Journal of Contemporary Educational Research, 2023, Volume 7, Issue 11
http://ojs.bbwpublisher.com/index.php/JCER
ISSN Online: 2208-8474
ISSN Print: 2208-8466

Empowering Vocational Students to Excel in Skills Competitions: Challenges and Recommendations

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Abstract: This paper analyzes the key challenges faced by vocational college students when participating in national skills competitions. It identifies problems such as limited resources, insufficient training, lack of mentorship, academic workload constraints, and inadequate equipment. Targeted solutions are proposed, including improving resource access, providing structured skill training, implementing expert mentorship programs, offering flexible schedules, and upgrading experimental equipment. Implementing these recommendations through a collaborative effort among stakeholders can significantly empower vocational students to excel in skills competitions by enabling access to resources, building practical skills, obtaining guidance, managing time effectively, and gaining hands-on experience.

Keywords: Skills competitions; Vocational colleges; Vocational education; Teaching

Online publication: November 23, 2023

1. Introduction

Vocational education plays a crucial role in cultivating skilled talents and driving economic growth. The national skills competition serves as an important platform for vocational college students to demonstrate their abilities and acquire advanced skills. However, these students face unique challenges in preparing for and participating in the competition compared to their counterparts in undergraduate institutions [1,2]. To ensure the sustainable development of vocational education and enable vocational college students to realize their full potential, it is imperative to identify and address the problems encountered by vocational college students in skills competition.

This paper aims to discuss the key challenges faced by vocational college students participating in the national skills competition and propose targeted recommendations to tackle these issues. The problems analyzed include limited access to learning resources, insufficient training opportunities, lack of feedback and support, difficulty in balancing studies and competition preparation, and shortage of experimental equipment. Corresponding suggestions are provided, such as collaborating with external organizations to provide online resources, offering customized training programs, establishing mentorship schemes, implementing flexible course schedules, and increasing investment in laboratories and equipment. The analysis presented in this

paper is of great practical significance as its findings can guide policy-making and vocational colleges in optimizing their approaches to cultivating talents and strengthening students' competitiveness. Implementing the recommendations proposed can enhance vocational college students' preparation for and performance in skills competitions. Moreover, this paper contributes to research on vocational education development and skills competition training.

2. Literature review

A number of researches highlight varied benefits of vocational skills competitions for empowering students. Wang *et al.* [3] found that competitions strengthened problem-solving via application of multidisciplinary knowledge to industry-aligned issues. The competitions also facilitate vocational education development. Wan [4] argued that competitions showcase graduate talents to employers and promote program applied-focus. Similarly, Wang *et al.* [5] incorporated competition-styled assessments into courses/projects, denoting improved learning outcomes. Introducing competition elements proved effective for cultivating job-relevant skills while enhancing content interest [5,6]. Additionally, competitions also aid curriculum refinement. Liu and Wan [7] delineated flaws uncovered through competition, thus exposing shortcomings in augmenting food testing training. Scholars emphasize simulation roles for preparation [8] and contextual design applications [3]. Diverse assessment methods were explored. Chen [9] mined the data of competition evaluation to update microchip instruction platforms. Li [10] reviewed spare part mapping instruction informed by technical competitions. Wu *et al.* [11] and Wang *et al.* [12] constructed teaching evaluation metrics derived from metalworking competition benchmarks. Wan and Qi [13] profiled modern electrical troubleshooting for simulated competitions. Collectively, this research believes that vocational skills competitions confer multidimensional benefits for fostering independent, applied acquisition through performance benchmarking and education innovation informed by sector standards. Competitions empower students and curriculum via cultivation of competencies required for professional excellence.

3. Problems faced by vocational college students in skills competitions

Despite the benefits of participating in skills competitions, vocational college students face a number of challenges that can hinder their performance and outcomes. Based on an analysis of the existing literature and inputs from vocational college educators, this paper identifies five major problems confronted by these students.

3.1. Limited access to learning resources

Compared to students at undergraduate institutions, vocational college students often have constrained access to learning resources like textbooks, journals, computers, and software that are essential for acquiring domain knowledge and technical skills. This severely impedes their ability to effectively prepare for competitions, especially in fields requiring specialized tools and technologies.

3.2. Insufficient training opportunities

Vocational colleges frequently lack structured training programs, workshops, and simulation-based learning modules that can equip students with hands-on experiences aligned to competition requirements. Therefore, students struggle to acquire the level of practical skills and readiness required for excelling in skills competitions.

3.3. Lack of mentorship and expert feedback

With limited access to guidance from experienced mentors and professionals, vocational students are often

unable to obtain constructive feedback and insights to continuously improve and refine their skills. Absence of mentorship prevents them from gaining exposure to industry's best practices as well.

