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ASSESSING THE READINESS OF LECTURERS AND STUDENTS IN ADAPTING TO ONLINE LEARNING IN VOCATIONAL HIGHER EDUCATION

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ABSTRACT

The research aimed to identify the teaching experience carried out by lecturers in vocational higher education, Department of Energy Conversion Engineering, dominated by practical lectures during online learning. Online learning carried out during the pandemic was one of the efforts to manage the learning process to suppress the coronavirus's spread (COVID-19). In the learning process, which involved students and lecturers, limitations were not only felt by students as participants in the learning process but also by lecturers who were in charge of the courses. Activities in the laboratory were undertaken at all levels and accounted for more than 40% of all learning activities. The experience of the online teaching process for vocational engineering education was very interesting to be researched since the challenges of delivering practical material had a 50% proportion of the entire course. Observations on laboratory activities during online lectures could be a reference for further learning activities. Qualitative methods were used by observation, data collection and compilation, and analysis. From the data that have been accumulated, it can be concluded that several components become obstacles in the online learning process for engineering/vocational higher education. However, some parts are also considered beneficial during the learning process for the lecturers and students.

Keywords: *lecturer readiness, student readiness, online learning, vocational school*

INTRODUCTION

The education system is one of the sectors that has received the impact of the global pandemic (Covid-19) that is happening in the world. This makes the learning process must be carried out remotely to avoid increasing cases of the spread of the virus. With the distance learning process, new terms in the field of teaching are emerged, such as distance learning, e-learning, or online learning, all of which have the same goal, namely to keep the learning process going (Moore, Dickson-Deane, & Galyen, 2011). The implementation of distance learning has different challenges and difficulty levels compared to conventional learning (learning in a class). Higher education does various ways so that the educational process continues in an interesting way, and the material can be transferred to students wherever they follow the process. One of them is carried out by Sujinah (2020) for bahasa Indonesia learning which is carried out with a qualitative method. This research has concluded that there is still a need for readjustment for the field supervisors so that the learning process can be more innovative in vocational high schools.

The distance learning process for vocational education is also carried out by Purnamasari (2021), Mahmut (2020), Syauqi, Munadi, and Triyono (2020), and Edy (2020) by identifying the steps taken in online learning and compared to the conventional learning process. To find out the materials and platforms used during distance learning in vocational education, research has been conducted by Algiovan

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and Roza (2020), Edy (2020), Syauqi, Munadi, and Triyono (2020), Aydin et al. (2015), Mukarromah and Wijayanti (2021), and provided suggestions related to the learning process by improving disaster education at all levels. A comprehensive analysis is also carried out to find the most influencing factors toward online learning during the Covid-19 pandemic (Alqahtani & Rajkhan, 2020). This distance learning process also affects the teaching carried out by teachers who are categorized as seniors. This is investigated by Rahayu dan Devina (2021), involving senior lecturers and how they adapt to teaching situations that are very new to them.

There is a shift in the way of teaching from a face-to-face model in class to an online type of teaching. This condition may have an enormous effect on the adjustments that must be made by senior lecturers. This is mainly because the majority of online lectures are conducted with new technologies that are not very accustomed to people of mature age. This is especially important to understand, not only in vocational high schools but also in other higher education.

Student perceptions also need to be considered related to the online learning process. Face-to-face learning that has been stopped during the pandemic has an influence that cannot be ignored, especially for vocational students whose learning process is dominated by activities in the laboratory. It is necessary to pay attention to whether the learning process that has been prepared by the lecturer can be optimally absorbed by students in online classes. Online learning for vocational universities has never been published before, although it is well known that the vocational learning process has significant differences compared to non-vocational universities.

Referring to the published research, the majority of studies conducted for online learning are on language studies. There has been no research on how the distance learning process is carried out by vocational education institutions for non-language studies. This should be a concern because, by far, the conventional learning process for vocational programs consists of 50% practical learning.

From the research that has been done, there is no research reported on how online learning is carried out in vocational colleges. Based on data from the Higher Education Statistics 2020, the number of vocational universities in Indonesia is 35,25% of the total higher education in Indonesia. This is becoming necessary to know how the learning process is carried out online, considering a large amount of vocational education in Indonesia. Therefore, it is very interesting to conduct research to discover the online learning process during the pandemic in technical vocational higher education. In addition, it is necessary to analyze the challenges lecturers face during the online practical learning process to make improvements in the future.

