Exploration of Talent Cultivation Model Driven by Academic Competitions in Studio Empowerment

Ruitao Zhou*, Cui Li, Qianqian Shao and Xuanjing Dong

Qingdao Huanghai University, Qingdao, China

*zhourt@qdhhc.edu.cn

Abstract. A new talent cultivation model has been proposed for application-oriented undergraduate colleges, aimed at addressing the issues of insufficient practical skills, lack of innovative spirit, and weak team collaboration abilities. This model is driven by academic competitions and relies on co-creation studios by teachers and students as a practical platform. It reasonably configures the mentor team and student echelons, forming a close "tutorial system" relationship. Through a multidimensional assessment system, including students' knowledge systems, academic competition results, innovation capabilities, and team collaboration abilities, it comprehensively promotes student's ability. This model not only focuses on the integration of theory and practice but also emphasizes stimulating innovative thinking and cultivating team collaboration skills, aiming to provide society with high-quality applied talents. At the same time, this model is scalable and provides valuable references and insights for other universities.

Keywords: Academic Competitions, Teacher-Student Co-creation Studios, Talent Cultivation Model.

1   Introduction

In recent years, undergraduate colleges in China have been vying for engineering education accreditation, promoting reforms in school engineering education, and designing top-level applied talent cultivation systems. They have made extensive explorations and innovations in optimizing curriculum systems, reforming teaching methods, improving evaluation systems, and strengthening cooperation with enterprises.

In view of the current situation, there is a significant gap between applied colleges and public research universities in terms of teaching resources, policy support, and social attention. Moreover, the cultivation of applied talents lacks reference templates, leading to a phenomenon where there is much talk but little action, and few colleges have achieved substantial results. The cultivation of applied undergraduate talents in China has already focused on the role of academic competitions, and many colleges have explored the role of academic competitions, teacher studios, and other factors in promoting students' innovative and practical abilities. He Zhenfang et al. from Liaocheng University have studied the project-based learning model based on "team +

competition + mentor" [1]; Liu Diantong and others from Yantai University have proposed the integration of professional practice teaching with academic competitions[2]; A construction model of national first-class majors centered around academic competitions has been studied under the background of new engineering[3]; A reform of "learning, practicing, researching, and competing" four-in-one practical teaching system has been carried out under the background of new engineering[4]; Wang Zhenduo et al. from Xi'an Siyuan University have explored and practiced the promotion of applied innovation ability in computer majors driven by academic competitions under the OBE concept [5]; Huang Xiaoyan from Guilin University of Electronic Technology has conducted practical teaching reform research based on the studio model [6]; Ma Huifang et al. from Beijing Union University have explored and practiced the teaching reform model of digital image studio [7].

The relationship between college teachers and students, which is often based on competitions, is relatively loose and usually lacks continuity. Teacher studios are often led by the teacher's own research topics, heavily relying on the individual capabilities of the teacher. Given that the teaching staff at applied colleges is relatively weaker, this model is difficult to replicate and promote on a large scale. Therefore, although models such as academic competitions, university teacher studios, and school-enterprise cooperation all play a certain role in the process of cultivating applied talents, they all have limitations in terms of organizational form, stable team relationships, and sustainable development.

In response to the shortcomings of current training models, this paper proposes an "apprenticeship" model for applied talent cultivation, based on interdisciplinary mentor teams and student echelons formed by university and industry mentors. Focusing on academic competitions, it fosters personalized student development. The "Little Peach" co-creation studio at Qingdao Huanghai College's Big Data School has successfully trained a large number of computer science undergraduates, achieving significant results.

