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The Influence of Practical Drawing Courses on Student Work Competence in SKKNI Building Drawing: Case Study at Surabaya State University

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A B STR A CT

This research examines the influence of emphasizing practical drawing learning methods and work competencies in the SKKNI for building drawings. The majority of respondents work in the vocational school sector with a percentage of 53%. Furthermore, as many as 41% of respondents work in the PT sector. Meanwhile, only 6% of respondents work in the high school sector. The results of the analysis show that the majority of respondents consider these two methods to have a significant impact. The emphasis on "Fieldwork" was considered very large by 40 respondents and had a large influence by another 35 respondents, while "Participation in Research Projects" was considered very large by 25 respondents and had a large influence by 40 respondents. These findings emphasize the importance of practical learning methods and research projects in preparing graduates for various career paths, and demonstrate the variety of career choices made by graduates after completing their studies.

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INTRODUCTION

Building drawing skills are one of the main competencies in engineering and industrial education. Drawing a building is not only a visual representation of a design concept, but also a vital communication tool between architects, engineers and field workers. The ability to create accurate and detailed technical drawings is essential in ensuring that each construction project can be implemented according to planned specifications, thereby reducing the risk of errors and increasing work efficiency (Sukma, 2021). In engineering education, these skills provide students with a deep understanding of design principles, building structures, and the regulations and standards that must be adhered to (Ilmawanty & Rizqa, 2023). In industry, professionals skilled in building drawing are able to produce work that is not only aesthetic but also functional and safe, in accordance with national and international standards (Giatman, 2018) (Abdullah & Hendra, 2018) (Romadhona & Saputro, 2019) (Badriyah, 2018) (Dasar, Patah, & Nurdin, 2022) (Chofzah, 2024).

Mastery of standards such as the Indonesian National Work Competency Standards (SKKNI) in building drawing practice is becoming increasingly crucial in this modern era. SKKNI establishes clear and structured guidelines to ensure that every professional in the construction sector has the skills and knowledge necessary to produce quality work that complies with regulations. In the context of globalization and increasing complexity of building projects, these standards help create uniformity and consistency in industry practices, thereby minimizing errors and increasing efficiency. Apart from that, SKKNI also plays an important role in increasing the competitiveness of Indonesian workers in the international arena, by ensuring that they have globally recognized competencies. Mastery of these standards not only provides quality assurance for clients and stakeholders, but also facilitates workforce mobility and cross-border collaboration on large construction projects (Pratama, 2018) (Kesuma & Persada, 2019) (Reinhold, Manik, Kristanto, Enny, & Suhariani, 2021).

The Drawing Practice course plays an important role in helping students understand building drawing regulations and standards in depth (Ramadhani & Suparji, 2021) (Hasrul & Wahidayat, 2024). Through a well-designed curriculum, students are introduced to various technical and legal aspects governing the creation of building drawings, including national standards such as SKKNI. In the learning process, they are taught how to apply these principles in real projects, ensuring that each resulting drawing is not only technically accurate but also complies with applicable regulations. With this understanding, students can anticipate and comply with legal and normative requirements that are often complex and vary from project to project. Apart from that, this course also hones students' analytical and critical skills in assessing and ensuring image compliance with established standards, which are essential skills in the professional world of work. Thus, the Drawing Practice course significantly increases students' readiness to operate in the highly regulated construction industry (Ramadhani A. S., 2021) (Sugihartono, 2022).

This research aims to investigate the impact of the Drawing Practice course on students' practical skills in drawing buildings. The main focus of the research was to evaluate the extent to which this course contributes to the development of technical skills necessary to produce accurate and functional building drawings. By exploring various aspects such as plans, cuts, elevations and technical details, this research seeks to measure the increase in students' ability to apply architectural design concepts and principles effectively.

