

Analysis of the Learning Effect Evaluation System for Students of Digital Media Art Major Based on TOPCARES-CDIO

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Abstract—Digital media art is an interdisciplinary integrated discipline and involves majors like art design and media technology. To establish the evaluation system of students' learning effect for this major will help improve teaching quality and better carry out connotation construction of the major. The research priority of this paper is the significance of the evaluation system of students' learning effect, including students' evaluation analysis under the teaching idea on the basis of TOPCARES-CDIO. The evaluation is conducted mainly according to quality, knowledge and ability, and students' learning effect is evaluated according to the degree of achieving corresponding ability indicator. Because of changes and prospects of discipline, especially the conception of joining the collaborative evaluation system of industry and enterprise mainly includes links of industry standards, process design and outcome test. Students' learning effectiveness will be enhanced via evaluation on and off campus, in order to meet the requirement of employment and entrepreneurship.

Keywords—students' learning effect; effect evaluation; school-enterprise cooperative education; TOPCARES-CDIO talent training mode

I. INTRODUCTION

The "13th Five-year Plan" about the development of national educational cause puts forward new demands for education in universities, deepens teaching reform in universities and emphasizes improving teaching evaluation system in teaching management as well as establishes the reasonable, scientific and effective students' appraisal system. Therefore, under the demands of the time, the educators should think the effective evaluation system of talent training effect that conforms to modern education concept, serves economic and social development and cultivating talents for the national modernization construction.

Students' learning effect is expressed in the intuitive teaching effect of classroom learning and is divided into the degree of students' participation in learning, students' accuracy and quality in finishing homework. At the meantime, students' learning effect is also reflected in practice links such as students' after-class independent study and application in knowledge learnt. In addition, from a long-term perspective, students' learning effect is also

embodied in students' employment, entrepreneurial situation and their subsequent development in the society. Therefore, the evaluation on the learning effect of university students should be stereo-dynamic evaluation system and be designed and implemented according to students' basic knowledge, attainment, quality and social demands.

II. CURRENT SITUATION OF THE EVALUATION SYSTEM OF LEARNING EFFECT OF COLLEGE STUDENTS

A. Evaluation System of Learning Effect of Traditional University Students

Currently, the teaching process of most universities still centers on curriculum evaluation, and the course score is students' final score, equivalent to the process evaluation of students' learning effect. In the evaluation on students, students' summative grade is assessed mainly through ways of formative assessment such as students' daily management and usual homework, and students' final grade is assessed via forms such as big school assignment, graduation thesis defenses and written examination. Students' final score is obtained via scores of two aspects, and students' learning effect is divided into the excellent, good, medium and poor. The premise of forming the assessment form is applicable to basic teaching links to guarantee most students study hard, interact effectively and get outstanding academic results. The assessment system appears under normal conditions. With the reform and development of education, in order to serve students and create students' value, educators should think students' diversified performance and assess students via aspects such as quality, knowledge and ability, find students' strong points and turn excellence into students' advantages in social competition to promote good employment and entrepreneurship.

B. Evaluation System of Learning Effect of Students in Dalian Neusoft University of Information

Dalian Neusoft University of Information is a private institution of higher learning that is approved by the Ministry of Education for establishment and is funded by Neusoft. Dalian Neusoft University of Information devotes to becoming characteristic, high-level and entrepreneurial application-oriented technical university and training high-

quality application-oriented senior special talents that have sense of social responsibility, creative spirit, international view and strong practice ability.

Under the premise that the Ministry of Education strongly advocates education reform, Dalian Neusoft University of Information actively carries out innovation and entrepreneurship education and brings in the international popular CDIO project education idea and establishes the TOPCARES-CDIO teaching and training mode with university characteristics. The TOPCARES-CDIO teaching and training mode in Dalian Neusoft University of Information emphasizes training students' learning ability and forms 8 indicators of ability training. As innovative model of teaching, it has truly fulfilled the spirit of education conference and has realized who to train, how to train talents and train talents for whom.

