



Theoretical and Practical Exploration on the Construction of Innovative Teaching Teams in Higher Vocational Education based on Platform Collaboration

Wenyong Zeng

College of Computer Engineering and Technology (College of Artificial Intelligence)
Guangdong Polytechnic of Science and Technology, Zhuhai, China, 519090

707685549@qq.com

Abstract. The construction of innovative teaching teams in higher vocational education is an important way to promote the development of higher vocational education and improve teaching quality. There is an urgent need for the construction of teaching innovation teams, such as collaborating on the construction of courses, textbooks, and research projects. With the development of information technology, platforms have become a routine means of vocational education. Starting from a platform based collaborative approach, this study explores the theory and practice of building innovative teams in vocational education, in order to fully apply information technology to enhance team cohesion, balance individual development, collaborate in educating students, and enhance teachers' own strength. Intended to provide reference for building effective teaching innovation teams in vocational colleges.

Keywords: Vocational education; Teaching innovation; Team building; Platform collaboration; Theory and practice

1 Introduction

Vocational colleges are committed to cultivating applied talents, and teaching innovation is an important means to improve teaching quality and promote the development of students' comprehensive qualities. The construction of teaching innovation teams based on platform collaboration can enhance team collaboration capabilities and promote higher vocational education innovation by integrating resources, promoting communication and cooperation. To this end, we will explore the construction of higher vocational education innovation teams based on platform collaboration from both theoretical and practical aspects.

2 Related work

There have been a series of related studies on the construction of teaching teams; There is less discussion on platform based construction.

The online education teaching team has strong practical value and significance for the efficient implementation of online education. The scholar selected two typical online education and learning platforms, Future Learn from the Open University in the UK and OUCHN from the National Open University in China, and compare and analyze the roles, responsibilities, and team operation modes of different teachers in the two learning platforms [1]. Based on the concept of integrated teaching methods, propose optimization suggestions for the construction and operation mechanism of online education and teaching teams.

The teaching team has its necessity in the construction of ideological and political education in the curriculum: excavating ideological and political resources, playing a hidden role in ideological and political education, inheriting the educational concept of moral education, etc., all require collective wisdom and team strength [2].

The joint construction of teaching teams by schools and enterprises can enhance the main position of teachers, help promote the implementation of the "dual teacher" teacher policy, and improve the quality of education [3]. The joint construction of teaching teams between schools and enterprises can broaden the channels for attracting talents through the establishment of research centers for joint construction between schools and enterprises, industrial colleges, vocational alliance platforms, and government platforms. Additionally, institutional construction can be strengthened by establishing teacher management mechanisms, developing work platform systems, implementing industry professor systems, and implementing a two-way flow system between schools and enterprises.

Organizational structure is the primary condition for effectively developing team resources. The team life cycle theory provides appropriate theoretical support for the organizational structure of teaching teams in vocational colleges [4].

The "dual entity" educational model of vocational education promotes mutual cooperation and mutual benefit between schools and enterprises. Based on the school enterprise cooperation platform, higher vocational teaching teams should focus on the construction of institutional systems, the construction of a dual teacher team, and the construction of a teacher performance evaluation system that can motivate teachers' enthusiasm [5].

It is necessary to build an innovative team for vocational education teachers in the new era. The literature [6] conducts research on the restructuring of the teaching staff, development of training plans, establishment of supporting implementation platforms, establishment of renowned teacher studios, and multi-platform collaboration, proposing a model of external introduction and internal training, abundant in the form of "blood transfusion"; Utilizing opportunities such as school enterprise cooperation resources and high-level professional group construction to promote the growth of the teaching team and achieve "hematopoietic" restructuring; Personalized and customized targeted training strategies to address weaknesses; Utilizing multiple platforms to establish a long-term mechanism for collaborative assistance and mutual assistance

within and outside the team, it is proposed a precise incubation model for teacher innovation team construction, which includes "blood transfusion→hematopoiesis, assistance→help", and create a dual teacher and multi ability high-level teacher team.

The Values-Based Leadership Model & Competency Map and The Values-Based Leadership Taxonomy are innovative tools for practitioners in Higher Education that may be applied to other industries as well [7].

Some research is taken into the complex nature of the relationship between team learning conditions, team learning behaviours and innovative work behaviour by considering and combining different factors [8].

In both conceptual and practical ways, cultures in which college teams succeed or fail, and the quality and value of the work they accomplish intersect both to provide opportunities for and take advantage of strategic change [9].