THEORITICAL REVIEW

This literature review explores the importance of building drawing skills in engineering and industrial education, as well as their impact on professional performance in the construction field. The study by Johnson emphasizes that accurate technical drawing skills are a key foundation for the success of construction projects, showing that clear visual representations help reduce implementation errors in the field (Johnson, 2019). Other research by Smith supports this view by stating that these skills are not only important for communication between architects and engineers, but are also crucial in ensuring compliance with applicable standards and regulations (Smith, Thompson, & Nguyen, 2020). In an educational context, Jones and Brown point out that Drawing Practice courses play an important role in providing students with a deep understanding of design principles and regulations that must be adhered to, which in turn increases their readiness to enter the world of professional work (Jones & Brown, 2018). Additionally, competency standards such as the Indonesian National Work Competency Standards (SKKNI) have been recognized as important tools for ensuring quality and consistency in industrial practices, as discussed by Wibowo (Wibowo, 2021). In their review, Lee and Kim observe that mastery of these standards also contributes to increasing labor competitiveness in global markets, emphasizing that internationally recognized competencies facilitate labor mobility and cross-border collaboration (Lee & Kim, 2022). This research also notes that the Drawing Practice course not only teaches technical skills, but also develops students' analytical and critical abilities in ensuring drawing compliance with established standards, as outlined by Ahmad (Ahmad, 2020). Overall, the literature shows that building drawing skills are a vital element in engineering education and industrial practice, significantly influencing the efficiency of construction projects and the readiness of professionals to meet complex regulatory demands.

METHODOLOGY

The research method used in this research includes an integrated qualitative and quantitative approach. The qualitative approach involved interviews with students, lecturers and industry stakeholders to gain in-depth insight into their experiences and perceptions of the Drawing Practice course. Meanwhile, the quantitative approach uses surveys to measure students' improvement in skills, conceptual understanding and work readiness after taking courses, as well as analysis of student exam or project results to

objectively assess learning achievements. The observation method is also applied to observe student interactions with learning material and the application of practical skills in practicums or projects. This combination of methods allows a holistic and in-depth understanding of the influence of the Drawing Practice course on students' work competence.

RESULTS AND DISCUSSION

From the data presented, it can be explained that the majority of respondents, namely 82%, currently have working status, either full time or part time. As many as 6% of respondents are not working but are looking for work, another 6% are working as entrepreneurs, and another 6% are continuing their education.

The second diagram shows that 76% of respondents have found work in less than or equal to 6 months, including those who had worked before graduating. Meanwhile, 24% of respondents had not found work in that period. This shows that most graduates can find work relatively quickly, both before graduating and within the first six months after graduation.

