Students' Perceptions of the Quality of High-Speed Sewing Machines in the Workshop at SMK Negeri 8 Padang

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Abstract. This study was conducted to determine the quality of high-speed sewing machines in the workshop of the Fashion Design Department of SMK Negeri 8 Padang. This descriptive quantitative study was performed using percentage analysis and categorization. The population included all 11th and 12th-grade students enrolled in the July-December 2023 semester, out of which 80 students were selected as samples using the simple random technique. A set of 5-point Likert scale questionnaires was used to collect the data. The results showed that five students (6.25%) perceived the quality of high-speed sewing machines as very high in terms of damage, while 25 students (31.25%) perceived it as high, and 30 others (37.5%) found it moderate. Furthermore, 17 students (21.25%) perceived that the damage to the machine was low, and 3 others (3.75%) categorized it as very low. Six students (7.5%) categorized care and maintenance as very high, and 11 (13. 75%) found it high. 18 students (22.5%) categorized the care and maintenance of the high-speed sewing machine as moderate, and 38 students (47.5%) categorized it as low. The remaining seven students (8.75%) perceived it within the low category.

Keywords: Students' perception, quality of high-speed sewing machines, workshop.

INTRODUCTION

Vocational High Schools (SMK) play a crucial role in equipping students with the practical skills and knowledge necessary for various professional fields (Ali et al., 2021). SMKN 8 Padang stands out among these institutions, offering seven specialized departments that cater to specific career paths, including the Department of Fashion. The Department of Fashion at SMKN 8 Padang adopts a comprehensive teaching approach that blends theoretical concepts with practical applications. This method ensures that students not only grasp the foundational theories of fashion design but also gain hands-on experience in real-world scenarios. One of the key aspects of the educational process in the Fashion Design Department is practical training. This training enables students to translate theoretical knowledge into tangible skills (Beard & Wilson, 2018). Throughout their training, students undergo the entire garment creation journey, starting from the initial design phase to the final finishing touches.

Kolb's Experiential Learning Theory emphasizes the importance of learning through experience. Kolb (2014) posits that knowledge is created through the transformation of experience. Practical training in vocational education, such as that provided at SMKN 8 Padang, aligns with Kolb's model by allowing students to engage in concrete experiences and reflective observation. These stages are critical as students design garments and utilize sewing machines, thereby gaining insights from their hands-on activities.

To facilitate this process, the department provides students with a range of specialized tools and equipment. These tools include design software for creating digital designs, measurement instruments for ensuring accuracy, pattern-

making materials for creating garment patterns, cutting implements for precise cutting of fabric, and seam-strengthening equipment for durability. Additionally, the department provides sewing machinery for stitching garments, fabric edge trimmers for finishing edges, pressing apparatus for ironing, and clothing fitting aids for assessing garment fit. These tools are essential for students to practice and refine their skills, ensuring they are well-prepared for careers in the fashion industry.

The primary tool used by students in the Fashion Design Department at SMKN 8 Padang for their sewing tasks is a high-quality, high-speed sewing machine. Powered by a dynamo, this machine operates at elevated speeds (Ernawati & Nelmira, 2008) and is versatile for various materials, except stretchy fabrics. Students begin training on high-speed sewing machines from their X-grade year, ensuring they become proficient in handling these machines and comfortable with the high-speed operation, which is crucial for industrial settings. According to Ernawati and Nelmira (2008), sewing tools are categorized into two groups: primary and supplementary. Primary sewing tools include the sewing machine and other essentials for basic sewing tasks, while supplementary tools help expedite and simplify the sewing process.

Before operating any equipment, it is crucial to assess its current condition. Quality, in this context, refers to the specifications or conditions of a product, process, human tasks, and their dynamic environment (Sader et al., 2022). When using a high-speed sewing machine, meticulous attention must be given to its condition and the identification of any signs of malfunction. Potential issues with high-speed sewing machines can include damage to the machine itself, stitching irregularities, needle problems, and fabric complications. Beyond identifying faults, it is equally important to be familiar with the proper methods for addressing and maintaining the machine to minimize, prevent, or even avert potential damage. The care and maintenance regimen for high-speed sewing machines can be divided into two main categories: preventive and corrective maintenance (Shamsuzzaman et al., 2023). Preventive maintenance includes proactive measures aimed at preventing damage.

