

The Impact of Skill Test on Technical High Schools in Taiwan

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The Asian Conference on Education 2024
Official Conference Proceedings

Abstract

This study primarily investigated the impact of skill test on vocational education in Taiwan. The skill test certificate, issued by the government, assessed the proficiency of technical skills, providing vocational school students with a clear understanding of their learning outcomes. Through a questionnaire survey, this research gathered insights from vocational school principals regarding the use of the skill test as a measure of student skill acquisition and its appropriateness within the educational context. A survey was conducted using a combination of open-ended and closed-ended questions as research instruments. The survey targeted principals of technical high schools and a total of 60 questionnaires were collected. The results indicated that the primary benefits of implementing a skill test were the improvement of the students' technical proficiency (98.3%) and the enhancement of the teachers' professional instructional skills (71.7%). The primary issues requiring improvement were the impact of skill test on traditional school instruction (45%) and the obsolete nature of examination questions (33.3%). The policy recommendations included: 1. increasing industry participation and assigning private organizations to manage relevant skill test certificates under the Workforce Development Agency, MOL. supervision; 2. reviewing and updating skill test to improve their content; and 3. urging the Ministry of Education to align the curriculum with skill test requirements. In conclusion, optimizing the content and processes of skill test, promoting Occupational Competency Standard and enhancing the social image of vocational education could effectively change societal perceptions of skills and improve the overall quality of vocational education.

Keywords: Skill Test, Skill Test Certificate, Vocational Education, Technical High Schools, Talent Cultivation, Special Achievement and Screening-Based Admission, Ability Identification

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Introduction

The skill test as an evaluative tool for assessing technical proficiency has had a significant impact on the development of vocational education in Taiwan. Vocational education aims to equip students with specialized skills in specific fields to meet the rapidly changing demands of industries. The skill test system plays a critical role in this process, not only by providing students with a standard to self-assess their learning outcomes but also in helping institutions set educational goals and directions.

Research by Hsi-Shan Lai (2020) highlights a positive relationship between awareness of the skill test, learning effectiveness, and employment awareness. Furthermore, learning effectiveness positively influences employment awareness. In relation to skill test-related topics, experts and scholars in Taiwan have conducted extensive research on areas such as the appropriateness of question bank design, the impact on teaching, learning motivation, attitudes and learning effectiveness. These studies, primarily focused on students and teachers, include works by Wei-Ming Hsieh (2016), Ching-Chin Su (2019), Hsi-Shan Lai (2020), Tsu-Ming Yeh, Fan-Yun Pai, Yi-Long Shu (2020), and Chia-Yu Wang and Chung-Yung Tu (2021). These studies provide valuable insights for improving the content of the skill test and fostering student skill development, while also laying the groundwork for better alignment between vocational education and industry needs.

Although many scholars have offered valuable suggestions regarding the skill test and student skill development, there remains a lack of empirical research on the role and influence of vocational school principals in this area. As key leaders of vocational schools, the principals' perspectives are crucial to understanding the role of the skill test in vocational education. Therefore, this study aims to explore the views of technical high school principals on the use of the skill test to measure the students' skill acquisition and its appropriateness within the educational context. The main research objectives are as follows:

1. Understand the application of the skill test in vocational education.
2. Investigate the impact of implementing skill tests for full-time students in technical high schools on teaching.
3. Analyze technical high school principals' perspectives on the skill test system.
4. Provide suggestions for the application of the skill test system in Taiwan's technical high schools.

Literature Review

Current Status of the Skill Test

The skill test is a system designed to assess the professional skills of technicians, with certificates awarded to those who meet the required standards. The primary objective of the skill test is to enhance labor skills and support social and economic development. The exam consists of both a written and a practical test, and individuals who pass are designated as "technicians," receiving a skill test certificate issued by the central competent authority. Since its inception in 1963, more than 9.7 million certificates have been issued.

Of the 139 available occupational categories, 82 carry legal significance, including fields such as crane operations, childcare, Chinese cuisine, occupational safety and health management and employment services. The skill test categories are divided into three levels:

Level A, B and C. If a category is not suited for this tiered classification, it is assigned a single level.

Application of the Skill Test in Vocational Education

The relationship between the skill test, talent cultivation and industry demand is dynamic and interdependent. The skill test not only boosts corporate productivity but also has a significant impact on vocational education. As industries rapidly evolve, educational institutions have increasingly integrated skill development into their curricula to ensure that students acquire the practical skills demanded by the marketplace. The Ministry of Education has adjusted educational policies accordingly, aiming to better align the skill test with formal education.