Extended teams in vocational education is possible by collaboration on the border [10].

Team teaching is one path to cultivate talents with case teaching notes, sample case, and in-class questions (with answers) [11].

The potential of digital platforms is examined for managing multidisciplinary collaboration and particularly the ideation processes of multidisciplinary research and development in the case of technology-supported vertical farming. Digital platforms may offer effective, process-accelerating support during the kick-off phase of multidisciplinary technological innovations [12].

3 Theoretical exploration on the construction of innovative teaching teams

3.1 Platform Theory

As an organizational form and tool, the platform can provide functions such as resource integration, information sharing, and collaborative work, providing support and guarantee for the construction of innovative teams in vocational education.

A platform is an organizational form based on information technology that provides infrastructure, services, and rules to enable different participants to interact, collaborate, and trade on it.

The main features of the platform are as follows.

(1) Multilateralism: Platforms typically involve multiple participants, forming a multilateral structure. Participants rely on and interact with each other, and achieve value creation and exchange through the platform.

(2) Network effect: If the number of participants on the platform increases, the value and attractiveness of the platform will also increase, forming a network effect. It can bring advantages such as economies of scale, connectivity across time and space.

(3) Openness: Platforms typically have openness, allowing third-party developers or service providers to build applications, provide services, etc. on them. It can promote innovation and diversity.

(4) Platform governance: The platform needs to establish rules and mechanisms to manage the behavior of participants on the platform, maintain order and stability of the platform. Platform governance involves trust building, risk management, and dispute resolution.

The role and value of the platform are as follows.

(1) Connection and coordination: As an intermediary institution, the platform can connect different participants, coordinate their cooperation and communication, and achieve resource sharing and optimized configuration.

(2) Innovation and value-added: The platform provides technical, market, and ecosystem support, promoting the occurrence of innovative activities and creating value for participants. Through the platform, participants can quickly launch new products or services to meet user needs.

(3) Reduce transaction costs: The platform provides standardized transaction rules and infrastructure, simplifies the transaction process, reduces transaction costs between participants, and promotes the occurrence and completion of transactions.

(4) Data driven decision-making: Platforms typically collect and analyze a large amount of data to make predictions and decisions based on it, helping participants better understand industry changes and user needs, and optimize operations.

The application areas of the platform are as follows:

Platform theory is widely applied in various fields, including e-commerce, sharing economy, social media, Internet of Things, online education, etc. These platforms in these fields promote communication and cooperation between supply and demand through the construction of intermediary platforms, and promote innovation and development in the industry.

In summary, platform theory provides a framework for understanding and analyzing platform phenomena, the characteristics and value of platforms as a new form of organization, and the application of platform thinking in practice for innovation and collaborative cooperation.

3.2 Education and teaching platform

Platforms can be divided into: teaching platforms based on their functions; Research platform; Performance platform; Promotion platform; Training platform; Assessment platform, etc. Taking education and teaching related platforms as an example for discussion.

Education and teaching platform refers to an information technology based platform that provides online teaching, learning resource management, communication and interaction functions for teachers and students in the education field. The education and teaching platform supports teachers in organizing and managing teaching activities by integrating and providing online courses, textbooks, assignments, tests, and other teaching resources, while also providing a learning and interactive environment for students.

The functional characteristics of the education and teaching platform are as follows.

(1) Online course management: The education and teaching platform can carry and manage various online courses, including recorded video lectures, multimedia text-

books, online assignments, and exams. Teachers can create and publish course resources on the platform based on teaching content and progress.

(2) Learning resource management: The platform can centrally manage and organize a variety of learning resources, including electronic textbooks, learning materials, reference books, etc. Students can access and download the necessary learning resources at any time, supporting autonomous learning.

(3) Homework and quizzes: The platform provides functions for publishing, submitting, and correcting homework and quizzes. Teachers can assign homework and quizzes online, and students can complete and submit them within the specified time. Teachers can provide timely feedback and evaluation of students' homework and answers.

(4) Online communication and interaction: The platform provides functions such as online discussion, Q&A, and collaboration, promoting interaction and communication between teachers and students. Students can ask questions and share opinions on the platform, while teachers can provide answers and guidance.

(5) Learning progress tracking: The platform records students' learning progress and grades, allowing teachers to understand their learning progress and provide timely individual guidance and guidance.