2   The Construction Content of the "Academic Competition + Teacher-Student Studio" Cultivation Model

2.1   Overall Operational Framework of the Talent Cultivation Model

The cultivation of students is centered around academic competitions as the core content. As shown in Figure 1, the Class A academic competitions in the computer discipline are displayed, covering professional capabilities, innovation and entrepreneurship abilities, and more.
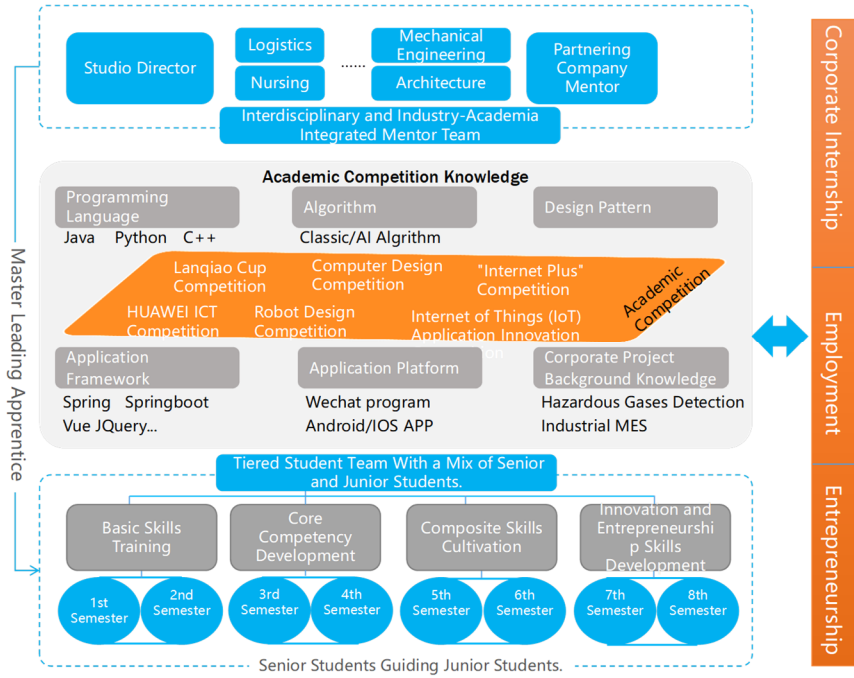
Fig. 1. Academic Competition + Teacher-Student Studio Cultivation Model (Taking the Computer Discipline as an Example).

The process of student capability development is divided into four parts: basic capabilities, core capabilities, composite capabilities, and innovation and entrepreneurship capabilities. These correspond to the eight semesters of university life, gradually building up professional skills from the basics. The studio serves as a platform to establish a close "mentor-mentee relationship" between teachers and students. The knowledge system of academic competitions is used as the content for student cultivation, and the model of "master leading apprentice" and "seniors guiding juniors" forms a talent echelon within the studio. This helps to reduce the confusion in students' learning process and smoothly enter the fast track of professional study.

At the same time, the studio can bring together instructors from different disciplines and corporate mentors from outside the school to assist in the cultivation of students' interdisciplinary and practical abilities. The ultimate goal is to produce applied talents with innovative and practical capabilities.

2.2 Exploring the Construction of a Knowledge System Centered on Academic Competition Content

Building a knowledge system centered on academic competitions is key to enhancing students' comprehensive abilities. We differentiate between foundational and innova-

tion and entrepreneurship competitions, distill core knowledge points, and form a systematic knowledge framework that covers basic theories, cutting-edge technologies, and innovative thinking methods. At the same time, through interdisciplinary team collaboration, we develop rich teaching resources to support students' independent learning and personalized development, and keep the knowledge system dynamically updated. In teaching, we adopt project-based learning and a mentorship system, encouraging students to apply theoretical knowledge to practice, and provide practical opportunities through regular mock competitions and real combat drills, helping students adapt to the competitive environment and accumulate valuable experience.

2.3   Forging an Interdisciplinary and Industry-Academia Integrated Mentor Team and a Student Member Tier with Senior-Junior Pairing

To deepen the integration of higher education with innovation and entrepreneurship education, we have built a cross-disciplinary, school-enterprise collaborative mentor team and established a student echelon with a mix of senior and junior students. This strategy integrates resources to provide comprehensive and personalized guidance for students. We innovatively adopt the "major mentor + interdisciplinary mentor + industry mentor" model to ensure students receive well-rounded guidance in professional foundations, interdisciplinary perspectives, and practical experience. Additionally, the internal mentorship model where senior students lead junior students promotes the inheritance of knowledge, team cohesion, and collaborative skills.

2.4   Exploring the OBE Concept-Based Studio Talent Cultivation Quality Assessment Standards

The studio talent cultivation quality evaluation standards based on the OBE (Outcomes-Based Education) philosophy ensure the comprehensive construction of students' knowledge systems, active participation in academic competitions, and continuous enhancement of innovative capabilities through multi-dimensional assessments. These standards focus on students' performance in technology, teamwork, creativity, and execution, using actual outcomes as the basis for evaluation. Through regular self-assessment, peer assessment, and mentor feedback, students receive comprehensive feedback to identify their strengths and weaknesses and develop improvement plans. The studio optimizes its curriculum and teaching methods based on evaluation results, enhancing the targeted and adaptive nature of talent cultivation. Additionally, by establishing an incentive mechanism, the studio recognizes outstanding students, provides personalized guidance for those in need, and promotes overall improvement in teaching quality.

3   The Operational Effectiveness of the Model

We rely on the School of Data Science of Qingdao Huanghai College to operate the "Xiaomaotao Software Studio", achieving significant results in software development,

skills training, academic competitions, and industry-academia cooperation, demonstrating strong innovation capabilities and practical levels.