Special Achievement and Screening-Based Admission Policy.

To improve admissions pathways, the Ministry of Education introduced the "Special Achievement and Screening-Based Admission" policy in 2001 (Ministry of Education, 2001). This policy encourages vocational students to engage in skill learning by offering extra points on entrance exams for those holding relevant skill test certificates. However, some students began acquiring certificates unrelated to their field of study solely to gain bonus points, straying from the policy's original intent of promoting professional skill development.

As a response, the Ministry revised the qualifications for this program. Bonus points are now awarded to students who win prizes in international or national skill competitions. For students holding Level B or higher skill test certificates, bonus points for admission to 2-year and 4-year technological colleges are tiered based on the certificate's relevance to the student's field of study, with 15%, 8% and 4% bonuses for high, medium and low relevance, respectively.

Licensing in Vocational Education Policy.

To enhance the employability of vocational graduates, the Ministry of Education introduced the "Licensing in Vocational Education" policy in the 2009 academic year. This policy emphasizes aligning teaching content with employment demands, making Level B and C skill tests a graduation requirement to ensure that students are job-ready. This initiative has significantly boosted the competitiveness of vocational graduates in the job market (Meng et al., 2010). Institutions such as the Taipei University of Marine Technology and National Chin-Yi University of Technology have already incorporated certification as a graduation criterion. Additionally, the Ministry of Labor offers three certification channels: the national technician skill test, full-time student testing programs and instant testing, immediate evaluation and certification programs, encouraging students to obtain multiple skill test certificates.

Pilot Program for Encouraging Youth to Obtain Skill Test Certificates in Key Industries and Achieve Stable Employment.

To encourage the youth aged 15 to 29 to acquire professional skills and obtain skill test certificates, the Workforce Development Agency, MOL launched the "Pilot Program for Encouraging Youth to Obtain Skill Test Certificates in Key Industries and Achieve Stable Employment" on July 1, 2023 (Workforce Development Agency, MOL, 2024). Key industries include semiconductors, communications and smart machinery. The program

offers two tiers of incentives: first, a "Certificate Incentive Bonus" for youth obtaining skill test certificates in 22 key industries, with rewards based on the certificate level: NTD20,000 for Level A, NTD10,000 for Level B and NTD5,000 for Level C. Additionally, those who secure a certificate and work in a corresponding key industry for at least 90 days will receive an "Employment Incentive Bonus."

Impact of Full-Time Student Skill Testing on Teaching in Technical High Schools

The skill test assesses workplace-specific skills in-depth. While it helps students master individual skills, the preparation often involves repetitive practice, limiting the teaching of broader competencies (Fang, 2021). Huang-Chia Huang (2002) noted that skill testing significantly influences internship teaching in vocational high school electrical engineering departments, especially in private institutions. Many teachers believe regular classroom instruction is insufficient to prepare students for the skill test, necessitating additional practice outside of class.

I-Hsuan Chiang (2012) highlighted several challenges faced by vocational high schools' special education sections in preparing students for the Level C skill test, including limited practice time, high exam difficulty, a lack of administrative resources and insufficient specialized equipment. Despite these challenges, teachers still viewed the use of skill testing as an effective student development tool. Hui-Chun Chuang (2007) found that practical instructions based on skill test questions significantly improved the students' cognitive and technical performance. Tzu-Ming Yeh and colleagues (2020) showed that students' learning behavior, teaching methods and the learning environment significantly affect the outcomes of the skill test, demonstrating that vocational education certification aligns education with industry needs, enhancing student competitiveness and creating a win-win-win scenario.

Methodology

Participants and Procedure

A total of 141 questionnaires were distributed to principals of technical high schools, with 60 valid responses collected, yielding a response rate of 42.55%. The survey employed purposive sampling and was conducted via an online questionnaire from December 12 to December 15, 2023.

Measurement

The research tool used in this study was a questionnaire titled "Principals' Survey on Skill Tests for Full-Time Technical High School Students." It included sections on school attributes and location, featuring both multiple-choice and open-ended questions.

