Improving the Quality of Internships Through Industry Partnerships for Students of the Department of Building Engineering Education

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IMPROVING THE QUALITY OF INTERNSHIPS THROUGH INDUSTRY PARTNERSHIPS FOR STUDENTS OF THE DEPARTMENT OF BUILDING ENGINEERING EDUCATION

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Abstract

Industrial internship activities prepare students to anticipate various problems in the industrial world and anticipate termination of employment. This study aimed to determine the quality of implementing internships at the Department of Building Engineering Education at Medan State University. The research subjects were Unimed building engineering students who had carried out internships with as many as 43 people. Data collection techniques were carried out using questionnaires and analysis of internship reports. The data analysis technique was carried out descriptively. The study results showed that implementing quality internships can improve students' competencies and attitudes toward the world of work. Based on the results of the research, the implementation of the internship had to be improved: 1) the implementation of the internship should be carried out during college holidays to make it more efficient, 2) the internship report was determined during guidance with students, 3) the internship assessment system was based on reports and student study mastery during the internship, and 4) The competencies obtained during the internship were relatively under several competency achievements in the course. Implementing apprenticeships in the Department of Building Engineering Education still needs attention to prepare more competent graduates.

Keywords: Internship; Partnership; Construction; Competence.
A. Introduction

The National Education System categorizes education into academic, vocational, and professional education. Vocational education consists of two levels: vocational secondary education and vocational higher education. One of Medan's vocational higher education institutions is the Unimed Faculty of Engineering. Vocational education aims to produce human resources with specific competencies and the appropriate amount needed. The competencies of vocational education graduates are (1) knowledge and skills according to their field, (2) social competence in carrying out professional practice, (3) the ability to work effectively, and (4) the spirit of continuing to learn to improve their professional skills and knowledge. Vocational higher education must be able to produce graduates who are ready to work.

According to the International Labor Organization's World Employment and Social Outlook (2017), higher education no longer guarantees a good job. One of the main findings from surveys in the work industry is that graduates without previous work experience will have fewer job opportunities (High Fliers Research, 2017). This is confirmed by the world of industry and students' experiences in other countries (Alma Diploma, 2020; Groll, 2018; Van der Werff & Bisschop, 2016). Therefore, research on students who gain work experience during their studies (internships) has a positive value because graduates can sell skills in work (Gault et al., 2010), the speed of finding a job (Callanan & Benzing, 2004), and salary early (Reddy & Moores, 2012). Therefore, vocational tertiary institutions must improve the quality of apprenticeship as one of the subjects that can confirm the relationship between work experience and workability.

According to Rusidi in Sumardiono's book (2014, p. 119) states that apprenticeship is one of the courses that students must complete to prepare themselves as human resources who are ready to work after graduating from university. The internship course aims to bridge the material obtained by students in lectures with the competencies needed in industries with technological developments. So the internship course is an effort to equip students with industrial field experience as a form of practical learning
outside the classroom and laboratory. Internships are conducted so that students understand the ins and outs of various problems and studies in the industry and can provide alternative solutions to solve them. Furthermore, through industrial internships, students get real experience in all types of work and the constraints faced in the industry.

In the industrial field, many workers are less skilled, lazy, careless, dishonest, and lack discipline. Many workers were laid off in the industrial field because they did not meet expectations. Industrial internship activities provide students with anticipating various problems in the industrial world and anticipating dismissals from work. One of the objectives of the internship is to improve skills according to the field of expertise so that they become professionals. A profession is a position or job that requires special skills, ethics, and service standards. Professional is the nature of something related to the profession, appearance in carrying out a position under the demands of the profession, or people who have the ability by the demands of the profession. Internships not only help scholars and graduates get real exposure to the work environment but also help them develop the skills needed in the industrial world and can work professionally so they can earn higher salaries (Cullinane, C. & Montacute; R., 2018).

The implementation of the internship in the BEE department FE Unimed involves the company where the practice is, namely the business and industrial world. The implementation of the internship needs to be evaluated so that the quality of the implementation is better and appropriate according to the field. This is done because internships aim to improve students' knowledge, skills, and attitudes in dealing with the world of work.