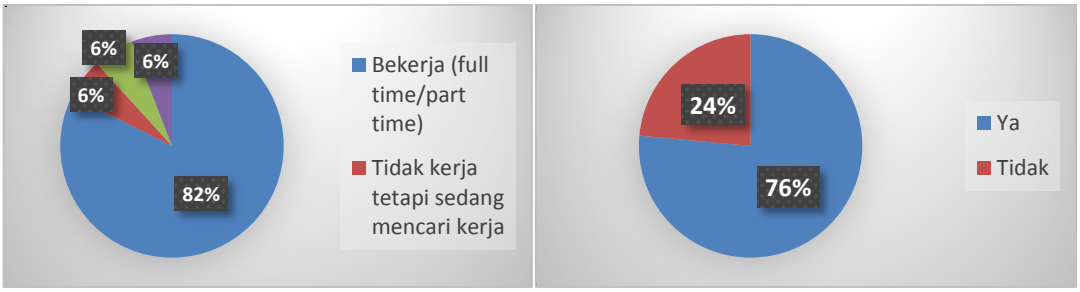

Figure 1. Respondent status data

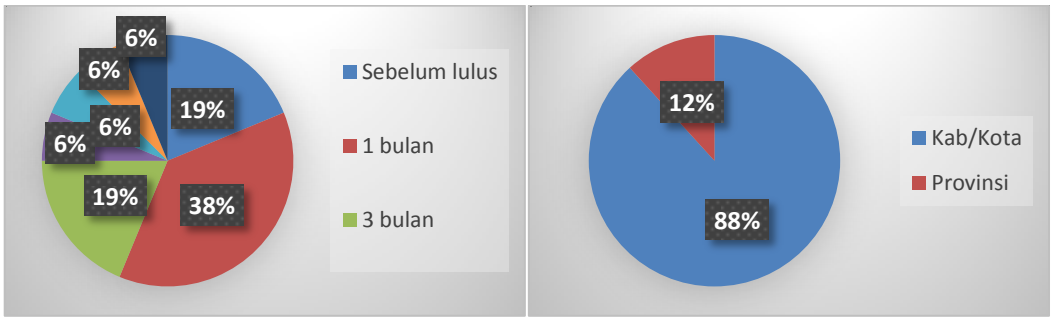

Figure 2. Duration and placement of respondents' work

In research regarding the time in figure 2, the time it takes to get a first job after graduating from college, the data collected shows quite wide variations. Some respondents immediately found work immediately after graduating, while others experienced a longer time lag. Some respondents (10 people) got a job within two months after graduating, while another respondent got a job two months before graduating. There were also those who managed to get a job one month after graduating, which was the largest number of respondents. Some respondents recorded a longer time, with 5 people taking up to a year and another person taking six months. Some respondents were

already involved in work before graduating from college, and 5 respondents noted that they were involved in lecturer recruitment as a career choice. This variation reflects the different experiences of graduates in entering the world of work after completing their studies.

Data regarding the location of respondents' workplaces shows that they are spread across various districts/cities in Indonesia, with some of them working at the provincial level. Most respondents noted the location of their work in a particular district or city, indicating that there is a wide distribution of work and is not concentrated in just one area. There were several respondents who reported working at the provincial level, indicating that their work was in provincial capitals or large cities with a wider scope. This diversity of workplace locations reflects that graduates are not only limited to certain geographic areas, but are spread across various locations that offer job opportunities at various administrative levels.

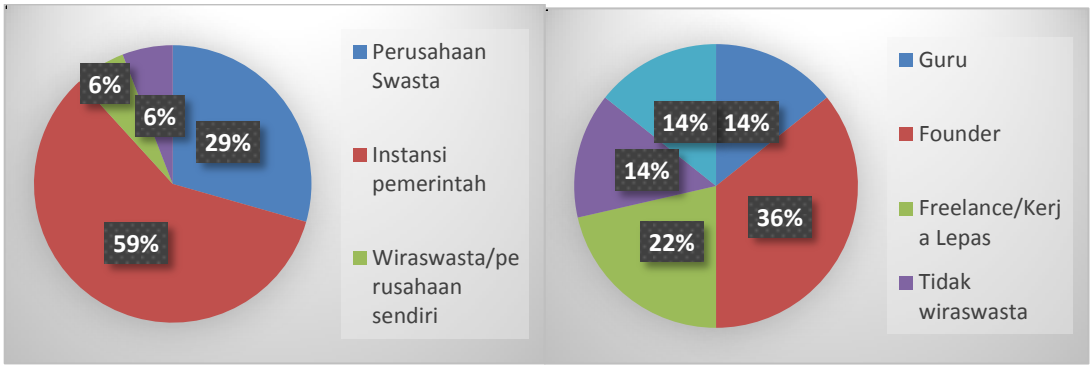

Figure 3. Respondent's Occupation

Data on respondents' jobs in Figure 3 shows variations in the types of work they did after graduating. Of the total respondents, 25 people worked as founders, reflecting that the majority had entrepreneurial roles or founded their own businesses. 15 respondents were involved in freelance work, indicating flexibility in the type of work they took on. 20 respondents each worked as teachers and staff, indicating more traditional and structured roles within educational organizations or institutions. Meanwhile, another 10 respondents chose not to become self-employed, perhaps indicating their preference to work in a more stable or organized environment.

Overall, these data reflect that respondents have diverse occupational backgrounds, with most involved in entrepreneurship and freelance work, while others work in more conventional capacities in the educational or organizational sectors. A detailed explanation of the respondents' work is in Figure 4. The majority of respondents work in the sector marked in blue (SMK) with a percentage of 53%. Furthermore, as many as 41% of respondents work in sectors marked in gray (PT). Meanwhile, only 6% of respondents work in the sector marked in orange (SMA).

