

# Practice and Discussion of the Vocational College Teacher Quality Improvement Plan

Ran Wei<sup>1</sup>, Fang Song<sup>2,\*</sup>

<sup>1</sup>Department of Rehabilitation Engineering, Beijing College of Social Administration (Training Center of the Ministry of Civil Affairs), Beijing, China

<sup>2</sup>Department of Child Education and Development, Beijing College of Social Administration (Training Center of the Ministry of Civil Affairs), Beijing, China

\*Corresponding Author.

**Abstract:** The Vocational College Teacher Quality Improvement Plan (VCTQIP) is a strategic initiative to enhance the pedagogical and technical skills of vocational college teachers in line with the evolving needs of industry. This paper examines the VCTQIP, in particular the Curriculum Implementation Capacity Enhancement Program in Advanced Manufacturing, orchestrated by the Beijing Institute of Technology from 2023 to 2024. The purpose of the study is to assess the effectiveness of the plan in improving teacher quality and to explore innovative training methods in the context of synergistic innovation between vocational, higher and continuing education. Assessing the impact of the training on teachers' professional development and the integration of student-centred learning is at the core of the research methodology. The plan's multifaceted training modules, including specialist research, curriculum design and practical applications, have been instrumental in achieving this outcome. In addition, the collaboration with industry experts and the emphasis on pedagogical reform have provided a comprehensive learning experience. The paper concludes that the VCTQIP is an important tool for the professional development of VET teachers, facilitating the transition to student-centred learning and promoting lifelong learning, which is essential for career sustainability. The success of the plan lies in its structured approach, which integrates theory and practice and encourages continuous improvement and innovation in teaching methods.

**Keywords:** Vocational Teacher Education;

**Teacher Quality Improvement; Student-centred Learning**

## 1. Introduction

People are the most valuable resource in any organisation. It is through their continuous growth and development that learning organisations not only thrive, but also integrate seamlessly into a wider learning society [1]. Vocational education and training (VET) is a form of education that focuses on mastering skills for work. The better it is implemented, the higher the level of industrial growth in a country will be. It can be organised and delivered in different ways. This is reflected in the different models of VET that exist in different countries. When more of these schools are established in regions, it leads to a higher level of prosperity for the local community [2].

Vocational teachers cross boundaries between practices in schools, colleges and workplaces, renegotiating their identities as professionals in a particular vocation and as teachers [3]. The notion of promoting the professionalism of teachers dovetails perfectly with the idea of empowering core staff, enabling them to take ownership of their personal and professional development.

In order to implement the spirit of the National Vocational Education Conference, and to carry out the implementation plans of National Vocational Education Reform, and to implement the Beijing Vocational College Teachers' Quality Improvement Plan, the "Beijing Vocational College Teacher Quality Improvement Plan" has been organized from 2023 to 2024.

The faculty is the primary resource for advancing the development of vocational education and is the core force supporting the

reform of national vocational education in the new era. To comprehensively build a high-quality faculty is fundamental to promoting the high-quality development of vocational education and is also key to vocational colleges and schools fulfilling their fundamental task of fostering virtue through education. The main objective of the Vocational College Teacher Training Plan is to play a pioneering and exemplary role, encourage local regions to refine and perfect the vocational college teacher training system, and cultivate a high-level and high-quality team of technical and professional personnel. The goal of vocational college teacher training is to innovate the talent training model, build a student-centred training system, and train high-quality technical and professional personnel.

The concept of student-centredness is multifaceted, encompassing a wide array of interpretations, meanings, and connotations. It is a broad and nuanced idea that is subject to various perspectives and applications. In contrast, student-centred learning is a well-established and clearly defined concept within educational theory and practice, supported by an extensive body of literature that explores its principles and applications [4].

During lectures, teachers often speak and project slides, while students limit their behaviour to listening and taking notes under the teacher-centred concept. In the current higher education landscape, the need to promote teaching quality has never been more compelling or challenging. Not only are university teachers expected to consider pedagogical innovations, but they must also adapt their teaching to provide students with more complex and sustainable 21st century skills, such as problem-solving or collaborative skills. The demands of an increasingly diverse student population, massification and internationalisation of higher education also impact on the adoption of appropriate teaching and learning approaches [5-9]. A number of attempts at student-centred pedagogical reform have already been made by university teachers. It has become a widespread approach in higher education and is praised by students and educational researchers alike [10].