Christine A, Zavotka, Susan L; Teaford, Margaret H. 2010 describe "Implementing a University-Community-Retail Partnership Model to Facilitate Community Education on Universal Design". Cristine A discusses a collaborative partnership model for developing and implementing an internship program with a universal design. The development of the partnership model resulted in five stages of the partnership model. The five stages involved in developing the partnership model are: a) identifying
strengths and learning partners together, b) developing an apprenticeship program, c) implementing a universally designed apprenticeship program, d) facilitating collaborative outreach, and e) moving in a sustainable direction. The partnership model is used to develop and deploy internship programs to promote to consumers related to university education. Collaboration or partnership is an activity to increase and combine industry strengths with universities for change for the common good.

Some of the obstacles in implementing internships are a need for more debriefing or orientation to students about the place or location of the internship. Furthermore, the problems students face in implementing the internship are that there needs to be a clear work schedule, the work is not as expected, and the lack of a supervisory role. Problems after the implementation of the internship are the preparation of the final internship report, students cannot synthesize the problems, and the performance/competency test needs to be carried out (Dika Ayu A and Ali Wafa, 2016).

The main problem in this study is to improve the quality of the implementation of the internship, including the process of implementing the internship, the quality of guidance, the assessment system, and the suitability of competencies. In addition, the internship is a program that is always carried out, so it is necessary to review the suitability and achievement of competencies and the assessment process. This paper will reveal the quality of the implementation of internships in the department BEE FE Unimed based on students' understanding of the world of work, skills, and professional attitudes, the role of internship supervisors in the field, or the role of supervisors in improving student competencies.

The research results by Catur A and Bambang S (2016) suggest that fieldwork practices (internships) are quality control of students, whether they have met the competencies required by employment, whether they have met the principle of link and match between the program and industry.

The description and information about the industrial world must be understood by students in carrying out internships according to their fields. The industrial world describes the form/ type of work workers do to
produce a product. For students who do internships, it is necessary to understand the industrial world, which includes: (1) Types of work in their environment, (2) Types of jobs that graduates can enter according to their fields, (3) Benefits obtained from each job, (4) Knowledge, skills, and skills required for each job, (5) Conditions and future in a job, and (6) The specific requirements of a job.

Students who carry out internships better understand the work, so they have adequate information about the work environment. Students who have information about the world of work will be able to make more appropriate choices in choosing the type of work. When students carry out internships, they interact a lot with employees to get information about the types and various motivations of people working. Thus students will have knowledge and understanding of the world of work. This fosters students' professional attitudes in seeking knowledge and attitudes at work.

Professionalism is the appearance of workers in carrying out something by the demands of the profession/job. Students who carry out internships will be able to accordance with the profession's demands according to their field. Students' professional competence shows mastery of knowledge, attitudes, and skills that are in accordance with what is needed in the world of work. Meanwhile, personal competence/personality is a significant factor in the personal formation of a student to become a professional. Personal competence needs attention because it takes a relatively long time to form it.

Skills are a follow-up to understanding and attitude. To improve skills in their field, students need to be given materials like self-understanding, values, environmental understanding, and future planning. Some characteristics of skilled students include: 1) immediately carrying out work, 2) carrying out work carefully, 3) being polite and friendly with other parties, 4) always looking for work-related information, and 5) practicing themselves. In general, student skills will improve if allowed to practice. Internships will be successful if students experience an increased understanding of the world of work, skills, and awareness of professional attitudes.
B. Method

In the industry, many workers still need to be more skilled. Many workers were laid off in the industrial sector because it did not meet expectations. Graduates from universities are expected to be able to work according to industry expectations. Therefore, internship activities must be of good quality to produce graduates who meet industry expectations. Quality internship activities must carry out evaluations so that the quality of the implementation is better and by the field. This is done because industrial internship activities aim to increase students' knowledge, skills, and attitudes in dealing with the world of work and equip students with anticipation of various industrial problems and anticipate employment termination.

This research was carried out in the PTB FT Unimed department and the place or location of the internship. This research was conducted in 2019-2020. This type of research includes descriptive research. The data to be obtained in this study are in the form of qualitative and quantitative data. Qualitative data is information about students' understanding of the industrial world according to their fields, skills, or competencies obtained during internships and their suitability with the subject matter at universities. Quantitative data in the form of descriptive information about the implementation of internships, internship guidance, and assessment of student competence in the implementation of internships.