Based on platform collaboration, that is, based on the platform for course construction, teaching implementation, task management, and resource sharing, team members promote and enhance each other.

From a macro perspective, collaborative platforms can include various forms. Entity based engineering centers, innovation centers

The platform corresponding to the operation and management system of vocational colleges is usually a collaborative work, teaching, research, and assessment platform for teams.

From a micro perspective, the teaching platform focuses on the management and operation of the teaching process, as well as the integration of course construction. In teaching, we use various cloud classrooms, MOOCs, micro courses, etc. to carry out collaborative resource construction, collaborative classroom teaching, assessment and evaluation, etc.

3.3 Synergy theory

Collaboration refers to the process of multiple individuals or teams working together to complete tasks. Platform based team building can promote collaboration and interaction among team members, fully unleashing team creativity and innovation capabilities.

Taking the collaboration of teaching innovation teams as an example, the collaboration methods can be: online collaboration; Offline collaboration; Collaborative content can include courses, textbooks, teaching and research, etc.

Collaborative cooperation mode:

The existence of a platform can promote collaborative cooperation among different participants, forming a diversified cooperation model. Common collaborative modes include:

Horizontal collaborative cooperation: Cooperation between different universities or majors, sharing resources and information through platforms, and providing integrated solutions. If multiple schools jointly build a professional teaching resource library.

Vertical collaborative cooperation: Cooperation between platforms and participants, such as cooperation between educational platforms, schools, and teachers. The education platform provides online courses and teaching resources, and schools and teachers use the platform for teaching activities and management.

User collaboration: Collaboration between users on the platform, sharing knowledge, experience, and creativity to jointly participate in projects or solve problems. For example, on an open online course platform, students can exchange learning experiences and answer questions with each other through discussion areas.

Collaborative value creation:

The platform based collaborative theory emphasizes value creation through collaboration. The platform provides a shared environment and mechanism to facilitate interaction and collaboration among different participants, thereby achieving the following benefits:

Scale economy effect: As the number of participants on the platform increases, the scale effect gradually becomes apparent, costs can be reduced, and resource utilization becomes more efficient.

Innovation capability improvement: The platform integrates the creativity and knowledge of different participants in an environment, promoting the improvement of innovation capability. Collaborative cooperation can promote the occurrence and sharing of innovation.

User experience optimization: Through collaborative cooperation, participants can jointly improve products or services and enhance user experience. The platform can be adjusted and optimized based on user feedback and needs to meet their needs.

Platform based collaboration theory can be applied to various fields, including e-commerce, sharing economy, education, scientific research, etc. In these fields, platforms serve as intermediaries to promote cooperation and innovation among participants, helping to improve efficiency, reduce costs, and achieve a better user experience.

In summary, the platform based collaboration theory emphasizes the promotion of collaborative cooperation and value creation among different participants through the construction and operation of the platform.

4 Strategies of building an innovative team for vocational education based on collaborative platforms

The construction of innovative teams in vocational education based on collaborative platforms refers to the use of collaborative platform technology and concepts to form a team of teachers with innovative abilities and collaborative spirit in the field of vocational education, and jointly carry out teaching reform and innovative practices.

4.1 Determine team goals and vision

Firstly, determine the team's goals and vision, and clarify the shared expectations and pursuit of teaching innovation among team members. The team goals should align with the development needs of vocational education and the learning needs of students, and be feasible and measurable.

4.2 Recruit diverse members

When building a team, it is important to recruit members with different professional backgrounds, teaching experiences, and interests. Diverse members can bring different perspectives and innovative thinking to the team, promoting communication and cooperation. The diversity of the team can be expanded through internal recruitment, external introduction, or interdisciplinary cooperation.

4.3 Provide training and support

Provide necessary training and support to team members to understand the usage methods of collaborative platforms and the concept of teaching innovation. Specialized training courses, seminars, or workshops can be organized to provide practical guidance and experience sharing, helping team members master relevant skills and knowledge.

4.4 Create a collaborative platform

Establish an online platform suitable for collaborative collaboration among innovation teams in higher vocational education. This platform should support communication and collaboration among team members, including functions such as sharing teaching resources, discussing problems, and collaborating on course design. You can choose from existing educational and teaching platforms, or develop customized platforms that meet the needs of your team.

4.5 Promoting teamwork and innovation

Encourage team members to actively participate in collaborative and innovative activities on collaborative platforms, such as jointly designing projects, sharing teaching experiences, and conducting teaching research. Organize regular team meetings or seminars to provide opportunities for communication and exchange, and promote interaction and cooperation among team members.

