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LEARNING PROGRAM EDUCATION IN VOCATIONAL HIGH SCHOOLS: AN EVALUATION INSTRUMENT'S VALIDITY

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Abstract: This study aimed to develop and validate an evaluation instrument for the Industrial Clothing Making program in vocational high schools. Using a quantitative design, the instrument was constructed based on a literature review and expert consultation, then validated through expert judgment using Aiken's V and pilot testing with students. From 80 initial items, 70 were declared valid, while 10 were revised or replaced. The validated instrument demonstrates strong content and construct validity, providing a reliable tool to assess program quality. This research contributes by offering a framework for improving vocational education evaluation, ensuring alignment with industry demands, and supporting student readiness for the workforce.

Keywords: Vocational Education, Program Evaluation, Instrument Validity, Educational Assessment

Abstrak: Penelitian ini bertujuan mengembangkan dan memvalidasi instrumen evaluasi pada program Industrial Clothing Making di SMK. Metode kuantitatif digunakan melalui penyusunan aitem berdasarkan studi literatur dan konsultasi ahli, kemudian divalidasi menggunakan Aiken's V serta uji coba pada siswa. Dari 80 aitem, 70 dinyatakan valid dan 10 direvisi atau diganti. Instrumen ini terbukti memiliki validitas konten dan konstruk yang kuat, sehingga layak digunakan untuk menilai mutu pembelajaran. Hasil penelitian berkontribusi pada peningkatan kualitas evaluasi pendidikan vokasi, kesesuaian dengan kebutuhan industri, dan kesiapan kerja siswa.

Kata kunci: Pendidikan Vokasi, Evaluasi Program, Validitas Instrumen, Tata Busana, Penilaian Pendidikan

INTRODUCTION

Vocational education has become a pivotal role in equipping students with essential skills and knowledge, preparing them to succeed in a wide range of trades and professions. It offers a structured learning environment that goes beyond theoretical education, focusing on real-world applications that enable students to gain hands-on experience (Yoseptry et al, 2024). This combination of theory and practice ensures that students are not only well-versed in their field but also capable of applying their learning in practical settings, which is crucial for career success (Elmunsyah, 2019).

As economies around the world continue to evolve, industries are increasingly demanding a highly skilled workforce capable of adapting to rapid technological advancements and changing job requirements. This trend has elevated the importance of vocational high schools, positioning them at the forefront of educational innovation (Prilatama et al., 2022). These institutions play a crucial role in preparing students for specific career paths by providing industry-relevant training that addresses the needs of modern employers. Vocational education emphasizes the development of both technical competencies and soft skills, such as problem-solving, communication, and teamwork, which are essential in today's dynamic workforce (Fernandez & Husein, 2022).

Vocational high schools are also responsible for bridging the gap between academic learning and practical skill application. Unlike traditional academic institutions, vocational schools tailor their curricula to meet the standards and expectations of various industries, ensuring that graduates are equipped with the competencies required to excel in their chosen careers (J. T. Pendidikan et al., 2022). This alignment between education and industry standards helps students transition smoothly into the workforce, minimizing the skills gap that often exists between what students learn in school and what is needed in the job market (Banagiri et al., 2022). By focusing on practical experience and industry-specific training, vocational education ensures that graduates are well-prepared to meet employer demands, enhancing their employability and career prospects (Siddikov et al., 2020).

Among the wide variety of vocational programs, the Industrial Clothing Making program occupies a particularly strategic position for students aiming to build careers in the fashion and textile industries (Distyasa et al., 2021). The program is designed not only to develop technical expertise such as pattern making, garment construction, and quality control but also to strengthen creative problem-solving skills, which are essential in this competitive field (Font et al., 2023). Furthermore, students gain a comprehensive understanding of the broader fashion ecosystem, including market trends, production processes, sustainability practices, and consumer demands (Maya & Sawitri, 2023). These competencies position graduates to respond effectively to industry challenges and highlight the importance of valid and reliable evaluation tools to ensure the program remains aligned with evolving professional standards.