This study's subjects and data sources were 34 internship students, lecturers, and supervisors. To obtain data from research subjects, using data collection tools in the form of observation sheets and interview sheets. Interviews were conducted with lecturers and internship supervisors, while assessment sheets and observation sheets were conducted on students who carried out internships and the results of their reports. Data analysis in this study is based on the opinion of Lodico, Spaulding, & Voegtle (Putra, 2013). The data analysis model of this study uses the following stages: 1) organizing and examining data, 2) re-examining data, 3) data processing in the form of describing, summarizing, and organizing containing more specific categories, 4) conducting final analysis, and making interpretations. Moreover, the conclusion contains the research findings.
C. Result and Discussion

1. Result

The data sources in this study were students majoring in BEE who carried out internships in 2019-2020. Data were obtained from questionnaires and observations of the results of the internship report from as many as 43 people. Of the 43 internship reports written by students, they consist of BEE Study Program, Civil Engineering Study Program (S-1), and Civil Engineering Study Program (D-3). The distribution of the number of students doing internships based on the study program is shown in the following figure.

![Figure 1. Number of students doing internships by study program](image)

Figure 1 shows that the number of students who became the source of data came from the Building Engineering Education (BEE) study program as many as 33 people (77%), then from the Civil Engineering (S-1) study program students as many as eight people (18%) and finally from 2 students of the Civil Engineering (D-3) study program (5%). The picture shows that the most sources of data in this study are students from the BEE study program.

Furthermore, as long as students majoring in BEE participate in internships, they are scattered in various locations with different types of buildings/ constructions. The types of buildings or constructions that become materials for students in carrying out internships are presented in Figure 2 below.
Figure 2 shows that building and civil works are the types of work followed or observed and analyzed by BEE students in carrying out their internships. BEE students who carry out internships in buildings such as the construction of hospitals, mosques/viharas, malls, showrooms, schools, and hotels. If we look more closely, the places where BEE student internships are held apart from buildings and housing, namely: toll road construction of as many as two people (4.65%), construction of flyovers/ply over as many as five people (11.63%), area studies one person (4.65%) in urban areas and one person (4.65%) for retaining wall works. This data shows that the types of work that become the implementation of internships for students majoring in BEE need to be expanded, such as road construction, irrigation construction, bridge construction, and other buildings.

Table 1 shows the focus of the internship report on BEE majors. The results of internship reports written by students generally focus on building work. More specifically, the focus of internship activities is present in the following table.

<table>
<thead>
<tr>
<th>No.</th>
<th>Internship Report Focus</th>
<th>Sum</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Construction Implementation Techniques</td>
<td>4</td>
<td>9.30</td>
</tr>
<tr>
<td>2.</td>
<td>Beam Execution Technique</td>
<td>8</td>
<td>18.60</td>
</tr>
<tr>
<td>3.</td>
<td>Column Execution Technique</td>
<td>7</td>
<td>16.28</td>
</tr>
<tr>
<td>4.</td>
<td>Beam and Column Execution Technique</td>
<td>1</td>
<td>2.33</td>
</tr>
<tr>
<td>5.</td>
<td>Floor Plate Implementation Technique</td>
<td>2</td>
<td>4.65</td>
</tr>
</tbody>
</table>
Table 1 shows that the internship reports from students majoring in BEE focus on the technical implementation of building structures. Various kinds of existing building structures are the most widely used by students as the focus of internships is on the structure of the implementation of beams with eight reports (18.60%). Furthermore, there are also internship reports written by students as a whole or a combination of several building constructions, such as beams and columns. In order to broaden the horizons of BEE students, the focus area of the internship report is not only on construction implementation techniques but can also be in terms construction work management.

In implementing internship activities in the industry, the opinions of BEE students regarding the quality of their internships are presented, as shown in Figure 3 below.

Figure 3. BEE student internship implementation score

The implementation of the internship passed by students majoring in BEE FE Unimed stated that the aspect of the internship duration was the
lowest score, with a score of 2.65 out of a scale of 4. Then the highest score was given to preparing discussion topics during the internship, with a score of 3.53. The average score for the implementation of internships in BEE majors is 2.96. This shows that the implementation of internships in the BEE department still needs improvement to produce the expected competencies. From the data presented in Figure 2, students generally feel that the internship time is short for 60 working days because a lot is still understood and mastered during the internship. Conditions that often occur in building construction are obstacles that cause activities to be stopped. This can be due to technical problems or problems with natural conditions.

In implementing the internship, students must follow and learn everything related to the building or project. In practice, students, in addition to studying in terms of construction, also have to learn in terms of management and other sides. This results in an internship student having to be creative and have a lot of discussion or guidance to understand all aspects of the internship location. Based on the data obtained from students regarding the implementation of internship guidance is presented in Figure 4 below.