Results and Discussion

The SPSS statistical software was used to analyze data from the 60 valid questionnaires. The research findings are as follows:

Basic Data Analysis

The analysis focused on school attributes and whether or not the school was located in one of the six major municipalities. Among the respondents, 85% of schools were public, while 15% were private. In terms of location, 48.33% of schools were in the six major municipalities and 51.67% were not. The distribution of schools by both attribute and location is as follows: 35% were public schools in the six major municipalities, 13.33% were private schools in the six major municipalities, 50% were public schools outside the six major municipalities and 1.67% were private schools outside the six major municipalities, as shown in Table 1.

Table 1: Basic Data of Principals' Schools

(N=60)			
Attribute	Category	Quantity	Percentage (%)
Public or Private	Public	51	85.00
	Private	9	15.00
School Location	Six Major Municipalities	29	48.33
	Not in the Six Major Municipalities	31	51.67
In the Six Major Municipalities	Public	21	35.00
	Private	8	13.33
Outside the Six Major Municipalities	Public	30	50.00
	Private	1	1.67

Data Analysis

Advantages of Conducting Skill Tests.

The principals were asked to select the advantages of skill tests. The top three were: "Enhancing students' technical abilities" (27.83%), "Improving teachers' professional abilities" (20.28%), and "Increasing graduates' employment rate" (14.15%). These results suggest that skill tests not only directly improve students' technical abilities but also enhance teachers' professionalism, ultimately increasing the graduates' competitiveness in the job market. The results are shown in Table 2.

Table 2: Advantages of Conducting Skill Tests (Multiple Selections)

Attribute (Advantages)	Frequency	Percentage (%)
Enhancing students' technical abilities	59	27.83
Improving teachers' professional abilities	43	20.28
Increasing graduates' employment rate	30	14.15
Improving school equipment	25	11.79
Increasing the graduates' further education rate	22	10.38
Enhancing the school's reputation	15	7.08
Increasing the chances of obtaining government funding	13	6.13
Expanding the students' international outlook	5	2.36

Disadvantages of Conducting Skill Tests.

The principals were also asked to identify the disadvantages of skill tests. The top three were: "Disrupting regular teaching" (22.88%), "Inappropriate exam content" (16.95%), and "Low student participation" (16.10%). This indicates that while skill tests have advantages in enhancing technical skills, they may also disrupt regular teaching and suffer from issues such as outdated exam content and low student participation. The results are shown in Table 3.

Table 3: Disadvantages of Conducting Skill Tests (Multiple Selections)

Attribute (Disadvantages)	Frequency	Percentage (%)
Disrupting regular teaching	27	22.88
Inappropriate exam content	20	16.95
Low student participation	19	16.10
Complex regulations for the test	17	14.41
Complicated administrative procedures	12	10.17
Low pass rate of the test	6	5.08
Exam content too simple	5	4.24
Poor communication between schools	5	4.24
Exam content too difficult	3	2.54
High difficulty in executing the test content	2	1.69
Low cooperation from host schools	2	1.69
Inefficient execution by host schools	0	0.00
Unclear test regulations	0	0.00

Impact of School Attributes and Location on the Advantages and Disadvantages of Conducting Skill Tests.

Chi-square tests were conducted to analyze the impact of school location and attributes on the advantages and disadvantages of skill tests. For advantages, several items showed significant effects:

1. School location and improvement of school equipment: Schools located in the six major municipalities were more likely to believe that conducting skill tests could enhance the improvement of school equipment compared to private schools.
2. School location and increased chances of obtaining government funding: Schools in the six major municipalities were more likely to believe that conducting skill tests could increase their chances of obtaining government funding compared to private schools.
3. School attributes and improvement of school equipment: Private schools were more likely than public schools to believe that conducting skill tests could enhance the improvement of school equipment.

However, in terms of disadvantages, neither "school location in the six major municipalities" nor "school attributes" showed any significant relationship with any of the disadvantage items. This indicates that while there are significant differences in the evaluation of the advantages of skill tests based on school location and attributes, their influence on the disadvantages is not significant.