Observations of the high-speed sewing machines in the Fashion Design Workshop revealed a discrepancy between recorded data and the number of attending students. Additionally, several high-speed sewing machines showed signs of deterioration. The primary cause of machine malfunction was inadequate operation by students, leading to improper handling and subsequent damage. This mismanagement disrupted the workshop's educational processes, causing delays and operational inefficiencies. Interviews indicated that students' maintenance practices for the high-speed sewing machines were lacking. Common issues included leaving machine plugs on the floor, neglecting to remove thread debris, and failing to report machine problems to technicians. Consequently, problematic machines were used interchangeably. According to Baharuddin (2021), practical equipment affects students' skills. This research aims to address these issues and achieve two main objectives: 1) To articulate students' perceptions of high-speed sewing machine quality in terms of damage, and 2) To elucidate students' perspectives on high-speed sewing machine quality concerning maintenance and upkeep.

METHOD

This quantitative descriptive research employed percentage analysis and categorization methods to interpret the data. The research focused on the students of the Fashion Department at SMKN 8 Padang, specifically those enrolled in classes XI and XII during the July-December 2023 semester. The total population of these students formed the basis of the study.

To determine the appropriate sample size, Slovin's formula was used, which resulted in a minimum requirement of 80 students. This formula is commonly used in statistical sampling to provide a sample size that maintains a balance between accuracy and manageability. The calculation ensures that the sample size is representative of the entire population while allowing for a specified margin of error.

Once the sample size was established, a simple random sampling technique was applied to select the participants. This method ensures that every student in the specified population had an equal chance of being included in the sample, thereby reducing selection bias and enhancing the representativeness of the results (Dhivyadeepa, 2015).

Data collection was conducted through a structured questionnaire, which was designed to capture students' perceptions and experiences. The questionnaire featured a series of statements related to the quality and maintenance of high-speed sewing machines. Respondents were asked to rate their level of agreement or disagreement with each statement using a five-point Likert scale. The Likert scale is a widely used tool in survey research because it provides a quantitative measure of attitudes, opinions, or perceptions. It enables researchers to convert qualitative data into quantitative data, which can then be analyzed statistically.

RESULTS AND DISCUSSIONS

This research was conducted to describe and analyze students' perceptions of the quality of high-speed sewing machines, focusing on machine damage and maintenance. Practical learning for students majoring in cosmetology at SMKN 8 Padang in 2016 predominantly used ordinary sewing machines that operated with feet and dynamos. However, by 2023, practical learning for these students had transitioned to using high-speed sewing machines.

The quality of sewing machines significantly impacts the outcomes of student practicums. High-speed sewing machines, in particular, require meticulous attention to their condition and prompt recognition of any signs of malfunction. Potential issues with these machines can include damage to the machine itself, stitching irregularities, needle problems, and fabric complications. According to Assefa et al. (2018), the reliability and efficiency of sewing machines are paramount in practical training settings, as machine malfunctions can disrupt learning and reduce productivity.

Proper maintenance and care are crucial for the longevity and optimal performance of high-speed sewing machines. The care and maintenance regimen for these machines can be divided into two main categories: preventive and corrective maintenance. Preventive maintenance involves proactive measures aimed at pre-empting the occurrence of damage. Regular inspections, proper cleaning, and timely lubrication of moving parts are essential components of this approach. Preventive maintenance helps ensure that the machines operate smoothly and reduces the likelihood of sudden breakdowns. According to Al-Turki (2014), implementing a preventive maintenance strategy can significantly enhance the reliability and lifespan of machinery, leading to fewer interruptions in workflow.

Corrective maintenance, on the other hand, focuses on repairing and restoring machines after problems have been identified. This approach ensures that machines return to optimal functioning condition. Corrective maintenance is reactive and often involves troubleshooting specific issues that arise during machine operation. As noted by Mobley (2002), while corrective maintenance is essential for addressing immediate problems, it is generally more costly and time-consuming than preventive maintenance due to the potential severity of the issues being repaired.