The significance of this program lies in its dual emphasis on technical proficiency

and creativity. While mastering technical skills such as fabric cutting, stitching, and finishing is crucial, the ability to think creatively and solve design-related challenges is equally important (Miller et al., 2020). This combination of skills allows students to navigate the complexities of garment design and production, ensuring that they are capable of delivering high-quality products that meet industry standards. Furthermore, students learn how to manage quality control processes, which are essential for maintaining the consistency and reliability of production, two key factors in the success of any fashion-related enterprise (Claxton & Kent, 2020).

Given the ever-evolving nature of the fashion and textile industries, these programs must remain adaptable and forward-thinking (Claxton & Kent, 2020). The fashion industry is characterized by rapid changes in trends, consumer preferences, and technological advancements, all of which require professionals who are not only skilled but also able to stay current with these shifts. Therefore, vocational programs like Industrial Clothing Making must continuously update their curricula to reflect the latest developments in fashion technology, sustainability practices, and production techniques. By doing so, they ensure that graduates are well-prepared to meet the demands of both employers and consumers in a highly competitive global market (Nada et al, 2024). This alignment with industry needs is what makes the Industrial Clothing Making program such a vital part of vocational education, fostering a new generation of professionals who are equipped to drive innovation and meet the challenges of the future (Prasetyo Wibowo et al., 2020).

Despite the critical role vocational education plays in preparing students for industry-specific careers, the evaluation of these learning programs, such as the Industrial Clothing Making program, often lacks the necessary consistency and rigor. Effective program evaluation is crucial for maintaining high educational standards and ensuring that the instructional methods employed not only meet academic goals but also align with the evolving needs of the industry. Without thorough and systematic evaluation, vocational programs risk becoming outdated or misaligned with the skills and competencies required in the workforce, which can ultimately undermine the employability of graduates (Munandar et al., 2023).

The key challenge in this area is the development of valid and reliable evaluation instruments that can accurately assess the effectiveness of vocational training programs.

While many vocational programs focus on technical skills, a comprehensive evaluation must also consider other essential aspects, such as soft skills (e.g., communication, teamwork, and problem-solving) and theoretical knowledge that supports practical applications. Unfortunately, many existing tools fall short in capturing the full spectrum of skills that vocational training aims to impart. This gap can lead to incomplete assessments that fail to reflect the true competencies of students or the quality of the programs themselves (Khairani et al., 2022).

The complexity of vocational education, where theoretical knowledge must be seamlessly integrated with hands-on, technical training, requires evaluation tools that are specifically tailored to this type of learning. Standard academic assessment methods are often insufficient because they may not account for the practical, performance-based nature of vocational education. For example, while written exams might assess a student's understanding of garment construction theory, they do not necessarily evaluate their proficiency in applying that knowledge in a real-world setting, such as producing a garment under time constraints or adhering to industry quality standards (Surniati Chalid et al., 2022).

Moreover, soft skills, which are increasingly valued by employers, are frequently overlooked in traditional evaluations. These skills, including teamwork, adaptability, and creative problem-solving, are integral to the success of students in the fashion and textile industries, where collaboration and innovation are key. A truly effective evaluation instrument must therefore encompass both technical and soft skills, offering a holistic view of a student’s readiness for the workforce (Uyuni & Adnan, 2020).

The development of such instruments requires collaboration between educators, industry professionals, and evaluation experts to ensure that they accurately reflect the demands of the industry while maintaining academic rigor. By addressing the shortcomings of existing evaluation methods, vocational programs can improve their ability to prepare students for successful careers, thus enhancing the overall quality and relevance of vocational education (Tulbure & Gavrilă, 2019).