![Internship Guidance](image)

**Figure 4. The score of the implementation of bee student internship guidance**

Based on the data in Figure 4 shows that in the apprenticeship process, the lowest score is in the depth aspect of the report content, with a score of 2.79. The highest aspect is the quantity/ frequency of guidance, with a score of 3.42. On average, the internship guidance process is according to
students with a score of 3.00. The problem in the internship guidance process for students is compiling reports with content on the studies discussed. In implementing the internship, many aspects are studied and observed, and the report's writing is focused on one area. Writing an internship report will examine one area in detail. The various focus of studies in writing internship reports is presented in Table 1.

At the end of the internship, students are assessed. In assessing internship activities, many aspects become the focus of the assessment. The aspects assessed and the scores given by students from the implementation of the internship are presented in Table 2.

<table>
<thead>
<tr>
<th>No.</th>
<th>Assessment Aspect</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Organizational Structure</td>
<td>3.12</td>
</tr>
<tr>
<td>2.</td>
<td>Work Process</td>
<td>2.79</td>
</tr>
<tr>
<td>3.</td>
<td>Materials Used</td>
<td>3.32</td>
</tr>
<tr>
<td>4.</td>
<td>Equipment Used</td>
<td>3.32</td>
</tr>
<tr>
<td>5.</td>
<td>Job Understanding</td>
<td>3.24</td>
</tr>
<tr>
<td>6.</td>
<td>Contents of the Report</td>
<td>3.38</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>3.20</td>
</tr>
</tbody>
</table>

Table 2 shows scores based on student opinions about implementing the internship assessment in BEE majors. The lowest score was given by students, namely aspects of the work process at the time of the internship, with a score of 2.79. Meanwhile, the highest score occurred in the content/systematic aspect of the internship report, with a score of 3.38. The average score regarding the apprenticeship assessment is 3.20. Based on the results of the internship assessment, it is necessary to provide guidance that makes students better understand the process of implementing work in the building and civil construction fields. Furthermore, from the assessment process during the internship, to find out the improvement in students' abilities or competencies after completing the internship activities. Based on students' opinions about improving their competence after completing the internship, it is presented in Figure 5.
Figure 5 shows that the lowest competency improvement is owned by students in internship activities, namely in the aspect of solutions in work, with a score of 2.20. The competency score with the highest score is in implementing the work, with a score of 3.21. This data shows that students who take part in internships still need much experience to provide solutions to various problems in the implementation of building and civil construction works.

2. Discussion

Improving the quality of internships is necessary to produce graduates who are competent in their fields. Quality internship activities can increase students' knowledge, skills, and attitudes in facing the world of work and equip students with anticipation of various industrial problems and anticipate employment termination.

Implementation of internships by students majoring in Building Engineering Education spread across various locations with different types of buildings/constructions. Locations for student internships other than buildings and housing, namely the construction of toll roads by 2 people (4.65%), construction of flyovers/ply overs by five people (11.63%), area studies of 1 person (4.65%) in urban areas and one person (4.65%) for retaining wall work. This data shows that the types of work that become apprenticeships for students majoring in BEE need to be expanded, such as road construction, irrigation construction, bridge construction, and other buildings.
From the various dimensions assessed in the implementation of internships for students majoring in PTB, the role of supervisors and field officers is vast in achieving the objectives of the internship. There are various reasons supervisors and field officers do not play an optimal role in mentoring apprentices: the busyness and workload of lecturers on campus, the implementation of student internships outside the city, and the time for submission and withdrawal of student interns need to appropriately scheduled.

Based on quantitative data from various student opinions, construction street vendors are implemented during college holidays to be more efficient and focus on discussing the material being studied. The internship carried out by students majoring in BEE FE Unimed stated that the length of the internship aspect was the lowest score, with a score of 2.65 out of a scale of 4. Students generally felt the internship time was short, namely 60 working days. This time is not optimal because there is still much to be understood and mastered during the apprenticeship.

The focus of the internship report is determined during guidance with each student by field supervisors and lecturers. The results of internship reports written by students generally focus on technical building work in the implementation of building structures. The internship report focuses on the structure of the beam implementation, with eight reports (18.60%). To broaden the horizons of BEE students, the internship report area focuses not only on construction engineering but can also be in terms of construction work management.