Table 4: Chi-Square Test of School Location

Statistics	Is your school located in one of the six major municipalities?		χ^2
	Yes	No	
Improvement of school equipment			9.613*
Yes	18 (62.07%)	7 (22.58%)	
No	11 (37.93%)	24 (77.42%)	
Increased chances of obtaining government funding			5.432*
Yes	10 (34.48%)	3 (9.68%)	
No	19 (65.52%)	28 (90.32%)	

*p<.05

Table 5: Chi-Square Test of School Attributes

Statistics	School attributes		χ^2
	Public	Private	
Improving school equipment			9.714*
Yes	17 (33.33%)	8 (88.89%)	
No	34 (66.67%)	1 (11.11%)	

*p<.05

Conclusion and Recommendations

Conclusion

The results of the chi-square tests in this study indicate that most advantages and disadvantages are not significantly correlated with a school's geographical location or type, but they are significantly related to equipment updates and government funding. The study found that schools in the six major municipalities generally believe that holding skill tests helps increase the rate of equipment updates and makes it easier to receive government funding. In comparison, the private schools demonstrated a significantly higher recognition of the benefits of skill tests in promoting equipment updates than the public schools.

The differences between schools in the six major municipalities and those outside may stem from multiple factors. First, the economic development of the six municipalities is relatively stronger and resources are more abundant, enabling schools to more effectively promote skill tests and equipment updates. Additionally, schools in these municipalities are geographically closer to government agencies, making it easier to receive policy support and funding. Furthermore, the diverse vocational demands in these municipalities encourage schools to actively update their facilities to meet market needs.

Private schools, due to intense competition, prioritize equipment updates to attract students and enhance their image. Although public schools receive relatively more government subsidies, their use of resources is more constrained, which may lead to insufficient awareness or demand for equipment updates. These factors collectively influence how schools view skill tests and their implementation, which in turn affects the overall quality of vocational education and the development of students' skills.

In open-ended responses from principals, many pointed out that skill tests are often treated as the primary focus of vocational education, which may narrow its original goals. According to the 2018 examination regulations, industry experts make up only 39.2% of the exam

committee, while academic experts account for 42.8%. Despite efforts by the Ministry of Labor (MOL) to promote greater participation by industry experts, this proportion still needs improvement. Additionally, of the 138 skill test certificates issued by the MOL, only 82 have legal utility, with most concentrated in industrial categories. This suggests that over 40% of the certificates offer limited practical assistance to job seekers, thereby limiting the real value of vocational education to some extent.

Recommendations

Based on the survey results, it is evident that schools' views on skill tests vary according to geographical location, school type and access to resources. These differences influence the promotion of equipment updates and government funding support. To further improve the overall quality of vocational education and ensure that the certification system effectively fosters students' skill development, this study offers the following recommendations:

1. Enhance resource investment in equipment updates: To reduce the resource gap between schools in the six municipalities and those outside, it is recommended to provide more financial support to schools outside the six municipalities to minimize urban-rural disparities. Additionally, establishing an equipment-sharing platform between schools in and outside the six municipalities can reduce update costs, promote resource sharing and ensure that schools in all regions can effectively enhance the quality of vocational education.
2. Strengthen alignment between skill tests and industry needs: Increase the proportion of industry experts involved and delegate skill tests that lack legal utility to be managed by private organizations, with the MOL overseeing management. Industry stakeholders should be required to formulate certification standards and sign confidentiality agreements.
3. Support equipment updates in private schools: The government should provide targeted subsidies and financing support (such as loans) to private schools, allowing them to maintain teaching quality amid intense market competition. Furthermore, cooperation between public and private schools should be strengthened, encouraging both sides to form partnerships, share successful experiences in resource updates and promote cross-school collaboration.
4. Reduce over-reliance on skill tests: Vocational education should rebalance the relationship between teaching and certification, focusing on cultivating students' practical and innovative abilities rather than solely treating skill tests as the primary teaching objective. Therefore, it is recommended that the Ministry of Education strengthen guidance on school teaching policies, ensuring that the skills taught align with the content of skill tests and improve students' overall vocational competencies. A comprehensive assessment mechanism should also be established to provide students with diverse learning evaluations and promote holistic development.
5. Promote policy and industry dialogue: Regular industry-academia collaboration meetings are recommended to establish a long-term dialogue mechanism between the government, schools, and industries. This will facilitate ongoing assessment of the need for skill tests and equipment updates, ensuring that vocational education keeps pace with market changes and technological innovations.

Acknowledgments

I would like to express my sincere gratitude to Ms. Liu Huanyu for her assistance in organizing the data for this study. Her support was invaluable in the completion of this research. This study was partially funded by the National Science and Technology Council (NSTC) in Taiwan, with grant number NSTC 112-2410-H-027-021.

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