After clarifying the purpose of training who, it is necessary to put more emphasis on train people for whom and how to train people. On the basis of the background of school-enterprise cooperative education, Dalian Neusoft University of Information depends on Neusoft Group and combines with domestic and international well-known IT enterprise and accurately grasps industry features and carry out the school-running model of industry-university-research cooperation. It can be understood that industry requirements, characteristics of local industry and realize schools should cultivate adaptive talents that are professional in the industry, serve local areas, expand internationalization and realize cross-border integration. To achieve the goal, Dalian Neusoft University of Information walks in the forefront of reform all the time and explores the mechanism and evaluation system of talent training and pursues and improve ceaselessly according to the purpose that "education creates students' value, students create social value".

III. SIGNIFICANCE OF CONSTRUCTING EVALUATION SYSTEM OF STUDENTS' LEARNING EFFECT

A. *Being Conducive to Deepening the Connotation of Teaching Reform*

General Secretary Xi Jinping's important address on the national education conference has made strategic deployment on the essential issues of who to train, how to train people and train people for whom and has clearly put forward that it is the responsibility of families, schools, government and the society to achieve a successful educational cause.

Dalian Neusoft University of Information depends on Neusoft Group and possesses good condition for enterprise in running schools in the society. Excellent professional talents are cultivated for local areas in combining regional advantages of Dalian and local economic, cultural and educational features of Dalian. At the same time, as the International Finance Centre of Northeast Asia, Dalian has remarkable international financial degree. In possession of science parks such as high and new tech area and Software Park, Dalian absorbs multiple international top 500 companies. Dalian area has remarkable hardware and

software advantages and good international platform and superior entrepreneurial environment, which provide good innovation and entrepreneurship environment and condition for entrepreneurs at the same time provide resources and platform for entrepreneurship groups of university students.

Students' evaluation mechanism under the TOPCARES-CDIO education and teaching idea considers students' comprehensive evaluation and takes students' quality, knowledge and ability as evaluation indexes and carries out via course evaluation, experiment and practice evaluation, studio evaluation and employers' evaluation. The education and teaching practice reform of innovation and entrepreneurship of industry-university-research cooperation is deeply carried out. It will be necessary to deliver students' course achievements to practice and comprehensive training links via students' course assessment and gradually improve and develop. It connects development results with the society via studios and enterprises and arouses students' enthusiasm in learning in this process, stimulates students' innovative thinking, enhances students' practice ability and truly realizes turning knowledge into ability and social value.

B. *Being Conducive to Specialty Construction*

The major of digital media art of Dalian Neusoft University of Information trains high-quality and application-oriented senior special talents that comprehensively develop in morality, intelligence, physique and aesthetics, practice socialist core values, have good professional ethics, humanistic quality, artistic quality and aesthetic ability, have sense of social responsibility, creative spirit and international view, meet the development needs of digital era and information society, systematically grasp game concept design, digital game production, special effect creation, video post-production, network interactive design, network video production and basic knowledge, basic theory and method of related tool application and have strong ability of digital content creation and undertake the planning, creation, production, diffusion, operation or management of films and televisions, games and network media in fields such as media and cultural industries.

The setting of talent training programs focuses on setting major field and major courses that conform to industry orientation according to the inverse derivation of industry and enterprise requirements and become market-oriented and take students' innovation and entrepreneurship as power. As a gas station, studios realize the conversion and promotion of course outcomes and the connection with enterprises' actual projects.

A dynamic talent training mode is formed in the process of training students in the department. That is, the market proposes demands and talent training centers on the market. At the meantime, teaching provides prospective estimation and centers on the core main courses to form interdisciplinary staggered comprehensive subject education model, achieve associative education of multiple colleges and disciplines, break the barriers of relevant disciplines and form diversified professional education, so that students have innovation ability of long-term development and meet

market demand more quickly. Meanwhile, it forms ecological chain of talent training, students of entrepreneurship and employment participate in supporting the major and carrying out specialty construction, in order to provide more students with employment and entrepreneurship information and provide effective basis for training professional talents in universities.