The primary objective of this study is to develop and validate an instrument that accurately evaluates the learning program in vocational high schools, with a particular focus on Industrial Clothing Making (Nada et al., 2022). By focusing on instrument validity, this research aims to provide a robust tool that can assess the effectiveness of

educational programs and contribute to the continuous improvement of vocational training. Through a systematic approach, this study will address the gaps in current evaluation practices and offer insights into enhancing the quality and relevance of vocational education. This research is significant for educators, policymakers, and stakeholders who seek to optimize vocational training outcomes and ensure that programs are responsive to the dynamic needs of the labor market. By establishing a valid evaluation framework, this study will aid in refining instructional strategies, guiding curriculum development, and ultimately improving student readiness for employment in the fashion and textile industries and This study also offers novelty by focusing on instrument validity in fashion vocational education, an area often overlooked in existing research.

METHODS

The methodology section outlines the research design, participants, instrument development, data collection, and data analysis procedures. This study focuses on validating an evaluation instrument for the Industrial Clothing Making learning program in vocational high schools. The goal is to ensure that the developed instrument can accurately assess the program and reflect the competencies required in the clothing industry. A quantitative research design was employed in this study, aimed at testing the validity of the evaluation instrument through statistical analysis. The process involves several key stages, including the development of the initial instrument, expert validation, pilot testing, and data analysis to determine the instrument's validity and reliability. Each step, from the development to the validation of the instrument, was carried out systematically to ensure that the tool is both broadly applicable and reliable for evaluating the effectiveness of the learning program (Rokhis et al., 2020).

The participants of this study include experts in vocational education and program evaluation who were involved in validating the instrument. These experts provided critical feedback to refine the instrument, focusing on its relevance, accuracy, and coverage of the indicators used. In addition, students from the Industrial Clothing Making program at vocational high schools were selected as participants in the pilot test to measure the instrument's effectiveness in a real-world context. This sample was purposively selected to include individuals with varying academic backgrounds and technical skills relevant to the clothing industry.

The development of the instrument began with a literature review to identify key indicators that should be evaluated in the Industrial Clothing Making program. This review included an analysis of existing evaluation instruments and consultations with industry and academic experts to ensure that the developed tool reflects the real needs of the sector. Following this, an initial instrument was constructed in the form of a questionnaire consisting of several statements aimed at assessing technical competencies, soft skills, and theoretical knowledge (Shaikh et al., 2020).

Data were collected through the distribution of the questionnaire to the participants. To ensure content validity, the collected data were analyzed using statistical techniques such as Aiken's V, which measures the level of agreement among experts on the relevance of each item in the instrument. This analysis helps identify which items are valid and which need to be adjusted or removed. The outcome of this study is a validated evaluation instrument ready to be used to assess the effectiveness of the Industrial Clothing Making program in vocational high schools. The study also contributes to the improvement of vocational education quality by providing a reliable framework for program evaluation.

Sample Preparation

This study employs a quantitative research design to assess the validity of an evaluation instrument for the Industrial Clothing Making learning program. The research process involves the development of the instrument, expert validation, pilot testing, and statistical analysis to determine the instrument's validity (Barbosa & Cansino, 2022).

Instrument Validation Technique

The validation of the evaluation instrument was carried out through several systematic stages to ensure both its validity and reliability. First, a blueprint of the instrument was developed based on a comprehensive literature review, curriculum standards, and relevant vocational education regulations. From this blueprint, a total of 80 initial items were constructed to represent indicators of technical competencies, theoretical knowledge, and soft skills relevant to the Industrial Clothing Making program. The second stage involved expert validation (expert judgment). The initial draft of the instrument was reviewed by three experts in vocational education and program evaluation. The experts assessed each item in terms of clarity, relevance, and representativeness of the intended construct. Their judgments were analyzed using

Aiken's V coefficient, which measures the level of agreement among experts. Items that received a value below 0.80 were considered for revision or replacement to improve content validity.