3.4. Difficulty in managing time

The demanding curriculum and heavy academic load at vocational colleges makes it extremely challenging for students to simultaneously prepare for upcoming competitions while also completing their regular coursework. Their academic performance often suffers due to inability to balance the two.

3.5. Shortage of experimental equipment

Most vocational colleges suffer from insufficient investment in laboratories, tools, and equipment that enable students to gain first-hand practical experience through extensive experimentation and simulation. This hampers their learning and ability to apply skills effectively.

In summary, vocational college students face multifaceted challenges that create a non-conducive environment for competitive skill development. A concerted and systematic effort is required to address these limitations.

4. Targeted recommendations

To tackle the multifaceted challenges faced by vocational college students in skills competitions, this paper puts forth the following targeted recommendations.

4.1. Improving access to learning resources

Vocational colleges should collaborate with public libraries, universities, and online education platforms to provide students with access to digital learning resources including e-books, scholarly journals, online courses, and simulation software. A virtual library system can be established to allow remote access to the resources.

4.2. Increasing training opportunities

Practical training programs focused on building competition-relevant skills should be offered through partnerships with industry players. Workshops, seminars, hackathons, and bootcamps can provide intensive training. Internship opportunities with leading companies can also enrich students' experiences.

4.3. Implementing mentorship programs

Industry veterans, entrepreneurs, and senior professionals should be engaged as student mentors to provide regular guidance and feedback. Mentorship sessions focused on soft skills, industry knowledge, and technical competencies can better prepare students for competitions.

4.4. Offering flexible academic schedules

Blended learning options like online courses, modular classes, and dual study schemes can be leveraged to allow students to optimally manage academic workload alongside competition preparation. Universities can also offer students extended project timelines or leaves of absence.

4.5. Upgrading experimental equipment

Priority funding allocation should focus on procuring tools, software, and machinery aligned to the competition categories students are participating in. Simulation labs that recreate real-world scenarios can enable extensive

hands-on learning.

Implementing these targeted interventions in a systematic manner and with support from governmental and private sector stakeholders can significantly empower vocational college students to excel in skills competitions in the long run.

5. Results and discussion

The recommendations proposed in this paper, if implemented effectively, can lead to significant improvements in vocational college students' skills competition outcomes and address the key challenges identified earlier.

5.1. Enhanced access to resources

By collaborating with external stakeholders, vocational colleges can provide their students with access to digital libraries, e-learning platforms, and simulation software. This can greatly expand the breadth and depth of learning materials available to students to acquire domain knowledge and technical skills, thereby enhancing their readiness for competition.

5.2. Improved training quality

Introducing structured training programs in partnership with industry players can significantly upgrade the practical skills and hands-on experiences gained by vocational students, making them more adept at demonstrating applied skills in competitions.

5.3. Expert mentorship and feedback

Access to guidance from experienced mentors, professionals, and entrepreneurs can expose students to industry's best practices and enable them to continuously improve through expert feedback. This can boost their confidence and help them to refine their approaches.

5.4. Improved time management

The flexibility provided through blended learning, online courses, and extended project timelines can help to improve students' ability to simultaneously manage their academic workload and prepare for competitions. This facilitates better time management for academic and competitions.

5.5. Enhanced equipment and facilities

Upgrading labs and procuring advanced equipment aligned to competition categories can facilitate repeated hands-on practice and experimentation by students. This can greatly enhance their mastery of practical skills and readiness to apply them in competitive settings.

6. Conclusion

In conclusion, this paper has discussed the key challenges faced by vocational college students when participating in national skills competitions. Five major problems were identified, including constrained access to learning resources, insufficient training opportunities, lack of expert mentorship, difficulties in managing academic workload alongside competition preparation, and inadequate experimental equipment in vocational colleges.

Targeted recommendations were proposed to address each of these challenges in a systematic manner, such

as improving access to digital libraries and simulation software, providing structured skill training programs, implementing expert mentorship schemes, offering flexible academic schedules, and upgrading laboratories and equipment. The solutions presented can significantly empower vocational students to excel in skills competitions by enabling access to resources, building practical skills, obtaining expert guidance, managing time effectively, and gaining hands-on experience. Implementing these recommendations would require joint efforts from vocational colleges, government education departments, industry partners, and other stakeholders.

This paper contributes valuable practical insights on enhancing vocational education system and nurturing highly skilled talents. Further research can build upon the findings to develop plans and policies for vocational colleges aimed at strengthening skill-based learning and realizing students' full potential. Uplifting vocational education is key to promoting inclusive socioeconomic development.

Funding

The Project of China Vocational Education Association (Project number: ZJS2022YB024).

Disclosure statement

The authors declare no conflict of interest.

Author contributions

M.X. and X.L. conceived the idea of the study and wrote the first draft of the paper. H.J. revised the format of the article.

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