



Evaluation of the Effectiveness of the Industrial Work Practice Program for Vocational Mechatronics Education Students

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ABSTRACT

The Vocational Mechatronics Education Study Program at the Faculty of Engineering, Universitas Negeri Makassar (FT UNM), implements the Industrial Work Practice (Prakerin) program to enhance student competence through hands-on experience in industry. This study aims to evaluate the effectiveness of the Prakerin program using a descriptive research approach. The sample consisted of 30 respondents, including fifth-semester students, academic supervisors, and industry representatives. Data were collected through questionnaires. Results show that the Prakerin program is generally effective. Students reported the highest mean score (3.5) in the "activity" sub-variable, while the lowest (3.0) was in "implementation." Supervisors rated "implementation" highest (3.8) and "assessment" lowest (2.8). Industry representatives gave the highest score (3.6) to "assessment" and the lowest (2.7) to "planning." These findings indicate that while the program is effective overall, improvements are needed in planning and assessment aspects.

INTRODUCTION

The industrial sector consistently applies competency standards for prospective workers. These standards are intended to maintain the quality of the workforce, ensuring that they can perform productively. Since industry is inherently profit-oriented, all factors related to production continuity are carefully optimized. Therefore, workforce competency standards serve as a key factor in ensuring that production processes run efficiently and effectively. To recruit workers who meet these standards, companies conduct thorough and selective hiring processes. One potential source of such qualified workers is graduates from the Faculty of Engineering.

Learning effectiveness refers to the achievement of educational goals as a result of alignment between instructional planning and learning outcomes. It is a condition in which targeted objectives are successfully attained through appropriate strategies and competencies, ultimately leading to satisfying results (OECD, 2020). Vocational education, as defined by UNESCO (2021), aims to develop job-specific skills, competencies, interpretations, attitudes, behaviors, work habits, and appreciation for occupations that are relevant to the needs of the workforce and industry. The effectiveness of vocational education is closely tied to its ability to produce graduates who are not only competent in their specific field of expertise but also adaptable and competitive in dynamic labor markets. According to the World Bank (2020), industries today require graduates with strong technical skills, high adaptability, and the ability to innovate and respond to workplace challenges.

In recent years, several studies have emphasized the importance of Industrial Work Practice (Internship) programs in vocational education. A study by Urip and Tri Kuat (2023) highlighted that industrial work practices have a positive impact on vocational students' work readiness. The research demonstrates how internships, vocational guidance, and motivation significantly influence students' preparedness for the workforce. Similarly, Delzy Yandra (2024) underscored the need for strong collaboration between vocational schools and industries to improve internship quality. This collaboration ensures that students acquire the necessary skills and competencies to meet industry demands.

Furthermore, a study by Anwar et al. (2023) utilized the CIPP evaluation model to assess the effectiveness of internship programs, suggesting that systematic evaluations can enhance the alignment of vocational education with industry needs. Jubaedah et al. (2025) explored the use of digital assessment models for internship evaluation, highlighting how digital tools can improve the accuracy, efficiency, and objectivity of assessing student performance during internships. Additionally, Saputra and Sukirno (2024) proposed the development of integrated internship applications, which streamline the internship process and make it more accessible while aligning it with industry standards.

These studies collectively demonstrate that effective internships, supported by strong industry involvement, technology, and evaluation models, are crucial for enhancing vocational education and ensuring that students graduate with the skills, knowledge, and work ethics required by the labor market.

Graduates transitioning directly into the workforce shortly after completing their studies are a significant consideration for educational institutions. The Industrial Work Practice (IWP) program plays a vital role in this process, serving as a structured and relevant learning experience that integrates academic curricula with hands-on activities in real-world industrial settings. According to the OECD (2020), the IWP process involves several essential stages. The first stage, planning, is crucial for aligning educational goals with industry needs. Effective planning, as emphasized by Nielson and Thune (2023), includes defining clear objectives, selecting appropriate strategies, and developing detailed work plans to guide the internship process. In addition, providing students with the necessary tools and equipment is essential for practical learning. The World Bank (2020) highlights that providing students with access to industry-relevant tools allows them to bridge the gap between theoretical knowledge and real-world application, thus enhancing their skill set. Supervision also plays a critical role in ensuring the success of the IWP program. Wesselink et al. (2021) stress that effective supervision ensures students are guided throughout their internships, helping them apply academic knowledge in a practical setting while receiving constructive feedback to improve their performance. The overarching goal of the IWP program is to enhance students' knowledge, skills, and work ethics, ultimately preparing them to meet the demands of the labor market. However, challenges persist in aligning the competencies developed during internships with actual industry requirements, as noted by the International Labour Organization (ILO, 2021). To address these challenges, evaluations of IWP programs are essential, as suggested by Billett (2022), to identify areas for improvement and ensure that these programs remain relevant to both educational and industry standards. Regular evaluations help adapt the curriculum to the changing needs of the labor market and improve industry cooperation in vocational education.

Based on the results of observations and interviews conducted during the preliminary study, the researcher identified several discrepancies in the implementation of the Industrial Work Practice (IWP) program. An interview with one of the industry practice mentors revealed that the IWP activities did not always align with the expected objectives. Consequently, several issues were found during the IWP process. One such issue was that students were not permitted to perform hands-on work during their internship at large industries, such as PT, due to the high volume of machines and the continuous production process. Furthermore, during the internship, students were only given the opportunity to work with a single piece of equipment. These findings prompted the researcher to further investigate the effectiveness of the IWP implementation, particularly within the Vocational Education Program in Mechatronics at the Faculty of Engineering, Universitas Negeri Makassar (UNM).

