Research on Innovative Path of Two-dimensional Design Course Practice System of SPOC Hybrid Teaching Oriented by Industry, Academia and Research

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ABSTRACT

With the rapid development of digital technology, the traditional 2D animation design course gradually reveals its insufficiency in teaching mode. This paper explores the optimisation of 2D animation design course based on the blended teaching mode of SPOC (Small Private Online Course) and industry-university-research combination. By adopting the platform of 'Study Pass', this paper makes innovations in the preparation of course resources, the design of teaching links, and the evaluation and feedback mechanism, aiming to improve students' independent learning ability and practical innovation ability. It is found that the combination of SPOC and industry-academia-research not only enhances students' interest in learning, but also effectively promotes the cultivation of their higher-order thinking ability. At the same time, this paper analyses the challenges encountered in the implementation process, such as the lack of students' self-discipline, and puts forward corresponding improvement measures. The teaching mode provides a new idea for the digital reform of the 2D animation design course, and also provides a reference for the teaching of other courses with strong practicality.

Keywords: Small private online course, Industry academia and research, Blended teaching.

1. INTRODUCTION

The goal of the Digital Media Technology programme is to cultivate a comprehensive mastery of art and design theory and modern digital media tools, and to be able to independently carry out video image design practice and design innovation. This requires that the teaching mode of the professional curriculum of the Digital Media Technology programme needs to keep abreast of the times, focus on the practical ability of students, dovetail with the needs of enterprises, and be more adaptable to the needs of the society in order to serve the construction of the Guangdong-Hong Kong-Macao Greater Bay Area. Blended teaching based on SPOC(Small Private Online Course)teaching mode oriented to industry-academia-research refers to the blended teaching as the main mode, the SPOC concept as the teaching idea, and industry-academia-research as the guiding ideology to provide students with all-around and personalised learning services. In this teaching mode, students can independently master the learning rhythm, combining online independent learning with offline classroom teaching, so as to better meet the personalised learning needs, improve the problems associated with the traditional offline face-to-face teaching mode, further enhance the teaching effect, and cultivate students' innovation and practical ability. This study tries to take industry-university-research as the guide, focuses on the needs of enterprises, lands on the classroom practice, applies SPOC to the 2D design course, introduces a variety of online teaching means, reforms the course structure and teaching methods, and explores the effective blended practical teaching mode[1].

2. REVIEW OF INNOVATIVE METHODS OF SPOC TEACHING MODELS ORIENTED BY INDUSTRY, ACADEMIA AND RESEARCH

2.1 Educational Status of 2D Animation Design Courses

The course 2D Animation Design is a compulsory course for students of various disciplines such as Digital Media Technology, Art and Visual Communication Design. The main purpose of this course is to let students master the way of using professional software in the field of animation and design, such as AN(Adobe Animate)and PS(Adobe PhotoShop), to complete the production of creative projects. The teaching process includes the editing of audio and video, the fusion of special effects, and the drawing and production of images, aiming to cultivate and improve ability to design and produce 2D animation and digital media using computers. In the face-to-face teaching scenario, students are prone to lag behind, and the design courses are generally very practical, requiring many steps and parameters to be adjusted, and other difficulties. Traditional face-to-face lectures are unable to meet students' individual needs and teachers guidance.

2.2 Significance of an Industry-Academia-Orientated Approach

Industry-academia-research is a teaching model that combines industry, academia and research. It integrates the resources of the three parties through cooperation among universities, research institutions and enterprises to promote knowledge innovation and technology application. The core of this model lies in combining academic research with actual industrial needs, promoting the transformation of research results into productivity, and thus enhancing the innovation ability of enterprises and the practical teaching level of universities. As socialism with Chinese characteristics enters a new era and innovation-driven development, the industry's demand for talents is becoming more and more urgent, but due to a variety of factors such as institutional mechanisms [2]. However, due to various factors such as institutional mechanism, the quantity, quality and level of education supply and industrial demand for innovative and practical talents in China are not yet fully matched. Because of the traditional education model due to the university teachers and hardware conditions of various restrictions, the practice content of the teaching content is generally old, lagging behind, and the era of the actual needs of the industry is completely mismatched to train out of the students do not have the ability to solve complex practical problems, and can not meet the needs of enterprises for talent. In this regard, the proposed industry-university-research teaching mode, through the integration of enterprise product projects into the curriculum, so that students in the learning process to participate in the enterprise's projects, to understand the actual needs of the specific industry, reduce the gap between theory and practice, and constantly improve the innovation and practice ability. Through the combination of industry-university-research, the scientific research achievements of universities and research institutes can be applied in the market faster, and students can also get internship opportunities to get working experience in the industry, a win-win situation for enterprises, universities and students[3].