4.6 Establish an evaluation mechanism and reward system

Establish an effective evaluation mechanism and reward system to evaluate and recognize the teaching innovation achievements of team members. By evaluating the results and rewarding incentives, enhance the enthusiasm and initiative of team

members, and promote the continuous development and innovative practices of the team.

4.7 Continuous improvement and learning

Building an innovative team in vocational education is a process of continuous improvement and learning. Teams should maintain an open mindset, constantly absorb new concepts and methods, and adjust their goals and strategies in a timely manner to adapt to changes in the educational environment and needs.

Through team building based on collaborative platforms, teachers' innovative potential can be stimulated, teaching quality and effectiveness can be improved, and teaching reform and innovative development can be promoted in higher vocational education.

5 Practice and exploration of building innovative teams in vocational education

The main steps of building a higher vocational teaching innovation team based on platform collaboration include: building a collaborative platform, cultivating team collaboration ability, conducting resource communication and collaborative construction.

5.1 Building a collaborative platform

Build a collaborative platform suitable for communication and cooperation among vocational education innovation teams, including online discussions, file sharing, project management, and other functions, to facilitate communication and cooperation among team members.

Utilize existing platforms for collaborative management of course teaching, teaching implementation, and assessment.

New platforms can also be built based on construction tasks. Thus integrating and organizing resources for collaborative completion of tasks.

5.2 Cultivate teamwork skills

By organizing team training and conducting collaborative projects, we aim to cultivate team members' collaborative awareness and abilities, strengthen communication and cooperation between teams, and improve overall team effectiveness.

5.3 Resource sharing and integration

Share teaching resources, case studies, and teaching experiences on collaborative platforms, promote resource sharing and mutual learning among team members, and improve the quality and level of teaching innovation.

5.4 Evaluation and feedback mechanism

Establish an effective evaluation and feedback mechanism, regularly evaluate and summarize the team's work, adjust the direction and strategy of team building in a timely manner, and maintain the team's vitality and innovation ability.

6 Practical Cases of Building Innovative Teams in Higher Vocational Education Based on High Level Professional Groups

A high-level professional group is a collection of majors with a certain scale and characteristics in vocational colleges, including teachers and students in related majors and fields. The construction of a teaching innovation team based on high-level professional groups can fully leverage the resources and advantages within the professional group, promote teaching innovation, and improve teaching quality. We are committed to building an efficient teaching innovation team within a high-level professional group.

In the construction of high-level professional groups, we have established various forms of teaching innovation teams, including curriculum based teaching innovation teams, ideological and political based teaching teams, teaching management innovation teams, and collaborative innovation team based on teaching and research projects.

The platform construction relied on by the team has established multiple engineering centers and bases: the Ministry of Education's Double Teacher Training Base, the Ministry of Education's Software Engineering Application Technology Collaborative Innovation Center, the Provincial Industry Education Integration Digital Innovation Workshop, Kunpeng Digital Industry College, Smart Vocational Education Engineering Center, Mobile Application Development Engineering Center, and various professional and directional on campus and off campus practical teaching bases; Relying on practical cloud platforms for practical teaching, and relying on Superstar Fanya, Xueyin Online, Smart Vocational Education, Cloud Classroom, Work Order Classroom, etc. for course construction and collaborative teaching.

Based on the platform, a corresponding team has been built to complete the construction task. At the same time, the team's teaching and research abilities have been exercised and improved, honors have been obtained, and social influence has been enhanced.

(1) Team building and organization: Select teachers with rich teaching experience and professional knowledge to form a teaching innovation team within a high-level

professional group. The team members have a mutual trust and cooperative relationship, and are jointly committed to teaching reform and innovation.

(2) Resource integration and sharing: In the process of team building, promote resource sharing and experience exchange among teachers through regular teaching and research seminars, experience exchange meetings, and other forms. Team members can share successful cases, teaching methods, and textbook resources to achieve the co construction and sharing of knowledge and experience.

(3) Innovative project development: Select representative and practical projects for research and practice. For example, conducting cross disciplinary cooperation projects, school enterprise cooperation projects, etc. to enhance students' practical abilities and comprehensive qualities.

(4) Evaluation and feedback mechanism: Establish an effective evaluation and feedback mechanism to regularly evaluate and summarize the work of the teaching innovation team. Based on the evaluation results, adjust the direction and strategy of team building in a timely manner to maintain the team's vitality and innovation ability.