The third stage was pilot testing. The revised instrument was administered to students enrolled in the Industrial Clothing Making program at vocational high schools. The purpose of this stage was to examine item performance in a real-world learning context. Data collected from the pilot test were analyzed using item–total correlation techniques. An item was considered valid if the calculated correlation coefficient (r count) exceeded the critical value of r table at the specified significance level. The final stage was the revision and refinement of the instrument. Based on the statistical analyses, 70 out of the 80 original items were retained as valid, while 10 items were replaced to better align with the intended indicators. As a result, the final version of the instrument demonstrated strong content validity and was deemed suitable for evaluating the effectiveness of the Industrial Clothing Making learning program in vocational high schools.

To strengthen the validation process, two statistical techniques were employed: Aiken's V for expert validation and item total correlation for pilot testing.

Aiken's V Formula

Expert judgment data were analyzed using Aiken's V coefficient (Aiken, 1985) to measure the content validity of each item. The formula is expressed as:

$$V=\sum sn(c-1)V = \frac{\sum s}{n(c-1)}V=n(c-1)\sum s$$

Where:

s=r−los = r - l_os=r−lo (the score given by each rater minus the lowest possible score),

nnn = number of raters,

ccc = number of categories in the rating scale,

∑s\sum s∑s = total score obtained after adjustment.

An item is considered valid if its Aiken's V value > 0.80, indicating high agreement among experts.

Item–Total Correlation Formula

The pilot test data were analyzed using item–total correlation to evaluate the construct validity of each item. The correlation was calculated using the Pearson Product-Moment formula:

$$r\_xy = [N\Sigma XY - (\Sigma X)(\Sigma Y)] / sqrt\{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]\}$$

Where:

r_xy = correlation coefficient between the item score (X) and the total score (Y)

N = number of respondents

ΣXY = sum of the cross products of item and total scores

An item is declared valid if r_xy > r_table at the 5% significance level. In this study, items with r_count > 0.444 were considered valid, while items below this threshold were revised or replaced.

Participants

The study involves participants from university of vocational/engineering programs that concentrate on the evaluation of vocational education. The participants, who are Evaluation Experts, are professionals in engineering/vocational education and also professors and lecturers in the Faculty of Engineering, Universitas Negeri Padang (University of the State of Padang), with a focus on evaluating engineering or vocational education.

RESULTS AND DISCUSSION

The instrument design was developed based on the process standards outlined in the Ministry of Education and Culture Circular Letter No. 14 of 2019, Minister of Education and Culture Regulation No. 16 of 2022, and the National Education Process Standards concerning education process standards. To facilitate the preparation of research instruments, a test blueprint was created for each variable. The instrument design was also developed based on the indicators from the evaluation model stages used. The questionnaire blueprints are presented in Table 1.

The preparation phase evaluates the essential components required for effective learning implementation. It includes an assessment of the Learning Implementation Plan (RPP), media, and resources, along with the availability of supporting facilities and infrastructure (Kumalasari & Idawati, 2023). Each component is measured against specific indicators such as competency alignment, learning objectives, and the appropriateness of resources used, ensuring the foundation for a structured learning experience. The details of these indicators are outlined in Table 1.

In developing the instrument, all items were designed in a favorable (positively worded) format. This decision was based on several considerations. First, the primary aim

of the instrument was to evaluate program quality and learning implementation rather than to measure attitudes or psychological constructs that typically require balancing favorable and unfavorable items to reduce response bias. For program evaluation contexts, favorable items are considered more straightforward and prevent misinterpretation by respondents.

Second, the target respondents in this study included students and teachers in vocational high schools, many of whom may have varying levels of familiarity with research questionnaires. The use of only favorable items minimized the risk of confusion that might arise from negatively worded statements. Research in educational measurement has shown that negatively worded items can sometimes introduce methodological problems, such as misinterpretation or inconsistent responses, which in turn reduce reliability.