METHODS

The research is conducted by applying a qualitative descriptive method and an online survey. The survey is responded by 47 lecturers at the Department of Energy Conversion Engineering, Bandung State Polytechnic, which is a technical vocational higher education. Participants in the research are selected based on the lecture material given at the Department of Energy Conversion Engineering. The lecturers who participated are technical and non-technical lecturers. This selection is made to observe how technical and non-technical materials are provided in online learning in the department. There will be a demonstrated difference between learning the material online from the two types of the material provided. The teaching lecturers who become respondents are varied, namely those who taught technical and non-technical courses (general courses). The scope of the teaching period for lecturers in the research subject is in the same semester, the even semester when a pandemic suddenly hits the world.

The lecturers involved in the research are engineering and non-engineering lecturers who teach at the Department of Energy Conversion Engineering. The involvement of non-technical lecturers is intended to determine their perception of the teaching preparation and teaching process that has been carried out. This is very important to understand because in vocational colleges majoring in engineering, the lecturers involved in the teaching process are not only from the technical field but also from general subjects such as English, Religious Education, and others.

The description implemented in the research is online learning at the vocational level carried out during the COVID-19 pandemic. The qualitative research is descriptive, which means that the data obtained, such as data from questionnaires, include the readiness of lecturers and students to adapt to new platforms and types of learning.

From the lecturer's perspective, adaptation is somehow related to the willingness to adjust to new platforms, revising teaching materials and methods so it can fit accordingly. In some cases, different generations might find it differently; some find it easy, while some others find it rather challenging. So, the age aspect somewhat needs to be considered.

While from the student's perspective, the gadget native generation, technology-related matters are supposedly not challenging. They have a preference for accessing online stuff, even for learning through reading books, etc (Nuraeni & Nur, 2019). However, what needs to be identified are the effectiveness of online learning, learning outcomes delivered well, and the result of learning illustrated through students' grades.

Those findings will greatly contribute to the direct department's policy in managing online learning. In addition, the findings from the data analysis can be used as a reference for the learning process that will be carried out, namely the Merdeka Belajar Kampus

Merdeka (MBKM).

Data acquisition is obtained by filling out a questionnaire via an online form. The questions are related to the learning process for all courses taught in one semester. Learnings in one semester include 50% of practical learning, which is one of the characteristics of the vocational program.

The observations and data analysis results then provide a real picture of the actual conditions, including the effectiveness of learning, the challenges faced, and improvements that need to be made in the distance learning process in vocational higher education during the Covid-19 pandemic.

There are 263 students who participate in the research from the Energy Conversion Engineering, Power Generation Technology, and Energy Conservation Engineering Study Programs. Those three are under the management of the Department of Energy Conversion Engineering.

The data obtained are categorized into two, namely, the lecturer's perception data and the student's perception data. These two data sets are intended to provide a broader and more comprehensive picture of the two components involved in online learning. Those are teachers in the process of preparing and implementing online learning, as well as students, from the aspects of the learning process that has been undertaken and the results of the process. Students' opinions will be closely related to the perception given by the lecturer.

RESULTS AND DISCUSSIONS

In this section, several crucial points that lecturers experience during the online learning process are elaborated. In addition, students' perceptions are also presented to provide a broader picture related to the online learning process in the Department of Energy Conversion Engineering. The presentation of these two data are intended to provide validation from two groups who are directly involved in this online learning process. From these data, the perspective of technical vocational education lecturers in managing classes during the pandemic may be known.

The department consists of lecturers from several generations born in the nineties until those from the sixties. For this age range, the responses can be so much different, for instance, in terms of health, stress, and anxiety (Nwachukwu et al., 2020), (Turna et al., 2021), (Ştefănuţ et al., 2021), (Ceccato et al., 2021), and (Schmidt et al., 2021). So this factor will be one aspect that can be important.

The total number of lecturers involved in theresearch is 47 lecturers who teach at the Department of Energy Conversion Engineering. Those are lecturers who teach Department and/or study program-related courses, as well as those who teach general courses. According to the questionnaire, the lecturers having experience of more than ten years are the majority (74%), and the rest is younger lecturers whose experience is less than ten years (Figure 1). From these data, it can be categorized that the majority of lecturers are senior lecturers. The thing that needs to be concerned here is whether the presence of more experienced lecturers has implications for the adjustment process to the new teaching process. This process will be observed in the next steps.

Figure 1 Teaching Experience

A large number of groups of senior lecturers involved in this online learning process can be used as a foothold in the evaluation process that will need to be carried out by the Department of Energy Conversion Engineering as an improvement material in this online learning process. Does lecturer seniority affect the online learning process? If so, what solutions need to be taken by the Department as a corrective step? This is because the online learning process involves many new activities that require a learning process for lecturers. Not all individuals can follow every new process, and there is even the possibility to avoid what should be done according to the mutually agreed procedure in this online learning process.