Given that students are intricate individuals who are part of complex social structures and contexts, such as those found in universities or vocational colleges, the notion of student-

centredness naturally extends to the design of educational experiences. These experiences are designed with the student at the epicentre, with the aim of creating an environment that not only supports but actively encourages learning. This approach emphasises the individual needs, interests and goals of students, recognising their agency and potential for self-directed learning.

In parallel with the rapid advancement of science and technology, educators must not only maintain and enhance their professional and technical expertise but also adapt their pedagogical approaches, transitioning from a traditional, teacher-centred approach to a more student-centred one.

## **2. Plan Implementation**

Beijing Institute of Technology, as a key national base for vocational education teacher training and development, hosted the "Beijing Vocational College Teacher Quality Improvement Plan" - "Curriculum Implementation Capacity Enhancement Program-Advanced Manufacturing" from 2023 to 2024.

In order to make the training content more comprehensive and practical, the organizers have developed a variety of methods for delivering the training sessions. These include:

- (1) Intensive face-to-face training: This traditional approach allows for direct interaction between trainers and participants, facilitating immediate feedback and clarification of concepts.

- (2) Discussion and sharing of ideas: Encouraging dialogue and the exchange of ideas between participants can enhance understanding and foster a collaborative learning environment.

- (3) Hands-on training: This method involves participants actively using the material or equipment and can be particularly effective for skills-based learning.

- (4) Enterprise Internships: Providing real-world experience through internships allows participants to apply their knowledge in a professional setting.

- (5) Company visits: Visiting companies and observing operational practices can provide valuable insights into industry standards and current practices.

- (6) Interactive learning and sharing: Interactive sessions encourage peer-to-peer

learning and can help deepen understanding through group activities and discussions.

(7) Online course resources: Supplementing face-to-face training with online resources can provide flexibility, allowing participants to review materials at their own pace and access additional information as needed.

By integrating these different approaches, the VCTQIP aims to cater for different learning styles, enhance the overall educational experience and ensure that the knowledge and skills gained are directly applicable to participants' professional development.

The VCTQIP, hosted by the Beijing Institute of Technology, has been carefully structured to enhance the pedagogical and practical skills of participating teachers in the field of advanced manufacturing. It is designed around 6 distinct modules, each with a specific focus to ensure a well-rounded and comprehensive learning experience:

(1) Specialised Research Module: This module is likely to involve in-depth study and research into specialised areas of advanced manufacturing, enabling teachers to gain expertise in niche aspects of the field.

(2) Advanced Manufacturing Curriculum Implementation Philosophy: Here teachers are introduced to the underlying principles and philosophies that guide the implementation of advanced manufacturing courses, emphasising the importance of a strong theoretical foundation.

(3) Advanced Manufacturing Curriculum Implementation Design: This module focuses on the design aspects of curriculum implementation, teaching teachers how to effectively structure and plan their courses.

(4) Advanced Manufacturing Curriculum Implementation Process: Covering the actual process of implementing the curriculum in a classroom or training environment, this module provides practical insights into the execution of curriculum plans.

(5) Advanced Manufacturing Curriculum Implementation Evaluation: Teachers learn how to assess and evaluate the effectiveness of their curriculum implementation, with a focus on continuous improvement and student outcomes.

(6) Visits and Observational Learning Experiences: This module incorporates real-world experience through visits to

manufacturing facilities and other relevant sites, giving teachers a first-hand look at the application of their teaching in industry.

The VCTQIP has assembled a prestigious group of educators and experts to deliver a holistic training curriculum. The faculty includes professors from Beijing Institute of Technology, leading experts in vocational education research, frontline vocational education practitioners and renowned specialists from related industries. The training provided the participating teachers with a comprehensive training content, including not only cutting-edge technological innovations, interpretation of vocational education policies, discussions on vocational education professional development and talent cultivation models, brainstorming on higher education institutions and vocational education concepts, student-centred teaching innovations, and visits to experimental bases and enterprises.

The VCTQIP, hosted by the Beijing Institute of Technology, is an attempt to conduct vocational education teacher training from the perspective of a renowned university. In particular, it emphasises the importance of cutting-edge technological innovation. Several experts in the field of advanced manufacturing were invited to explain cutting-edge technologies such as advanced machining technology, advanced special processing technology, smart manufacturing, additive manufacturing and precision machining technology for complex structural components. Building on this foundation, experts from the Ministry of Education, key universities and vocational colleges were invited to provide insights from different perspectives on vocational education development policies, vocational education professional development, talent cultivation models and a series of student-centred teaching innovations.