2.3 Significance of the SPOC Teaching Model

SPOC is called Small Private Online Course(Small Private Online Course, SPOC)is a kind of course mode changed on the basis of MOOC(Massive Open Online Courses), and it is a kind of course teaching mode that integrates MOOC teaching resources into the class learning. SPOC inherits the features of MOOC mode, such as vivid content and flexible learning, and also solves the problems of MOOC courses, such as too broad, different learning participation and imperfect vertical tutorials for problems, etc. SPOC mode is a student-led course mode, which can efficiently improve the teaching effect, stimulate the interest in learning, and cultivate their independent innovation and thinking ability at the same time. Thinking ability allows students to find their own interests in the process of independent learning, and give play to their initiative to find and solve problems[4].

2.4 Significance for an Industry-Academia-Orientated SPOC Teaching Model

The traditional teaching mode has the problems of disconnection between theory and practice, low student participation, difficult to achieve teaching, and disconnection with industrial demand. Through the practical teaching innovation and practice of

SPOC teaching mode oriented to industry-university-research, teachers can achieve student-centred, enterprise talent demand-oriented, adjust and optimise the teaching direction. First of all, through the flexible curriculum mode of SPOC, students can learn and master the basic theoretical knowledge in and out of class, and at the same time, through the practical combination of university-enterprise co-operation enterprises, students can participate in the real enterprise R&D and production process during the school period, and get in touch with the theoretical research and landing scenarios, so that they can improve their own practical ability to meet the needs of the future employment. In the whole practical teaching process, students have a high degree of independent learning. In order to enhance the enthusiasm of students from the psychology, the University-Industry-Research University-Enterprise Co-operation model to the real business process as a grip, more able to improve the degree of student participation, the combination of the two, so that the students in the process of learning can be actively practiced, to achieve the results of the conversion, to obtain a sense of achievement, and further stimulate the interest in learning[5].

Combining SPOC with industry-academia-research can effectively solve the problems of disconnection between theory and practice and low participation of students in traditional teaching mode. It can enhance the comprehensive quality and professional ability of students through the support of rich online resources and practical projects closely linked with enterprises. This innovative teaching mode can not only meet the diverse learning needs of students, but also help colleges and universities better serve the needs of society and enterprises, thus promoting the overall improvement of education quality[6].

3. PREPARATION

3.1 Platform Selection

The practical application of SPOC and industry-academia-research can not be separated from the support of platform software, in this innovative practice, researchers chose the Super Star Learning Channel Online Teaching Platform (hereinafter referred to as Learning Channel) is relatively complete with online teaching functions. StudyPass supports data interoperability between multiple sites (web pages and clients, etc.), which ensures multi-contextual learning for students and is in line

with the student-led learning mode of SPOC. Secondly, Study Pass has a variety of teacher-student interaction systems, so that teachers can instruct students, assign homework, and understand the students' completion status through the software, thus improving the quality of teaching. Finally, it can also monitor the learning process of students, conduct data analysis, and generate a learning report for each student, which in turn guides teachers to carry out personalised guidance work[7].

Teachers and mentors can create courses, manage courses, create classes and interactive teaching within the platform. Learning Channel has a certain amount of cloud storage space, teachers can prepare all kinds of software installation packages and documents required for the project in advance according to the actual situation of the course or project, and record the relevant video materials, so as to facilitate the students to obtain timely information for learning in the learning process.

Based on the hardware of Super Star's big data statistics engine, Learning Channel can visualise and personalise students' results, assignments and feedback data at any time, which can efficiently realise personalised learning analysis and learning feedback for each student, and achieve interactive offline learning feedback between students and teachers.

Learning Channel also has a live chat function, teachers and business tutors can make announcements in the group chat during the teaching process, notifying students of many matters in a timely manner. Students who encounter difficulties in the course practice process can also communicate with teachers online through the software, eliminating the time and space limitations of traditional offline Q&A.

The construction of teaching resources based on the Learning Link platform helps the comprehensive development of course teaching or the practice of enterprise projects, and improves students' motivation and participation in learning.