C. Being Conducive to Improving Teaching Evaluation System

Establishing the scientific and complete educational evaluation system is one of the issues on the education conference of this year to encourage universities and majors to carry out improving the teaching evaluation system. The design of the evaluation system of learning effect of students major in digital media art combines with enterprises' social demands. The multi-angle and all-round evaluation on students' learning effect is conducted to give play to the role of studios in connection and the evaluation function of school-enterprise cooperation and promotion.

The implementation of evaluation scheme provides methods for establishing ecological and stereo course system with university features. According to the understanding of local economy and industry, universities provide courses that more conform to social and economic demands and construct ecosphere of social demand, student practice and courses provided by universities. School courses unceasingly update. Course system that is more suitable for modern economic and social demand is designed, and diversified teaching methods are adopted, and the stereo course system of combination of production and study that connects with enterprises is established. The course evaluation is conducted via quality, knowledge and ability all the time according to curriculum provision and corresponding evaluation index.

At the meantime, the evaluation scheme is implemented via students' participation in the experiment and practice of studios. The specialized characteristic of the department of digital media art is the talent training model of "TOPCARES-CDIO plus studio". Studios are available for students' knowledge acquisition, practice and training as well as innovation and entrepreneurship. The teaching teams alternatively participate in laboratory teaching and scientific research according to the direction at which they are adept. Students take elective courses and experimental practice according to courses provided by studios which provide corresponding theoretical and technical support. Studios will evaluate students' quality, knowledge and ability according to the standard requirement of talent training.

Furthermore, studios serve as a convenient way of connecting students' innovation and entrepreneurship with enterprises. Studios encourage students who dare to explore and innovate to transform their learning outcomes and recommend excellent students to enterprises or let them participate in the development and practice of enterprise projects in the form of workgroup. In this process, students' basic skills will be trained and their ability level in multiple aspects will be improved. In the aspect of evaluating the learning effect, students' learning effect is evaluated via the

form of joint evaluation of enterprises and studios to make students truly understand industrial process, industry characteristics and their deficiencies, improve proactively and make progress continuously.

Through feedback on graduates, it can be understood that the learning, life, employment and entrepreneurship of students who enter society, and improve the evaluation system continuously according to the final social evaluation, in order to complete the ecological and growth-based teaching evaluation and the evaluation system of students' learning effect.

D. Being Conducive to the Implementation of Innovation and Entrepreneurship of Universities

The department integrates innovation and entrepreneurship practice into the teaching and training program and links of teaching implementation and establishes the innovation and entrepreneurship platform for university students and encourages students to practice entrepreneurship. The establishment of the innovation and entrepreneurship platform can show works designed by students, provide platform for students' communication and collect students' comments and suggestions, arouse students' learning enthusiasm and improve learning effect. After obtaining a sense of satisfaction and achievement, students will form virtuous cycle of independent and effective learning, which arouse students' learning enthusiasm and create a perfect learning atmosphere.

To solve students' employment problem will lay foundation for future entrepreneurship. The platform construction brings in enterprise need and sets actual project module. Students sign actual project contracts with enterprises in the form of competitive bidding and build a team to finish the project within the term of contract. The link provides real experience environment for university students' employment and entrepreneurship and enables them to obtain relevant enterprises' and teachers' guidance and even enterprises' part of investment. When students are employed after graduation and have independent and actual project outcomes and the contract of participating in enterprise cooperation, it better benefits for students' job selection. When having independent projects, student teams can choose entrepreneurship and independently develop intellectual property to create more value for individuals and society. Students who can combine theory with practice will be recognized by enterprises and the society.