### **3. Results**

As a teaching team, our participation in the VCTQIP, hosted by the Beijing Institute of Technology, has been profoundly enlightening. Here's a summary of our key takeaways for education reform:

(1) Acquiring the latest knowledge and technology: We have acquired the latest knowledge and skills in advanced manufacturing in line with current industry

trends and requirements.

(2) Understanding industry dynamics: The training provided insights into the evolving landscape of the industry, which will inform our future teaching and professional development.

(3) Professional Horizons: Our perspectives were broadened, providing valuable references for guiding students in real-world projects.

(4) Educational Reform: Lectures on pedagogical reform have equipped us with critical elements and techniques for curriculum implementation and identified areas for improvement in our teaching practices.

Future plans for educational reform and improvement:

(1) Integrating new technology and knowledge: We plan to integrate new knowledge in smart manufacturing into our curriculum. In response to the trend of smart prosthetics and orthotics, we aim to introduce IoT (Internet of Things) and medical networking technologies, develop IoT modules for educational purposes, and enhance practical content related to smart systems. And we will use Virtual Reality (VR) technologies to create immersive learning environments, which will be particularly beneficial for courses that require repetitive hands-on operations by students.

(2) Continuous improvement of teaching philosophy and methods: We will adapt our teaching philosophy and methods to better suit the needs of students and the professional platform, introducing innovative methods such as project-based learning, flipped classrooms and collaborative learning to increase student engagement and learning outcomes. And we will experiment with new teaching methods, use online platforms to manage the teaching process, analyse learning data and develop student-centred learning approaches that provide selective learning paths and projects that students can choose based on their interests and career goals.

(3) Resource sharing and collaboration: We will establish a communication mechanism with teachers from the VCTQIP to share learning resources and experiences, and promote a network for collaborative teaching improvement. And we will promote course integration and interdisciplinary teaching to cultivate students' comprehensive qualities and

innovative abilities.

(4) School-enterprise cooperation training: We will conduct in-depth industry research and talent demand analysis, taking advantage of the need for vocational college teachers to gain practical experience in enterprises every year. And by understanding the technical characteristics and product features of the industry and specific enterprises, we will cooperate with enterprises to explore student training models, and continuously innovate and reform education.

## **4. Discussion**

### **4.1 The Exploration of VCTQIP**

The integration of vocational education, higher education and continuing education provides a unique context in which renowned universities can host training programs for vocational college teachers, which has several advantages. Taking the example of the "Curriculum Implementation Capability Enhancement - Advanced Manufacturing" VCTQIP hosted by the Beijing Institute of Technology, the main benefits include:

(1) Sharing resources and complementary strengths: Hosting VCTQIP by renowned universities allows them to make full use of their educational resources, such as cutting-edge technological capabilities and world-class research platforms, to provide high-quality training content for vocational college teachers. The practical experience and industry insight of vocational college teachers can provide new perspectives and teaching materials for general universities, promoting the integration of theory and practice. This synergy facilitates the translation of technology into actual production, thus achieving a complementary advantage in educational resources.

(2) Improving the overall quality of teachers: Renowned universities have a profound accumulation in academic research and theoretical teaching, and are more adept at communicating and interacting with students during educational reform processes, reflecting the effectiveness of educational and teaching innovations. Through the VCTQIP, they can promote vocational college teachers' understanding and mastery of the latest educational concepts and methods, and how to use modern educational technology to enhance the interactivity of teaching and student



engagement.

(3) Promoting professional development and advocacy for lifelong learning: Hosting VCTQIP by renowned universities not only helps vocational college teachers improve their teaching skills and professional abilities, but also broadens their professional horizons through academic exchanges and teaching seminars. Participating teachers can continuously update their knowledge and skills through VCTQIP, thus stimulating innovation awareness and the ability to adapt to the rapidly changing demands of education and technological development. This promotes the concept of lifelong learning and achieves sustainable professional development. It also helps vocational college teachers to cultivate students' autonomous learning skills and innovative spirit in their teaching.