3.2 Platform's Resources

Under the existing teaching mode, the effective combination of SPOC and 'industry-university-research' mode with curriculum resources is crucial for the overall development of college students. Curriculum resources should not only have a deep theoretical foundation, but also reflect the actual needs and application scenarios of the digital media

industry, in order to make up for the serious disconnect between theory and practice in traditional teaching. Teachers and enterprise mentors should cooperate and communicate with each other to design learning resources that are rich in content, reasonable in structure, perfect in project structure, and complete in description, and upload the resources to Learning Channel, so as to make it a big platform for students to learn theories and complete practice and innovation.

In the process of course resource preparation, to clarify the course objectives is the first part of our resource preparation, in the SPOC mode, the teacher's responsibility is to ensure that students master solid theoretical knowledge, while the enterprise tutor needs to make students aware of the significance of the theory in the real work scenario through actual cases and project tasks, and at the same time, to master the practical skills, so as to prepare for the subsequent employment of the job-seeking. With clear course objectives, teachers can mobilise students' enthusiasm for learning under the SPOC model, so that they can absorb all aspects of the industry's development in the "industry-university-research" co-operation and research.

The design of the course structure should ensure modularity and diversity, the modular design of the course is crucial to the combination of SPOC and 'industry-university-research', the course can be divided into sections according to the learning progress and difficulty. In the specific preparation of course resources, theoretical teaching resources and practical application resources should be closely related. The theoretical resources written by teachers, including electronic teaching materials, PPT courseware, academic papers, etc. , must cover the key knowledge points involved in the course and be supplemented with explanations and analyses of real application scenarios. For example, regarding the colour theory in 2D animation design, teachers can explain the principle of colour matching and its impact on visual communication through detailed handouts. At the same time, these theoretical resources should include interactive test questions or reflection questions after class to help students deepen their understanding and impression of knowledge. The practical resources prepared by business tutors are more inclined to real project cases and industry experience. Enterprise tutors can create resource files of completed projects in real enterprises, and through a series of methods such as face-to-face guidance, video explanations and analyses, students can gain an in-depth

understanding of the various aspects of the project process. For example, in the 2D animation design course, the enterprise tutor can share the animation cases used by the enterprises in the past, and show the complete process of animation project, animation production and animation final implementation.

Finally, a perfect joint project design plan should be established to give full play to the advantages of the combination of SPOC and 'industry-university-research'. The project tasks jointly designed by teachers and enterprise mentors can not only provide students with actual working scenarios, but also enable students to experience the value of the combination of universities and 'industry-academia-research' in their daily courses. Through scientific and reasonable curriculum design and rich and diversified learning resources, as well as interactive feedback mechanism, it can make up for the shortcomings of traditional classroom teaching, and also enriches their practical experience.

4. COURSE CONSTRUCTION AND PLANNING

4.1 Pre-course

In the pre-course stage, teachers and business tutors should design the course structure in a more targeted way according to the analysis of the academic situation, the demand and positioning of the professional course training programme, and the demand for talents in the industry, and distribute the teaching resources prepared in advance such as course resources and project contents in different course stages, so that students can come into contact with the projects and practices that correspond to the difficulty of the students' abilities in different stages, while at the same time, they also have to At the same time, it is also necessary to collect and improve the learning resources on the Learning Channel platform, so that the learning resources can be systematised and the time spent by students in searching for learning resources can be reduced.

Before the official start of the course, teachers and enterprise tutors can record video micro-courses in advance to share the technology trends and application scenarios of today's industry, and guide how to use the Learning Express platform to download resources and study, and through the live chat module, get in touch with on-campus teachers and enterprise tutors to answer questions and seek

help in a timely manner. Before the class can also be set up online discussion forum or online questionnaire, through the super star big data statistics to summarise the problems encountered by students in the process of independent learning, the teacher is able to focus on answering in the classroom, avoiding the repetition of questions from each student.