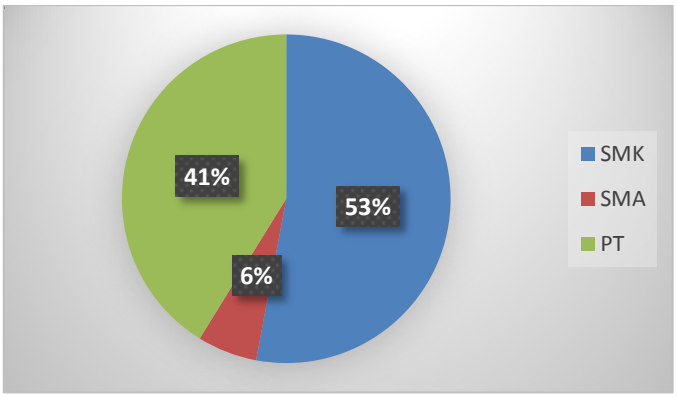

Figure 4. Respondent's employment sector

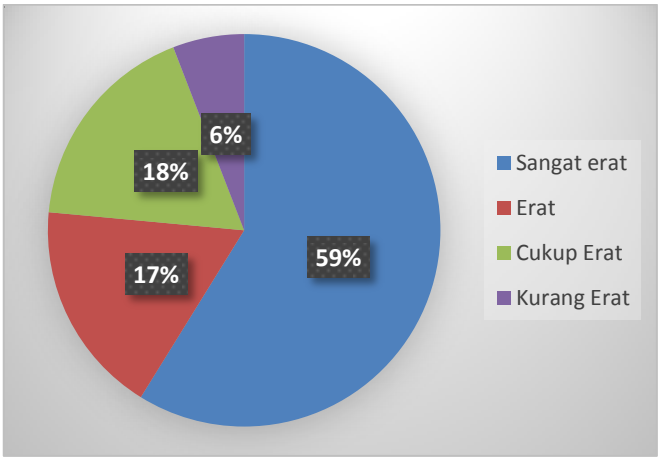

Figure 5. Effect of Building Drawings on Field Work

The results of respondents regarding the influence of the emphasis on the "Field Work" learning method on drawing practice in work competency at SKKNI for building drawings showed quite positive views from the participants. The majority of respondents, namely 40 people, felt that the emphasis on fieldwork methods had a very large influence on their drawing practice and work competence. Another 35 respondents felt that the effect was large, indicating that they also considered this method important but perhaps not as crucial as for the previous group. Only 10 respondents rated the influence of the fieldwork method as sufficient, indicating that they felt the impact was not as great as that felt by the majority of other respondents. Overall, these data show a consensus that fieldwork methods play an important role in developing drawing competence in accordance with SKKNI standards, with the majority of respondents believing that this approach makes a significant contribution to their practical abilities.

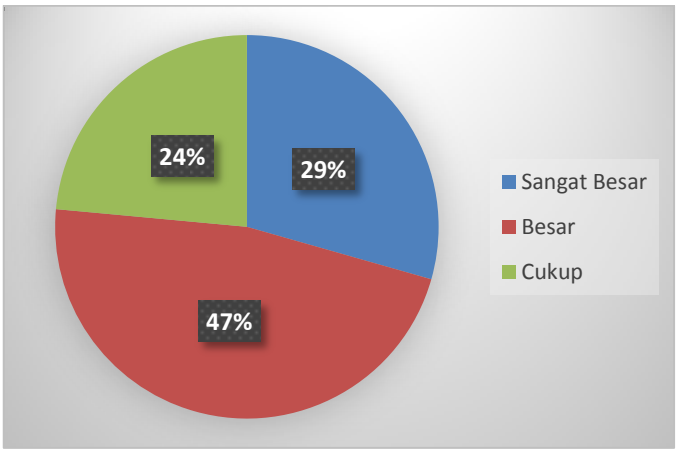

Figure 6. The Influence of Building Drawings on Research Projects

The results of respondents regarding the influence of the emphasis on the "Participation in Research Projects" learning method on drawing practice and work competency in SKKNI building drawing show that the majority of participants see this method as an important element in developing their skills. Of the total respondents, 40 people felt that participation in research projects had a major influence on their drawing practice and work competence. Meanwhile, 25 respondents considered the effect to be very large, showing strong belief in the benefits of this method. Only 20 respondents felt the impact was sufficient, indicating that they see value in research project participation but may not feel it is as crucial as other methods. Overall, these data indicate that involvement in research projects is considered to contribute significantly to drawing ability in accordance with SKKNI standards, with many respondents considering it a beneficial factor in the development of their practical skills.