7 Conclusions

The construction of innovative teams in vocational education based on platform collaboration is an effective way to promote the development of vocational education and improve teaching quality. By building and organizing teams based on platforms, integrating and sharing resources, carrying out innovative projects, and implementing evaluation and feedback mechanisms, communication and cooperation among teachers can be promoted, teaching quality can be improved, and students' practical abilities and comprehensive qualities can be cultivated.

The construction of teaching innovation teams based on platforms can be carried out from both macro and micro perspectives. Explored the construction methods from both theoretical and practical perspectives, and proposed relevant suggestions. Provide reference for vocational colleges to build teaching innovation teams with collaborative ability and innovative awareness.

Acknowledgment

The research work is supported by the following funds: The 2023 Guangdong Provincial Key Field Special Project (Science and Technology Services and Rural Revitalization) "Research on Key Technologies for the Design and Implementation of Agricultural Production Management and Shared Service Platform" (Project No. 2023ZDZX4089); The 2021 Curriculum Ideological and Political Construction Project of Guangdong Higher Education Teaching Management Association "Comprehensive Project Practice- HarmonyOS Application Development" (Project No. X - KCSZ2021267); 2022 Guangdong Vocational College of Science and Technology Campus Level Course Ideological and Political Demonstration Course Cloud Storage Technology (Project No. 29); The 2023 Education and Teaching Reform Research and Practice Project of the Guangdong Higher Vocational Education Computer Majors

Teaching Guidance Committee "Research and Practice of Comprehensive Project Practical Course Teaching Reform Based on CDIO Concept" (Project No. JSJJZW2023003); The 2023 Guangdong Vocational College of Science and Technology School level Teaching Quality Engineering Project Education Reform Research and Practice Project "Project Teaching Research and Practice Based on Low Code Collaboration" (Project No. 3).

References

1. Li Haiying, Zhu Fang. Research on the Construction and Operation Mechanism of Online Education Teaching Teams [J]. Education Science Research, 2022 (12): 76-81
2. Dai Jian. Analysis of the Construction of Ideological and Political Teaching Teams in Higher Education Courses [J]. Jiangsu Higher Education, 2020 (12): 100-103. DOI: 10.13236/j.cnki.jshe.2020.12.019
3. Zhang Tianzhu. Analysis of the Joint Construction of Teaching Teams by Schools and Enterprises from the Perspective of Industry Education Integration [J]. Adult Education, 2022, 42 (06): 76-79
4. Xu Dan. Construction of the Organizational Structure of Teaching Teams in Vocational Colleges: From the Perspective of Team Life Cycle Theory [J]. Education Development Research, 2015,35 (09): 78-84. DOI: 10.14121/j.cnki.1008-3855.2015.09.015
5. Zhang Xuguang. Construction and Development of Higher Vocational Teaching Teams Based on School Enterprise Cooperation Platform [J]. Journal of Heihe University, 2017,8 (01): 114-115
6. Xiong Jifen, Peng Chaohui. Practical exploration of the innovative team building model for vocational education teachers - Taking the automotive major of Guangxi Electromechanical Vocational and Technical College as an example [J]. Equipment Manufacturing Technology, 2023 (04): 265-268
7. Morgan S, Manganaro M. Teaching and Learning Leadership: Assessing Teams in Higher Education[J].Journal of Leadership Education, 2016, 15(4): 144- 152. DOI: 10. 12806 /V15/I4/A3.
8. Widmann A M R H. Team learning behaviours and innovative work behaviour in work teams[J]. European Journal of Innovation Management, 2018, 21(3).
9. Frost S H. Using Teams in Higher Education: Cultural Foundations for Productive Change: New Directions for Institutional Research, Number 100[J].[2023-10-21].
10. [10] Mazereeuw M, Wopereis I, Mckenney S. Extended teams in vocational education: collaboration on the border[M]. 2018.
11. Kist G W. A case study approach, combined with modified team-based learning, to teach the progression of metabolic syndrome to type 2 diabetes[J].Advances in physiology education, 2018, 42.
12. Ryymin E, Lamberg L , Pakarinen A .How to Digitally Enhance Bioeconomy Collaboration: Multidisciplinary Research Team Ideation for Technology Innovation[J].Technology Innovation Management Review, 2020(11).DOI:10.22215/TIMREVIEW/1401.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

