

Enhancing Vocational Education through Innovative Skills Competitions: Challenges and Solutions

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Abstract: This study investigates the challenges encountered by vocational colleges when preparing for innovative skills competitions and proposes effective countermeasures. It highlights issues concerning students' motivation, limited financial resources and hardware, teacher capacity limitations, inadequate reward systems, and curriculum misalignment. Through meticulous research and analysis, this paper presents practical recommendations to mitigate these challenges. Suggestions encompass strategies to enhance students' motivation, increase financial support, provide professional development opportunities for teachers, revamp the reward system, and align the curriculum with competition requirements. By implementing these measures, vocational colleges can cultivate active student participation, elevate teaching quality, bridge the gap between education and industry demands, and equip students for success in innovative skills competitions.

Keywords: Skills competitions; Challenges and solutions; Vocational colleges; Teaching

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1. Introduction

In recent years, vocational colleges have increasingly recognized the importance of innovative skills competitions as a means to prepare students for the dynamic demands of the workforce^[1,2]. However, these competitions often face numerous challenges that hinder their effectiveness in nurturing students' innovative abilities^[3]. This paper aims to explore the problems faced by vocational colleges in preparing for innovative skills competitions and propose countermeasures to address these issues. We provide an overview of the research focus and highlight the significance of innovative skills competitions in vocational colleges. This presents the objectives of the study, which include identifying the key problems and offering practical solutions. The paper concludes by outlining its structure, which consists of a comprehensive analysis of the research status, an examination of the specific problems encountered, and a presentation of suggested countermeasures.

2. Research status

Previous scholars have devoted significant effort to studying the impact of skills competitions on students' practical abilities and the development of vocational education. For instance, Qi emphasized the need to adjust teaching content and reform teaching methods to enhance students' practical abilities through vocational skills competitions^[4]. Wan suggested that building a reasonable teaching system and changing teaching evaluation methods can effectively promote the development of higher vocational education

through skills competitions ^[5]. Furthermore, Wang found that participating in skills competitions significantly improve students' employability in higher education institutions and enhances their teamwork skills ^[6]. Liu highlighted the benefits of participating in agricultural product quality and safety testing competitions in promoting the teaching level of agricultural product quality and safety testing ^[7]. Li explored the improvement of teaching methods in secondary vocational schools, using the parts mapping and CAD drawing technology project competition as an example, and suggested ways to integrate relevant content into the teaching curriculum ^[8]. Wu analyzed the role of skills competitions in advancing the metalworking internship curriculum, which enhances students' understanding of the course content and exercises their practical skills ^[9]. Lastly, Wan discussed the key technologies of the skills competition of "modern electrical control system installation and commissioning" and shared strategies for achieving favorable results ^[10].

From the research of scholars, it is not difficult to see that the current skills competitions have become the focus of research in the field of education. They are essential to analyze the problems faced by the development of vocational college skills competitions and put forward targeted suggestions.

3. Problems faced

3.1. Lack of students' motivation

One of the prominent challenges encountered by vocational colleges in preparing for innovative skills competitions is the deficiency in students' motivation. This issue is characterized by a diminished participation rate among students, particularly those with lower grades, leading to a decrease in overall engagement. Several factors contribute to this motivation deficit, including inadequate awareness of the benefits associated with skills competitions, limited recognition and incentives for participation, and a prevailing perception that these competitions primarily cater to high-achieving students. As a consequence, the full potential of students across the academic spectrum remains untapped.

3.2. Insufficient financial resources and hardware

The insufficiency of financial resources and hardware presents a significant obstacle to the effective preparation for innovative skills competitions. Vocational colleges often encounter challenges in procuring and maintaining modern laboratories and equipment necessary for students to thoroughly test and implement their innovative ideas. Inadequate funding impedes the establishment of well-equipped laboratories, hampering students' ability to conduct practical experiments and inhibiting their creativity and skill development. The lack of access to essential resources limits the scope and quality of projects that students can undertake, ultimately affecting their performance in skills competitions.

3.3. Teacher capacity limitations

Another critical issue faced by vocational colleges is the limitations in teacher capacity to provide effective guidance and support to students participating in skills competitions. Teachers may possess inadequate practical skills and relevant experience within the specific competition domains, which hinders their ability to offer comprehensive guidance. Insufficient training opportunities and tailored professional development programs further contribute to this capacity gap. Consequently, students may not receive the necessary mentorship, feedback, and expert knowledge required to excel in their competitive endeavors.

3.4. Inadequate reward system

The existing reward system for teachers involved in preparing students for skills competitions is often inadequate, resulting in demotivation and insufficient recognition. Despite dedicating significant time and effort to mentor students, teachers typically do not receive bonuses or commendations. Moreover, the time

invested in instructing students for skills competitions is not credited toward their teaching hours, which further devalues their contributions. This lack of recognition and tangible rewards undermines the dedication and commitment of teachers, potentially impacting the quality and effectiveness of their mentorship.