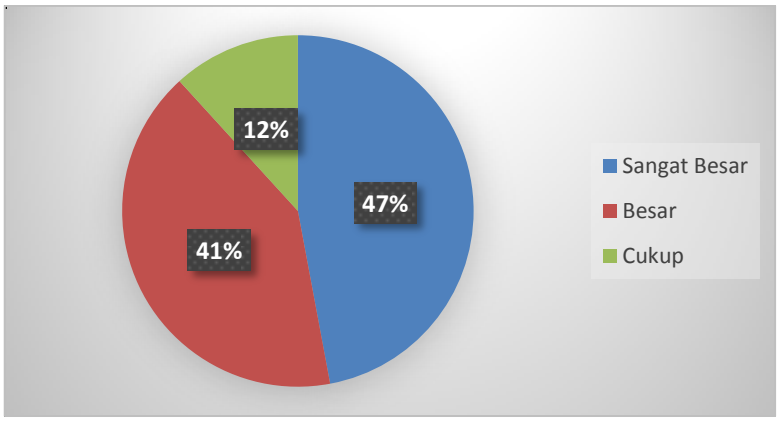

Figure 7. Influence of building drawings on field work

Based on the results of respondents regarding how much emphasis on building drawing learning methods influences drawing practice on work competencies in SKKNI building drawing, the majority of respondents gave a very positive assessment. A total of 40 respondents (71%) stated that the influence was very large, followed by 35 respondents (41%) who considered that the influence was large. Only 10 respondents (12%) felt the influence was

sufficient. This data shows that the learning methods applied in the building drawing course have a significant impact on the practical drawing skills required in the SKKNI for building drawing. This indicates that a good and structured learning approach in this course really supports the mastery of work competencies that are expected to be in accordance with national standards.

From the results of the questionnaire given to 85 respondents, it can be seen that the majority of them, namely 70 people, work either full time or part time, with most of the 65 people already working before graduating. The majority of respondents work in private companies 25 people or government agencies (25 people), and a small number are entrepreneurs or founders. Regarding location, the majority work at the district/city level, 75 people, while only a small number work at the provincial level, 10 people.

In terms of skills developed, respondents identified interpersonal skills and hard skills as key areas, with 50 respondents emphasizing the importance of hard skills. Education costs are mostly borne by themselves or by the families of 65 people, although some receive scholarships such as the PPA Scholarship for 10 people or the BIDIKMISI Scholarship for 10 people.

In addition, respondents stated that the Drawing Practice course had a very close relationship with the development of their work skills, with most considering it to have a very big influence on their work competence. A total of 50 respondents felt that the influence of the course was very strong, and 35 people stated that their level of understanding increased to the same or higher level after taking the course.

Respondents also gave a high assessment of the contribution of this course in increasing their understanding of building drawing regulations and standards, with many stating that its influence was very large and significant in various aspects. The time needed for most respondents to find a job after graduating ranged from 1-5 months (10 people), while some took longer or were still looking for work after one year of graduating.

CONCLUSIONS

From the analysis of the data obtained, it can be concluded that the emphasis on learning methods such as "Field Work" and "Participation in Research Projects" is considered to be very influential on drawing practices and work competencies in SKKNI building drawing. The majority of respondents felt that both methods made a significant contribution to the development of their practical skills, with “Fieldwork” rated very much by 40 respondents and “Participation in Research Projects” rated very much by 25 respondents. In terms of employment after graduation, the data shows clear diversity, with many respondents becoming founders or involved in freelance work, while others work as teachers, staff, or choose not to be self-employed. This diversity reflects the various career paths taken by graduates, from entrepreneurship to conventional roles in the educational or organizational sector. Overall, these results highlight the importance of practical learning methods and research projects in preparing graduates for the various professional roles they choose.

FUTURE RESEARCH

Further research could focus on the development and application of digital technology in teaching building drawing skills, such as the use of BIM (Building Information Modeling) and VR (Virtual Reality) software to more realistically simulate construction projects. Additionally, longitudinal studies could be conducted to evaluate the long-term impact of Drawing Practice courses on the professional careers of engineering graduates, including how these skills influence employment opportunities and performance in the workplace. Another interesting research is a comparative analysis between building drawing curricula in various countries, to identify best practices and international standards that can be adopted to improve the quality of engineering education in Indonesia. In addition, taking into account the globalization of the construction industry, it is important to examine the effectiveness of mastering standards such as SKKNI in increasing the competitiveness of Indonesian workers in the global market.

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