Many online learning platforms have emerged during this pandemic era to support the online learning process. Some are simple, user-friendly, and easy to learn, but some are more complex, provide more comprehensive features, and might take more time to master.

Regarding this aspect, users might choose either platform that suits them the most (Daniela & Rūdolfa, 2019; Kim, 2021). In this stage, it is necessary to know whether there are variations in the platforms used by lecturers for their online teaching process (shown in Figure 2).

During the pandemic, the online teaching process mostly used general learning management systems (LMS) and media. Those are mostly not provided by the institution. Even though the researchers' institution has been building the learning management system called e-learning Polban since 2014, only a few lecturers have the opportunity to access and the ability to operate and manage classes on this e-learning platform. Since then, e-learning course creators for lecturers have been delivered gradually. However, since this platform was only used as a complement for learning media and the main

learning process held in real classes and laboratories, the lecturers were not fully utilized. Therefore, most lecturers were not familiar with this platform and hence, not quite capable of managing it well.

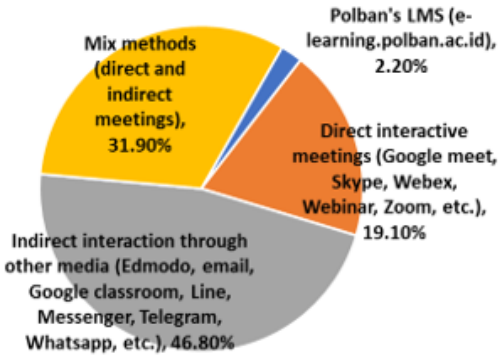

Figure 2 Platforms Used
during the Online Teaching Process

Realizing this condition, it is recommended for the institution to hold some more batch courses, so all lecturers can have the same ability to manage their courses using this e-learning platform, or at least they have sufficient knowledge and capability to do so. This e-learning platform is a good system to operate and manage since it can store and accommodate all the teaching materials, meeting menus, assignment submission menus, records, and all teaching databases, including videos during synchronous learning by lecturers. The resulting database can be used at any time by lecturers and institutions. More importantly, the database is a legacy that can be passed on to the next generation, both for lecturers and students. This is a very valuable legacy for future generations.

Departments also have an important role in encouraging their lecturers to use the e-learning platform provided by the institution. Departments can also monitor so that lecturers in their departments are willing and able to use the official platform provided by the institution. The encouragement given by the department to its teaching lecturers can be in the form of providing opportunities for lecturers to take part in training on the use of e-learning. Other support can be in the form of facilitating the in-house training within the department itself without waiting for instructions from the institution. In addition, assistance in the form of facilities needed during online lectures can also be considered provided by the department because not all lecturers have the same facilities, which might hinder the learning process to understanding the new technology needed. This can result in the way of the online learning process proceeded by the lecturer.

Just like in offline learning, when it comes to online learning, lecturers also have to prepare their teaching materials. Those two methods require the same student academic outcomes (Smith, Smith, & Boone, 2000). In addition to sufficient facilities required by each lecturer to deliver material in online learning, several stages of the preparation process need to be carried out. This preparatory stage is very crucial in determining whether the online learning process can run as planned or not. This preparatory stage is especially necessary if the material given is the provision of material that should be done through practice in the laboratory. Because in vocational higher education, especially for engineering majors, activities in this laboratory cannot be left behind and are the characteristic of vocational higher education.

Before learning, every lecturer must prepare their teaching plan and materials. The same goes for online learning. Special preparation is needed before the online learning process, especially to meet the platform requirement. Since both the platform and the teaching environment are new for some people, especially for senior lecturers (teaching experience > 10 years), they needed some time to adapt to the LMS.

There are several efforts made by lecturers to prepare themselves and their teaching materials before implementing it into the LMS. Some of those are attending LMS training and reading LMS tutorials, reading tutorials on the internet for different platforms utilization, asking friends, and self-learning many platforms from various sources. As presented in Figure 3, most of them use the internet to search tutorial sources.