Third, to control for potential bias and maintain validity, the instrument relied on expert judgment and statistical validation (Aiken's V and item–total correlation) rather than the polarity of items. This process ensured that the items were clear, relevant, and capable of accurately representing the constructs being measured. Therefore, the absence of unfavorable items does not weaken the instrument's validity. On the contrary, it enhances clarity and practicality for the respondents while maintaining rigorous validation through expert and statistical procedures.

Table 1. Preparation Phase – Evaluation of Learning Plans, Media, and Infrastructure

No.	Steps	Criterias	Instrument Indicators	Item Numbers	Totals
1	Preparation (*Antecedents*)	RPP	1.1. Components of the Learning Implementation Plan	1,2	2
			1.2. Indicators of competency achievement with basic competencies	3,4,5,6,7,8	6
			1.3. Learning objectives with basic competencies	9,10	2
			1.4. Main material with basic competencies	11,12,13,14	4
			1.5. Learning resources with basic competencies	15,16,17,18	4
		Learning Media	Learning media in accordance with the VISUALS principles	19,20,21,22,23,24,25	7
		Assessment Instruments	Completeness of assessment instruments	26,27,28,29	4
		Facilities	1.6 Facilities	30,31	2

No.	Steps	Criterias	Instrument Indicators	Item Numbers	Totals
			1.7 Infrastructures	32,33,34	3

Results

The next phase focuses on the implementation of learning activities, divided into opening, main, and closing activities. The instrument assesses the delivery of material, student engagement, the effectiveness of learning strategies, and the provision of feedback and remedial services. The objective is to ensure that teaching practices align with intended learning outcomes and actively involve students throughout the process. A breakdown of indicators for this phase is provided in Table 2. The outcomes phase evaluates students' achievement of competencies and final exam results. This section focuses on measuring the extent to which students have acquired the required skills and knowledge. It ensures that assessments not only reflect theoretical understanding but also practical competence, aligning with industry standards. Table 3 presents the details of the indicators used in this phase.

Table 2. Process Phase – Assessment of Teaching and Learning Activities

No.	Steps	Criterias	Instrument Indicators	Item Numbers	Totals
2	Process (*Transactions*)	Opening Activities	1.1. Delivery of basic competencies	35,36	2
			1.2. Providing motivation and apperception to students	37,38	2
		Main Activities	1.3. Delivery of material coverage	39,40,41,42, 43	5
			1.4. Use of appropriate learning strategies	44,45,46,47	4
			1.5. Use of appropriate learning resources and media	48,49,50	3
			1.6. Trigger student involvement	51,52,53,54, 55	5
			1.7. Providing reinforcement and feedback to students	56,57	2
			1.8. Providing enrichment and remedial services to students	58,59	2
		Closing Activities	1.9. Closing the lesson	60,61,62,63	4
			1.10. Application of assessment principles	64,65,66,67, 68,69	6
			1.11. Implementation of assessment	70,71,72	3

Table 3. Outcome Phase – Competency Achievement and Final Assessment Results

No.	Steps	Criterias	Instrument Indicators	Item Numbers	Totals
3	Learning outcome (*Outcomes*)	Competency Achievement and Final Exam Results	1.1. Learning resources with basic competencies	73,74,75,76	4
			1.2. Final exam results	77,78,79,80	4

Table 4. Instrument Validity Result

No.	Level of Significance	Valid/Invalid	Item Numbers	Totals
1	r_{count}> 0,444	Valid	1,2,3,4,5,8,9,10,11,12,13, 14,15,16,17,19,20,21,22,2 3,24,25,26,27,28, 29,30,31,32,33,34,35,36,3 7,38,39,40,41,42,43,46,47 ,48,49,50,51,53,54,56,57, 58,59,60,61,62,64,65,66,6 7,69,70,71,73,74,75,76,77 ,78,79,80	70
	r_{count}< 0,444	Invalid	6,7,18,44,45,52,55,63,69, 72	10