In an educational context, the integration of both preventive and corrective maintenance strategies is crucial. Preventive maintenance can minimize disruptions by keeping machines in good working order, while corrective maintenance ensures that any arising issues are promptly addressed. This dual approach not only enhances the learning experience for students by providing them with reliable equipment but also extends the lifespan of the machines, thereby optimizing resource utilization.

Furthermore, students should receive proper training on the operation and maintenance of high-speed sewing machines. Practical equipment significantly affects students' skills and learning outcomes. By equipping students with the knowledge and skills to properly handle and maintain these machines, educational institutions can foster a more effective and efficient learning environment.

Damages to the High-Speed Machine

The results of data analysis regarding the damages of high-speed sewing machines are presented in **TABLE 1**.

TABLE 1. Damage analysis of the high-speed sewing machine.

Interval		f	%	Category
Mean + 1.5 SD or greater	> 50	5	6.25	Very High
Mean + 0.5 SD to Mean + 1.5 SD	46 - 50	25	31.25	High
Mean – 0.5 SD to Mean + 0.5 SD	43 – 46	30	37.50	Moderate
Mean – 1.5 SD to Mean – 0.5 SD	40 -43	17	21.25	Low
Mean – 1.5 SD or lesser	< 40	3	1.25	Very Low
Total		80	100	

Based on the provided table data, perceptions regarding damage to high-speed sewing machines vary among the 80 students sampled from classes XI and XII of the Fashion Department at SMKN 8 Padang. Specifically, 5 students (6.25%) held a perception of significant damage, placing them in the "very high" category. Furthermore, 25 students (31.25%) perceived damage at a high level, categorizing them under the "high" classification. Similarly, 30 students (37.5%) perceived damage at a moderate level. On the other hand, 17 students (21.25%) regarded the damage as

relatively low, categorizing them in the "low" category. Finally, 3 students (3.75%) had a perception of minimal damage, fitting into the "very low" category.

The data from the table indicates that there is a range of perceptions among students regarding the extent of damage to high-speed sewing machines at SMKN 8 Padang. While a significant portion of students perceive the damage to be moderate to high, with 31.25% categorizing it as "high," there are also students who perceive the damage to be relatively low or minimal. This variation in perception suggests that there may be inconsistencies in the condition of the sewing machines or differences in how students perceive and interpret machine damage.

The average perception score of 37.5% falls within the "sufficient" category, indicating that there is room for improvement in the maintenance of high-speed sewing machines. This finding suggests that a substantial number of students believe that the sewing machines do not consistently maintain optimal conditions, which could impact their learning experiences during practical sessions.

To address these issues, enhancements in maintenance practices and student training are warranted. Regular maintenance, including inspections, cleaning, and repairs, can help ensure that the sewing machines remain in good working condition. Proper training for students on machine handling and maintenance is also crucial to prevent unnecessary damage and ensure that the machines are used correctly. Previous research by Ahmed and Ahsan (2018) emphasizes the importance of regular maintenance and user training in extending the lifespan and efficiency of industrial sewing machines. Their study found that well-maintained machines not only function more reliably but also enhance the overall productivity and learning outcomes in educational settings.

Additionally, the study by Lin and Tseng (2016) on the impact of equipment condition on vocational training highlights that poorly maintained equipment can lead to frustration and decreased motivation among students. Their research indicates that when students are provided with well-maintained and reliable equipment, their confidence and engagement in practical activities increase significantly. This aligns with the current findings at SMKN 8 Padang, where improved maintenance and training could lead to better educational outcomes.

By improving maintenance practices and providing better training for students, SMKN 8 Padang can enhance the availability and reliability of high-speed sewing machines for practicum sessions. This, in turn, can improve the overall educational experience for students in the Fashion Department and help them develop the skills they need for success in the fashion industry.

The Care and Maintenance of the High-Speed Sewing Machine

Students' perception regarding the maintenance of high-speed sewing machines is explained in **TABLE 2**.

TABLE 2. The care and maintenance of the high-speed sewing machine.