3.5. Curriculum misalignment

The misalignment between the existing curriculum in vocational colleges and the requirements of innovative skills competitions presents a notable challenge. The curriculum may inadequately integrate practical project-based learnings, real-world applications, and industry-relevant skills. This misalignment creates a gap in students' preparedness and skills, as they may not acquire the necessary competencies demanded by skills competitions. A comprehensive curriculum revision is necessary to incorporate the specific knowledge, techniques, and problem-solving abilities essential for success in innovative skills competitions, ensuring a seamless transition between education and industry demands.

4. Recommendations

4.1. Improving students' motivation

To address the issue of inadequate students' motivation in skills competitions, vocational colleges should implement a range of strategies. Firstly, mentorship programs should be established, pairing participating students with experienced mentors who can provide guidance and support throughout the competition process. Secondly, recognition and rewards should be offered to all participants, regardless of their academic performance, to incentivize active engagement. These can include certificates of participation, public acknowledgments, and opportunities to showcase their projects to a wider audience. Finally, a culture that celebrates innovation and highlights the benefits of skills competitions should be fostered to raise awareness and encourage more students to participate.

4.2. Increasing financial support

To overcome the challenge of insufficient financial resources and hardware, vocational colleges need to secure larger funding. This can be achieved through partnerships with industry stakeholders, government grants, and fundraising initiatives. The allocated resources should prioritize the acquisition of modern equipment and the establishment of well-equipped laboratories. Additionally, collaborations with industry partners can provide access to cutting-edge technologies and equipment, allowing students to explore innovative ideas and fully realize their potential in skills competitions.

4.3. Professional development for teachers

To address the limitations in teacher capacity, vocational colleges should invest in professional development programs tailored to the specific requirements of skills competitions. These programs should focus on enhancing practical skills, providing hands-on experience, and familiarizing teachers with the latest trends and techniques in relevant domains. Workshops, seminars, and collaborative projects involving industry experts can also contribute to the professional growth of teachers, enabling them to effectively guide and mentor students participating in skills competitions.

4.4. Revamping the reward system

To create a more equitable reward system, vocational colleges should recognize and appreciate the efforts of teachers involved in skills competitions. Bonuses, additional credits, or financial incentives can be provided to teachers based on their contributions to students' success in competitions. Moreover, the time spent on mentoring students should be counted toward their teaching hours, ensuring their efforts are duly

acknowledged and valued. This revamping of the reward system will motivate teachers, leading to enhanced commitment and support for students in skills competitions.

4.5. Curriculum alignment and integration

To bridge the gap between the existing curriculum and the requirements of innovative skills competitions, vocational colleges should collaborate closely with industry experts. Together, they can align the curriculum with the specific skills, knowledge, and practical experiences demanded by competitions. This alignment should emphasize project-based learning, real-world applications, and industry-relevant skills. Integrating practical training modules, internships, and industry partnerships into the curriculum will equip students with the necessary competencies to excel in skills competitions and meet industry demands.

5. Results and prospects

The implementation of the proposed measures can lead to positive outcomes for vocational colleges in preparing for innovative skills competitions. By enhancing student motivation through mentorship programs, recognition, and rewards, colleges can increase participation and engagement across a wider range of students. Additional financial support and modern equipment enable students to explore innovative ideas and enhance project quality. Professional development programs for teachers enhance their capacity to guide and support students effectively, while a revamped reward system recognizes their efforts and boosts their commitment. Aligning the curriculum with the competition requirements ensures that students acquire the necessary skills and knowledge demanded by the industry. These outcomes contribute to a more comprehensive approach to skills competitions in vocational colleges.

Looking ahead, continuous evaluation and improvement of the implemented measures are crucial. Regular assessment of student participation rates, project quality, and teacher satisfaction provide valuable insights into the effectiveness of the strategies. Ongoing collaboration with industry partners, experts, and stakeholders helps vocational colleges stay updated with the evolving demands of innovative skills competitions. Furthermore, research on emerging trends and best practices in skills competitions should inform future policy decisions and curriculum enhancements. By fostering a dynamic and adaptive environment, vocational colleges can prepare students to excel in skills competitions and meet the challenges of a rapidly evolving job market.

6. Conclusions

In conclusion, vocational colleges face challenges in preparing for innovative skills competitions, such as a lack of students' motivation, insufficient financial resources and hardware, teacher capacity limitations, inadequate reward systems, and curriculum misalignment. However, targeted strategies can effectively address these challenges. Enhancing student motivation, increasing financial support, providing professional development for teachers, revamping the reward system, and aligning the curriculum with the requirements of the competitions are key steps to overcoming these obstacles. These measures not only benefit students and teachers but also contribute to the overall advancement of vocational education. By embracing these suggestions, vocational colleges can empower students, foster innovation, and bridge the gap between education and industry demands. The continual evaluation and improvement of these strategies, coupled with collaboration and adaptability, will ensure that vocational colleges remain at the forefront of preparing students for the ever-evolving landscape of innovative skills competitions.

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Author contributions

P.F. and Y.T. conceived the idea of the study and wrote the first draft of the paper. S.W. revised the format of the article.

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