E. Being Conducive to Deepening the Education of School-enterprise Cooperation

The industry-university-research cooperation is an effective model of the development of universities in Europe and America. Enterprises cooperate with university teachers and key laboratories and develop and research state-of-the-art projects. Meanwhile, enterprises establish experimental centers by turning to universities' scientific research and talent advantages, providing powerful guidance for the supply-demand relationship between discipline and specialty of universities and local industry. The economic traits of

local area in Dalian are explicit and take science and technology, economy and service as subjects. To set enterprises' evaluation system can help professional universities understand the operation types and patterns of local enterprises in Dalian, understand enterprise characteristics and culture in Dalian area and enterprises' basic setting and types of personnel requirement, further understand enterprises' post setting and job requirements. In this process, universities obtain more relevant information and resources. Universities can learn from others' strong points to offset weakness and proactively update practice plan, adjust cultivation direction and combine actual industrial development, meet setting of specialty direction to adapt to local industrial development and gather experience for innovation and entrepreneurship and relevant education.

To understand local enterprises in advance and grasp enterprise culture and power can better integrate in enterprise cultural construction. General Secretary Xi Jinping addresses culture is the spirit of a country and nation. Similarly, enterprises should develop soft power of culture, construct their brand image and establish enterprise culture through communication with universities and university students' deep participation.

IV. ESTABLISHMENT OF THE EVALUATION SYSTEM OF LEARNING EFFECT OF STUDENTS MAJORING IN DIGITAL MEDIA ART

Digital media art is an interdisciplinary comprehensive discipline and involves specialties such as art design and media technology and embodies the combination of art and technology. In 2005, the college established the department of digital art, which was renamed as the major of digital media art in 2013 according to disciplinary development and industry requirement. The specialized characteristic of the department is to adopt the talent training mode of "TOPCARES-CDIO plus studio" that is OBE-oriented (OBE refers to outcome based education).

The national standards for professional teaching quality (2018 edition) require the major of digital media to assess students via three aspects of quality, knowledge and ability. Therefore, the major implements the three aspects and continuously improves the evaluation of students' learning effects via basic evaluation system, experiment, practice evaluation system and joint system of school-enterprise cooperation, deepens reform in education and improves talent training mechanism.

A. Establishment of Basic Evaluation System

The evaluation on students' learning effect is embodied in the acquisition of knowledge and attainment. The evaluation on students' learning effect has its foundation and support, and the basic evaluation system is the footstone of students' learning efficiency. The basic evaluation system of the major is reflected in the public basic courses that shape students' world view, values and outlook on life, general-knowledge courses investigate students' artistic accomplishment and cross-border integration consciousness, and professional basic course cultivates students' basic

theory and basic skills. Students' quality and knowledge can be cultivated through assessment of these courses.

B. Establishment of the Evaluation System of Experiment, Practical Training and Studio

The evaluation of students' learning effect is embodied in the cultivation of ability and students' learning ability, creative ability, cooperation ability and promotion ability and so on. Students strengthen their operational ability and the ability of turning theory into practice via the experiment link of laboratory; take advantage of actual projects in practical training to realize integration of production and education and experience the operation mode of enterprises on campus; truly serve people via laboratory courses, training courses and cutting-edge and future course of studios and conform to the tendency of social, economic and cultural development.

C. Establishment of the Evaluation System of School-enterprise Cooperation

The evaluation system of school-enterprise cooperation is to evaluate interns by university and enterprise and elaborate the classification of enterprises' demands. Under the target requirement provided by enterprises, students complete the final task as scheduled in the form of team or individual, mainly including links of industry standards, process design and result test. Students understand specific information such as the role setting of enterprise personnel, work assignment and work schedule through understanding working links, try links of employment and entrepreneurial practice to lay a solid foundation for future entrepreneurship and social activities.

V. CONCLUSION

In the process of constructing the evaluation system of learning effect of students major in digital media art, after ceaseless thinking and exploration, it is considered that to integrate laboratory and practical training and studio training and carry out school-enterprise cooperation is the main chain of establishing the professional learning effect and is the important link of carrying out teaching reform. To improve university students' learning effect can strengthen intrinsic motivation, arouse students' enthusiasm in employment and entrepreneurship and construct innovation-based university. It is expected that it can be reflected on the paper and improved jointly.

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