The apprentice assessment system is based on apprenticeship reports and student mastery of the studies observed during the apprenticeship. In the apprenticeship assessment process, many aspects are the focus of the assessment. The lowest score was given by students, namely the work process aspect during the internship, with a score of 2.79. While the highest score occurred in the content/systematic aspect of the internship report, with a score of 3.38. The average value of the apprenticeship assessment is 3.20. Based on the apprenticeship assessment results, guidance is needed to make students better understand the process of carrying out work in building and civil construction.
The competencies acquired during the apprenticeship align with some of the competency achievements of the courses. Students must participate in and learn everything related to the building or project during the internship. In practice, besides learning from a construction perspective, students also have to learn from a management perspective and other aspects. This resulted in student interns having to be creative and have lots of discussions or guidance to understand all aspects of the internship location.

Overall, the results show that implementing internships can improve competence and attitudes toward the world of work, especially in the construction sector. The results of the data show that the lowest competency increase is owned by students in internship activities, namely in the solution aspect of work, with a score of 2.20. The competency score with the highest score is in the implementation aspect of the work, with a score of 3.21. The data shows that students who take part in internships still need much experience to provide solutions to various problems in the implementation of building and civil construction work.

The qualitative research results show the implementation of internships in the PTB FT. The Unimed department can improve: 1) students' understanding of the world of construction as a whole and its benefits, as well as its meaning for life; 2) Awareness of the need for concepts and theories in the field of construction is strength in working in the field of construction; 3) Appreciation and attitude, in the form of a value system that applies and is needed in work, especially in the field of construction. This appreciation and attitude are developed through direct education in the field, which will result in self-satisfaction and social satisfaction at work; 4) Ability to make decisions and solutions in the field of construction; And 5) Educational awareness, a form of introduction from PTB students about the meaning of developing basic skills and mastery of science in achieving goals through education, especially in the construction and civil fields.

Several studies identified different predictors of apprenticeship quality, such as sound design and good organization (Coll et al., 2009), structural and curricular issues, assessment systems and quality of apprentice
coordinators (Gryski, Johnson and O'Tool, 1987), program goals, internship preparation, evaluation of apprenticeships and apprenticeship programs (Alpert, Heaney and Luhn, 2009), quality of workplace supervision or organizational practices and policies (Beard & Morton, 1999). From that study, the overall significance supports students to take full advantage of the internship. The Starr-Glass (2006) study revealed that: (a) all apprentices had positive learning experiences but were limited to activities in the apprentice industry; (b) apprentices have learned new skills and understand the differences between the theories they have learned in education and those in the industry; (c) the apprentice education component focuses on a particular product or company activity. The research findings align with the results of this study related to the quality of the apprenticeship program. Students' understanding of competencies is essential to increase their employment opportunities and practical knowledge. Excellent guidance between field supervisors and lecturers is essential to the quality of the internship. Apprentice evaluation and assessment systems are also mentioned in various previous studies in the form of apprentice evaluation.

From the data and findings above, implementing quality internships can improve students' competencies and attitudes toward the world of work. With internships, students can improve their knowledge, skills, and attitudes in dealing with the world of work. In line with this, Bose, Banerjee, and Saha (2023) state that through apprenticeship learning, students can learn direct experience, build their industry network, sharpen their professional abilities, and learn the main areas that need to be studied in an internship. Furthermore, the research results of Ebner, K., Soucek, R., and Selenko, E. (2021) show that apprentices that are evaluated positively contribute to graduates' self-perceived employability.

D. Conclusion

Based on the results and discussion in this research, several conclusions can be drawn: 1) the implementation of internships for students majoring in BEE should be carried out during lecture holidays for a longer time. So it is necessary
to review the model and weight of the implementation of internship courses in the industrial world; 2) In preparing the internship report, emphasize one field of study that has been determined at the time of the internship with the approval of lecturers and field supervisors, 3) The assessment system for the competence of internship students is based on written reports and general mastery of various types of work observed during internships in industry and, 4) In general the competencies obtained at internships are supported by prior knowledge gained during college, and 5) In general, the implementation of internships in majors BEE can improve students' competencies and attitudes about the world of construction and civil engineering.

To expedite and expand students' knowledge and competence in implementing internships in BEE majors, the focus and places for internship practices can be expanded, such as roads, ports, water structures (irrigation and dams), and other civil structures. Then the implementation of internships for students majoring in BEE can also be in planning and supervision (consultants) in the construction and civil fields.

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