Interval		f	%	Category
Mean + 1.5 SD or greater	>69	6	7.5	Very High
Mean + 0.5 SD to Mean + 1.5 SD	63 – 69	11	13.75	High
Mean – 0.5 SD to Mean + 0.5 SD	58 – 63	18	22.5	Moderate
Mean – 1.5 SD to Mean – 0.5 SD	53 – 58	38	47.5	Low
Mean – 1.5 Sd or lesser	<53	7	8.75	Very Low
Total		80	100	

Based on the provided table, students' perceptions regarding the extent of damage to high-speed sewing machines vary. Specifically, 5 students (6.25%) believed that damage to the high-speed sewing machines fell within the "very high" category. Additionally, 25 students (31.25%) perceived the damage to be in the "high" category, while 30 students (37.5%) categorized the damage as "moderate." Furthermore, 17 students (21.25%) believed the damage to be in the "low" category, and 3 students (3.75%) held the view that damage to the sewing machines was in the "very low" category.

The data from the table indicates that students' perceptions of the damage to high-speed sewing machines at SMKN 8 Padang vary widely. While some students believe the damage is significant or high, others perceive it to be moderate, low, or very low. This diversity in perception suggests that there may be inconsistencies in the condition of the sewing machines or differences in how students perceive and interpret machine damage.

The average perception score of 37.5% falls within the "sufficient" category, indicating that there is room for improvement in the maintenance of high-speed sewing machines. This finding suggests that a significant number of

students feel that the sewing machines do not consistently maintain optimal conditions, which could affect their learning experiences during practical sessions.

To address these issues, enhancements in maintenance practices and student training are necessary. Regular maintenance, including inspections, cleaning, and repairs, can help ensure that the sewing machines remain in good working condition. Proper training for students on machine handling and maintenance is also crucial to prevent unnecessary damage and ensure that the machines are used correctly.

Previous research has highlighted the importance of regular maintenance and proper training in vocational education settings. For example, a study by Park and Son (2010) found that regular maintenance of equipment in vocational schools significantly reduced downtime and increased the efficiency of practical sessions. Their findings emphasize that well-maintained equipment not only ensures smoother operation but also enhances the learning environment by reducing interruptions and frustrations that can arise from equipment malfunctions.

Furthermore, a study by Smith and Wiggins (2017) examined the impact of equipment maintenance on student performance in technical education programs. They concluded that students who had access to well-maintained equipment demonstrated higher levels of engagement and performance. The researchers argued that reliable equipment allows students to focus more on learning and skill development rather than dealing with the challenges posed by faulty machinery.

By improving maintenance practices and providing better training for students, SMKN 8 Padang can enhance the availability and reliability of high-speed sewing machines for practicum sessions. This, in turn, can improve the overall educational experience for students in the Fashion Department and help them develop the skills they need for success in the fashion industry.

CONCLUSION

This research delves into the assessment of high-speed sewing machine quality in the fashion design workshop of SMKN 8 Padang, focusing on two crucial aspects: the extent of damage to the machines and the level of maintenance they receive. The perceptions of students in classes XI and XII within the Fashion Design Department reveal that not all high-speed sewing machines used for practicums are in optimal condition, leading to disruptions in the learning process.

The computed mean score of 37.5% indicates that, based on the viewpoints of 30 students, the damage to the high-speed sewing machines falls within a moderately significant range. To address this, it is recommended that any damaged high-speed sewing machine at SMKN 8 Padang be promptly repaired. Minor damages can be addressed by a technician, while more extensive issues should be handled by a professional. Proper repair will ensure that all high-speed sewing machines are available for student practicums.

In terms of care and maintenance, the perceptions of students in classes XI and XII within the Fashion Department at SMKN 8 Padang yield an average score of 47.5%. This score suggests that, according to the viewpoints of 38 students, the care and maintenance of high-speed sewing machines fall within the "low" category. Consequently, efforts to enhance these practices in the fashion design department of SMKN 8 Padang must be prioritized. Such improvements are essential for preventing damage to the machines and ensuring the smooth progression of the student practicum learning process.

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