4.2 In-course

Since students have learnt the theoretical knowledge of the course in the pre-course stage through the Learning Access resources and understood the process of project operation and the requirements of the tasks they need to complete through the video lectures of the enterprise tutors, the focus in the course implementation is on solving the problems encountered by the students in the pre-course pre-training and the process dilemmas encountered in the in-course practice. When teachers design the teaching phase of the course, the teaching location is selected as the on-campus computer room and off-campus studio. The on-campus computer room mainly teaches the theoretical and basic operational content of the course, i.e., before travelling to the off-campus practice bases, students should first build up the basic skills of the theory and software operation on the campus in advance, so that when arriving at the studio, they can start the project as soon as possible to avoid wasting time. Off-campus studios and other practice bases rely on enterprise resources to complete a more complete real enterprise cases, so that learning a real sense of the atmosphere of the enterprise, in advance to adapt to the operation of the enterprise project process, which is conducive to the later from the student to the identity of the workers to change. As the learning time of off-campus studio is relatively short, students are required to actively learn at this stage, and seek help from enterprise tutors and employees to absorb more knowledge and skills in a short period of time. For example, in the digital media studio, students are more able to get in touch with skilled employees who are able to master the design software of the industry through the real design environment, so as to ask them to teach them how to use the software quickly and how to think and use the software in the design of the real project requirements. Students will be able to learn from them how to think and use the software in real projects, as well as how to plan for their careers. The course requires students to actively make classroom records, whether it is on-campus

classroom or off-campus practice base learning practice, they need to record the whole process of their own operation process, problems encountered, mentor guidance records, solutions and learning experience, and submit to the mentor for approval, which helps the mentor to adjust their teaching strategies and project content according to the students' feedback in a timely manner, and the students are also able to further improve their comprehensive ability in the process of summarising and clarifying the direction of subsequent projects. The students can also further improve their comprehensive ability in the process of summarising and make clear the subsequent learning objectives.

4.3 Post-course

The post-course stage requires teachers to answer questions in the online discussion forum or students' private messaging area according to the content and difficulties instructed in the class on Learning Link, as well as arrange and approve course assignments to test and reinforce students' mastery of knowledge, guide students to actively participate in the project tasks assigned by the enterprise tutor, so that students can find out their own learning deficiencies from the tasks, and also through the Learning Link online platform to communicate and contact with the enterprise tutor to solve problems in the process of project practice. Through the online platform of SPOC, students can communicate with the enterprise tutors to solve the problems in the process of project practice. On-campus teachers and enterprise mentors also need to carry out process evaluation and summative evaluation for each student, and output a personalised analysis report for each student, so as to truly realise the concept of student-centred teaching. Finally, through further cooperation and mutual assistance, on-campus teachers and enterprise mentors can follow up the latest industry trends, update and improve the teaching content of course design, as well as problems encountered in the industry, and problems encountered by the enterprise project design on the on-campus platform, so as to realise the in-depth fusion of the SPOC teaching mode and the 'industry-academia-research'.

5. THOUGHTS AND REFLECTIONS

5.1 Student Autonomy

SPOC and industry-academia-research course integration mode, students need to carry out independent learning initiative, due to the richness of learning resources and learning flexibility, if teachers do not do a good job of task scheduling and timely supervision and feedback, students are not easy to grasp the main direction of learning, easy to go around, energy consumption, teachers should be clear about the course and project objectives, and require students to report on the stage of the project once a week, as well as regularly set up group discussion sessions to track the students' progress in learning. course and project objectives, and require students to report on the stage of the project once a week, as well as regularly set up group discussion sessions to track the progress of students online learning, and enhance students sense of urgency in learning.

5.2 Curriculum Improvement

In the era of rapid development of artificial intelligence, many design skills are constantly replaced by AI and big models, which requires on-campus teachers and enterprise tutors to follow up the development of the times, understand the latest trends in the industry, and update and improve the content of lectures and practical projects in a timely manner, so as to avoid a disconnect between the teaching content and the needs of society.

5.3 Platform Diversity

In the selection of SPOC platforms, only one platform, Super Star Learning Pass, may not be able to meet the students' personalised and customised needs of the project, especially some enterprise projects need to use some specialised tools, which requires us to investigate and use platforms that can carry specialised software and AI big models, in order to enhance the students' interest in learning and improve the efficiency of project teaching. It is also necessary to design questionnaires and analyse the use of platforms, and select more suitable platforms according to students' feedback to achieve the deep combination of SPOC teaching mode and the concept of industry-university-research.

6. CONCLUSION

The innovative teaching model of deep integration of SPOC oriented to the concept of industry-academia-research is an important step to improve the employability of digital media majors, which can largely improve the hands-on practical ability of students' innovative design ability, but still the challenges of lack of student autonomy, insufficient course refinement and a single platform. By continuously improving teaching strategies and learning from successful practices, the SPOC-based hybrid education model can evolve into a more mature and efficient method that effectively prepares students for future employment.

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