3.1   Rich Project Practice Achievements

The studio has successfully developed and delivered multiple high-quality software projects, such as the "School Performance Appraisal System" and the "Counselor Capability Evaluation System". These systems have not only improved the school's management efficiency but also enhanced the professionalism of the counselor team. Notably, the successful operation of the "Huanghai Market" Wechat mini-program has not only exceeded 20,000 registered users but also won the national second prize in the National Computer Design Competition, fully proving the team's technical strength and market insight. In addition, works such as the "Waste Sorting Mini-Program" and the "Resource Platform Mini-Program" also reflect the studio's active contribution to social responsibility and public welfare projects.

3.2   Continuous Deepening of Skills Training

We are well aware that talent is the core of development, so we regularly hold technical sharing sessions and internal training, inviting industry elites to impart cutting-edge knowledge and stimulate the learning enthusiasm of team members. For example, Dr. Yin Lei from WeBank was invited to give a report on artificial intelligence and remote sensing. At the same time, we encourage self-directed learning, promoting the internalization of knowledge and the improvement of abilities through project combat and technical exchanges, forming a strong learning atmosphere and a positive team culture.

3.3   Repeated Successes in Academic Competitions

In various professional academic competitions, studio members have won honors with their solid professional foundation and excellent innovation capabilities. Some of the awards obtained include the first prize in the national competition of the National College Students' Digital Media Technology Works and Creative Competition; the second prize in the national computer design competition, the first prize in the Shandong Province section of the Lanqiao Cup, the first prize in the Datang Cup 5G competition in Shandong Province, and dozens of other provincial-level awards. These honors are not only a recognition of the team's strength but also an incentive for future development.

3.4   Significant Effects of Industry-Academia Cooperation

The studio's in-depth cooperation with companies such as Qingdao Light and Shadow Technology Co., Ltd. has provided students with valuable practical opportunities and career development platforms. Through summer training and graduation internship projects, students have been able to apply their knowledge to actual work, enhancing their professional literacy and comprehensive abilities. At the same time, cooperation with

other companies has also enriched campus activities, such as the "Meccano × Huanghai Market" campus activities, enhancing the exchange and interaction between students and enterprises, and laying a solid foundation for future employment and entrepreneurship.

4   Conclusion

This paper proposes a new applied undergraduate talent cultivation model driven by academic competitions and based on teacher-student co-created studios. The model addresses issues such as insufficient practical ability and lack of innovative spirit by reasonably configuring mentors and student echelons, and constructing a multi-dimensional assessment system to promote the comprehensive development of students. The core content includes: changing the traditional teaching model, clarifying learning goals, and stimulating student potential; establishing a studio-based teacher-student relationship, forming a learning model where seniors guide juniors; strengthening professional and interdisciplinary abilities, and fostering innovation and team spirit; promoting exchanges among teachers and with enterprises to improve teaching levels. Practice has proven that this model has achieved significant results in software development, skills training, academic competitions, and industry-academia cooperation, effectively enhancing students' practical abilities and innovative spirit, providing a new approach to the cultivation of applied talents.

Acknowledgement

References

1. He Zhenfang, Xiao Yan, Ma Xuemei, et al. Research and Practice on Cultivating College Students' Innovation and Entrepreneurship Literacy Based on the "Team + Competition + Mentor" Project-Based Learning Model [J]. Higher Education Journal, 2023, 9(31): 74-78.
2. Liu Diantong, Guo Weiping. Exploration and Practice of Integrating Professional Practice Teaching with Academic Competitions [J]. Theoretical Research and Practice of Innovation and Entrepreneurship, 2023, 6(20): 172-175.
3. Qin Xulei, Wang Lan, Liu Yanyang, et al. Research on Promoting the Construction of National First-Class Professional Model Centered on Academic Competitions under the Background of New Engineering [J]. Higher Education Journal, 2023, 9(31): 34-37.
4. Gao Huaibin, Ma Yu, Zhang Chuanwei, et al. Reform of the "Learning, Practicing, Researching, and Competing" Integrated Practical Teaching System under the Background of

New Engineering: A Case Study of the Vehicle Engineering Major [J]. Times Auto, 2023, (16): 57-59.

5. Wang Zhenduo, Bian Qian, Tian Xinzhi, et al. Exploration and Practice of Cultivating Applied Innovation Abilities in Computer Majors Driven by Academic Competitions under the OBE Concept [J]. Theoretical Research and Practice of Innovation and Entrepreneurship, 2023, 6(14): 144-146.

6. Huang Xiaoyan. Research on Practical Teaching Reform Based on the Studio Model: A Case Study of the Mini-Program "Ji Ying" [J]. Chinese Literary and Art Theorists, 2022, (07): 133-135.

7. Ma Huifang, Xia Hang, Yu Yang. Exploration and Practice of the Digital Imaging Studio Teaching Reform Model [J]. Art and Technology, 2015, 28(04): 47.