METHODOLOGY

This study employs a descriptive research design aimed at assessing the effectiveness of the Industrial Work Practice (IWP) program within the Vocational Education Program in Mechatronics at the Faculty of Engineering, Universitas Negeri Makassar (UNM). Descriptive research is utilized to determine the value of a variable or factor without establishing causal relationships, focusing on the "what" aspect of a phenomenon (Creswell, 2014).

The research adopts a quantitative approach, which is characterized by the collection and analysis of numerical data to identify patterns, relationships, or trends. According to Cohen, Manion, and Morrison (2018), quantitative research in education often involves surveys or experiments to gather data that can be quantified and subjected to statistical analysis. This methodology is particularly effective in evaluating educational programs, as it allows for the measurement of variables and the assessment of outcomes in a systematic manner.

In the context of vocational education, quantitative research has been instrumental in evaluating internship programs. For instance, a study by Zhao and Ko (2022) utilized a quantitative approach to assess the effectiveness of internship programs in bridging the gap between vocational education and industry needs. The study found that structured internships significantly enhanced students' competencies and work readiness, aligning with the objectives of vocational education.

Similarly, a study by Billett (2022) employed a quantitative descriptive design to evaluate the impact of work-integrated learning on vocational students' skills development. The findings indicated that students who participated in well-structured internships demonstrated higher levels of technical skills and professional attitudes, underscoring the importance of effective internship programs in vocational education.

These studies highlight the utility of quantitative descriptive research in evaluating the effectiveness of internship programs in vocational education. By systematically collecting and analyzing data, researchers can provide evidence-based insights into the strengths and areas for improvement in such programs, thereby informing policy and practice in vocational education.

RESEARCH RESULT

The analysis of the average score (mean) of the student questionnaire sub-variables is as follows. Below are the mean values of the sub-variables from the student questionnaire regarding the implementation of the industrial practice program. The analysis of the mean values was processed using Microsoft Excel, as shown in the table below:

Table 1. Student Questionnaire Sub-Variables

| No | Sub Variable | Number of Question Items | Mean Value of Sub-Variables |
|----|----------------|--------------------------|-----------------------------|
| 1 | Planning | 7 | 3 |
| 2 | Implementation | 11 | 3 |
| 3 | Satisfaction | 6 | 3.5 |
| 4 | Evaluation | 6 | 3.2 |

Table 1 shows the mean values of the student questionnaire sub-variables, indicating that the implementation of the industrial work practice program, based on 30 statement items, obtained the highest score in the sub-variable of evaluation of industrial work practice activities from the student questionnaire data, with a score of 3.5. On the other hand, the lowest score was found in the implementation sub-variable, which scored 3. This is because students assessed that they were able to perform the tasks they were assigned, yet during the implementation phase, they found that their industrial work practice placements were not in alignment with their chosen area of expertise.

Below are the mean values of the sub-variables from the industrial practice mentor questionnaire regarding the implementation of the students' industrial work practice. The analysis of the mean values was processed using Microsoft Excel, as shown in the table below:

Table 2. Sub-Variables of the Industrial Practice Mentor Questionnaire

| No | Sub Variable | Number of Question Items | Mean Value of Sub-Variables |
|----|----------------|--------------------------|-----------------------------|
| 1 | Planning | 4 | 3 |
| 2 | Implementation | 6 | 3 |
| 3 | Satisfaction | 5 | 3.5 |
| 4 | Evaluation | 5 | 2.8 |

Table 2 shows the mean values of the mentor questionnaire sub-variables, indicating that the implementation of the industrial work practice program, based on 20 statement items, obtained the highest score in the implementation sub-variable from the mentor questionnaire data, with a score of 3.8. The lowest score was found in the evaluation sub-variable, which scored 2.8. This is due to the mentor's opinion that the industrial work practice location was suitable for the chosen area of expertise. However, after the mentor conducted monitoring and evaluated the industrial practice, it was found that many students were unfamiliar with or unable to operate the machines available in the industry.

Below are the mean values of the sub-variables from the business/industry questionnaire regarding the implementation of industrial

work practice. The analysis of the mean values was processed using Microsoft Excel, as shown in the table below:

Table 3. Sub-Variables of the Industry Questionnaire

| No | Sub Variable | Number of Question Items | Mean Value of Sub-Variables |
|----|----------------|--------------------------|-----------------------------|
| 1 | Planning | 4 | 2.7 |
| 2 | Implementation | 6 | 3 |
| 3 | Satisfaction | 5 | 3.3 |
| 4 | Evaluation | 5 | 3.6 |

Table 3 presents the mean values of the sub-variables from the industry questionnaire regarding the implementation of industrial work practice. Based on 20 statement items, the highest score was found in the evaluation sub-variable, with a mean value of 3.6. In contrast, the lowest score was in the planning sub-variable, which had a mean value of 2.7. This indicates that, in order to minimize the risk of workplace accidents, a stronger emphasis on student evaluation is necessary. Meanwhile, the low planning score was attributed to the fact that supervision from mentors was limited to monitoring at the beginning, middle, and end of the industrial work practice implementation.

CONCLUSIONS AND RECOMMENDATIONS

The results of this study indicate that the implementation of industrial work practice for students in the Vocational Education in Mechatronics program at the Faculty of Engineering, Universitas Negeri Makassar (UNM), can be considered effective. This conclusion is based on the highest average (mean) score in the student questionnaire, which was found in the evaluation of industrial work practice activities sub-variable, with a score of 3.5, while the lowest was in the implementation sub-variable, with a score of 3.0. In the mentor (supervising lecturer) questionnaire, the highest mean score was found in the implementation sub-variable, at 3.8, and the lowest in the evaluation sub-variable, at 2.8. Meanwhile, in the questionnaire from the business/industry sector, the highest mean score was in the evaluation sub-variable, at 3.6, while the lowest was in the planning sub-variable, at 2.7..

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