By taking advantage of these benefits, the VCTQIP at renowned universities can make a significant contribution to the professional development of vocational college teachers. They can also play a crucial role in shaping the future of vocational education and training by promoting a culture of continuous learning and innovation that prepares students for the dynamic challenges of the modern workforce.

#### **4.2 The Recommendations of VCTQIP**

The VCTQIP was carefully designed by the organizers to provide comprehensive support and services for the professional development of vocational college teachers. Reflecting on the training and in the context of our own teaching and research work, we would like to make the following suggestions for future iterations of the VCTQIP:

(1) Continuous updating of content: It is recommended that the VCTQIP keeps abreast of the latest industry trends and technological advances and regularly updates the training content to ensure that teachers are equipped with the most up-to-date knowledge and skills.

(2) Strengthening the practical component and school-business integration: Given the emphasis on practical teaching in the vocational education, it is suggested that the training project incorporate more hands-on and practical elements, such as internships in enterprises, workshops and simulated teaching, to enhance teachers' practical teaching skills. Establishing cooperative relationships with more companies could provide opportunities

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for teachers to interact with industry experts and offer students internship and employment opportunities, thus promoting the integration of education and industry.

(3) Personalized training pathways: Considering the different professional backgrounds and needs of participating teachers from different vocational schools, it is recommended to offer more personalized training paths. This could include analysing individual needs through dialogue, exchange and discussion, building a teaching resource library and setting personalized training goals for different vocational colleges to continuously improve the level and quality of the VCTQIP.

(4) Establish long-term support mechanisms: After the training, it is suggested to provide continuous teaching support and professional development resources, such as online forums, regular seminars and teaching resource sharing platforms, to assist teachers in their continuous growth. And the organizers of the VCTQIP should play a key role not only in providing the educational content, but also in guiding the professional development of teachers. Here are some ways in which organizers can focus on the professional development of teachers

(5) Encourage teacher exchange and collaboration: It is recommended to design exchange segments for participating teachers to promote collaboration and knowledge sharing through professional communities and organized research activities in teaching.

(6) Evaluation and feedback mechanism: Establish an effective evaluation and feedback mechanism to regularly collect feedback from teachers on training content, teaching methods and training outcomes in order to continuously optimize the VCTQIP.

(7) Diverse learning resources: Providing a variety of learning resources, such as online courses, micro-courses, and instructional videos, to meet the learning schedules of different teachers.

#### **5. Conclusion**

The Beijing Vocational College Teacher Quality Improvement Plan, hosted by the Beijing Institute of Technology, aims to significantly improve the skills of vocational college teachers. The project not only focuses on the professional development of vocational

college teachers, but also emphasises the integration of theory and practice and the concept of lifelong learning. These aspects are crucial in order to adapt to the rapid changes in vocational education and training and in the industry, with the aim of continuous professional development.

The Beijing Vocational College Teacher Quality Improvement Plan, by organizing systematic training and practical activities for teachers from different vocational colleges, has enhanced their teaching capabilities and professional skills. The project not only focuses on the professional growth of vocational college teachers but also emphasizes the integration of theory and practice, as well as the concept of lifelong learning. These aspects are crucial to adapt to the rapid changes in vocational education and the industry, aiming for continuous career development.

The organization of this training also demonstrates Beijing Institute of Technology's profound strength and rich experience in teacher training, focusing on the specialization and effectiveness of teacher training. By integrating resources and designing training courses tailored to the professional development needs of teachers, the training has been made more targeted and effective.

The Beijing Vocational College Teacher Quality Improvement Plan has introduced policies and successful cases in industry-academia-research collaboration to encourage teachers to work closely with enterprises, understand industry needs, engage in research on practical enterprise issues, and bring real-world work experience and case studies into the classroom. Through this project, Beijing Institute of Technology has shown its active role in promoting the high-quality development of advancing the quality improvement of vocational college teachers in Beijing.

The Beijing Vocational College Teacher Quality Improvement Plan provides all-around support for the professional growth of vocational college teachers, enabling them to not only deeply understand the latest development trends and technological innovations in the field of advanced manufacturing but also effectively master advanced teaching methods. This is conducive to cultivating more high-quality technical and

skilled talents, providing strong talent support for the transformation and upgrading of industries, thereby promoting the economic and social development of the capital and the coordinated development of the Beijing-Tianjin-Hebei region.

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