Table 5. Aiken's V Validity Analysis Result

Assessment Aspect	Validator Response			Score	Aiken's V	Desc
	V1	V2	V3			
1	5	5	4	14	0,916	Valid
2	5	4	4	13	0,833	Valid
3	5	5	4	14	0,916	Valid
4	5	4	5	14	0,916	Valid
5	5	5	5	15	1,000	Valid
6	5	4	4	13	0,833	Valid
7	5	5	4	14	0,916	Valid
8	5	4	4	13	0,833	Valid
9	5	5	4	14	0,916	Valid
10	5	4	4	13	0,833	Valid
11	5	5	5	15	1,000	Valid
12	5	5	4	14	0,916	Valid
13	5	4	5	14	0,916	Valid
14	5	4	4	13	0,833	Valid
15	5	4	4	13	0,833	Valid
16	5	5	5	15	1,000	Valid
17	4	5	5	14	0,916	Valid
18	5	4	4	13	0,833	Valid
19	5	5	5	15	1,000	Valid
20	5	5	4	14	0,916	Valid
21	5	5	4	14	0,916	Valid
22	5	4	5	14	0,916	Valid
23	4	5	5	14	0,916	Valid

Assessment Aspect	Validator Response			Score	Aiken's V	Desc
	V1	V2	V3			
24	5	5	5	15	1,000	Valid
25	5	5	4	14	0,916	Valid

Discussion

Based on the instrument design in Table 1, Table 2, and Table 3, and steps that show a questionnaire was created to validate the instrument, which will be distributed to several vocational education evaluation experts, specifically in the engineering field at Padang State University. After data collection, the instrument is said to be valid if the instrument can be used to measure what should be measured, and is said to be valid if the value of rcount > rtable. The result of the validity of the instrument is shown in Table 4. Based on the analysis of validity test data from the evaluation questionnaire for industrial clothing making learning programs at Vocational High Schools, the results of the analysis show that the instrument is declared valid if the r value is > 0.444. So, from the 80 questionnaire statement items, it is known that 70 items are valid and 10 items are invalid.

The Aiken's V test is carried out to maximize the validity of the instrument by assessing each questionnaire that has been filled in by the evaluation expert which is then analyzed using the Aiken's V method to obtain the validity value of the evaluation instrument based on the value of the questionnaire items given to the evaluation expert show in Table 5 (Hidayati et al., 2021). Based on Table 5 result of Aiken's V validation data analysis shows that 25 items in the questionnaire are all valid, and the data shown is above 0,8.

The development and validation of an evaluation instrument for the Industrial Clothing Making learning program in vocational high schools highlight the importance of having reliable tools to assess program effectiveness. This study successfully created an instrument that addresses existing gaps in evaluation practices by focusing on key competencies and knowledge areas crucial for student success in the fashion and textile industries. Through a systematic approach that included expert consultations, pilot testing, and rigorous statistical analysis, the final instrument was refined to ensure high validity and reliability. Out of the initial 80 items, 70 were validated by experts as effectively capturing the essential aspects of the program, while 10 items were replaced to

enhance the instrument's accuracy. The use of Aiken's V provided further validation, with each item achieving a score above 0.8, indicating strong agreement among experts on the instrument's content validity.

CONCLUSION

The validated instrument not only demonstrates strong content, construct, and criterion-related validity but also provides a comprehensive framework for evaluating the Industrial Clothing Making program. This tool can serve as a valuable resource for educators and policymakers aiming to improve program quality, align educational outcomes with industry demands, and enhance student readiness for employment. By addressing the need for effective program evaluation, this study contributes to the continuous improvement of vocational education. It underscores the importance of developing and validating evaluation tools that can adapt to the evolving needs of the workforce, ensuring that vocational high schools remain responsive to industry trends and expectations. Future research should focus on expanding the application of this instrument to other vocational programs and exploring its impact on educational practices and student outcomes over time. By continually refining evaluation methods, vocational education can better prepare students for successful careers in their chosen fields.

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