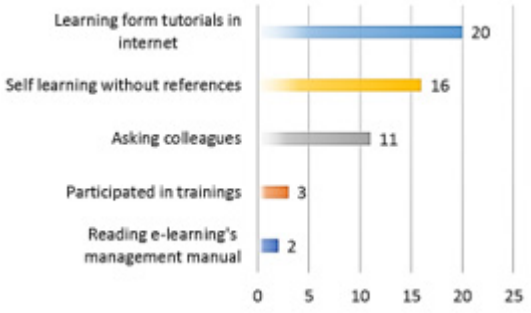

Figure 3 Lecturer's Preparation in Mastering
New Online Tools/Platforms

Furthermore, the other aspect that needs to be studied during this online learning process is preparation related to the teaching material to be delivered. It is also related to the variations of the teaching techniques used. In Figure 4, it can be seen that more than half of the lecturers modify their old teaching materials to adapt and adjust to the learning platform used.

Preparing teaching materials, especially to meet used platform requirement, also have some more constraints. In response to the difficulty of preparing materials that will be delivered during online learning, the lecturers give their answers, as illustrated in Figure 5. Most (63,8%) consider that preparing online learning materials is harder than the usual preparation for offline learning.

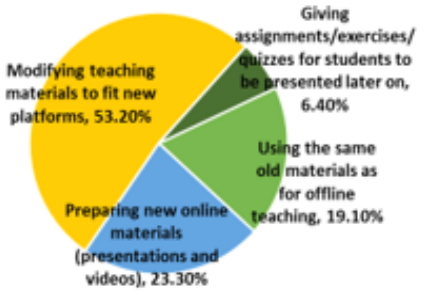

Figure 4 Preparation of Online Teaching Materials

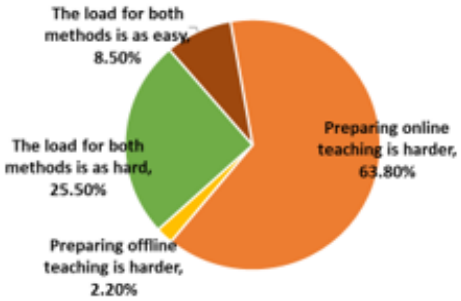

Figure 5 Online Learning Preparation

This data supported the previous statement that adaptation requires a huge effort, so it becomes a fairly formidable challenge. However, what is very interesting is that some claim that the preparations are just as strenuous. However, what is very interesting is that there are also those who claim that the preparations are just as hard. This may be related to the provision of material that should be carried out through activities in the laboratory. Activities in the laboratory are activities that require a relatively longer time compared to giving materials in class. Lecturers become the center of this practical activity because, in addition to the material that must be mastered, the practice also requires the lecturer's special capabilities in terms of utilizing tools or operating software, which is usually very specific.

Despite any methods used during this pandemic, the goals remain the same that the students learning outcomes is one of the most important matter. Although it cannot expect perfect or ideal results, at least it can attain the minimum standard of learning outcomes that have been determined by the study program. Some articles also have discussed the impact of Covid-19 pandemic on higher education learning outcomes (Rashid & Yadav, 2020) and how the students responded to this (Wargadinata et al., 2020).

The success rate of the learning process is measured through grades obtained by students at the end of the semester they experienced the online learning process. The result has shown in Figure 6 that 36,2% of the respondents stated that the grade obtained through offline learning s better than online. This could be due to delayed or interrupted internet signal; two-way communication sometimes does not occur smoothly. This is comprehensible, since the students come from different parts of the country, that up until now the quality of internet connection does not look equally good.

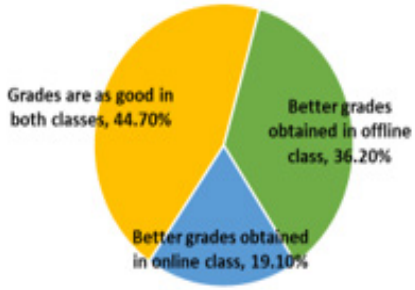

Figure 6 Comparison for Grades Achieved from the Evaluation Results

Supporting earlier data regarding some students who could not achieve good grades, students reckon offline learning is much more enjoyable. Students who cannot enjoy the learning process naturally cannot absorb learning materials given by the lecturers. Hence, it affects their grades and achievements.

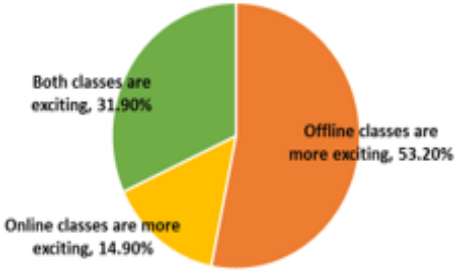

Figure 7 The Effectiveness of the Online Learning Process

Regarding the previous condition, most respondents have stated that the face-to-face learning process is better than online, as illustrated in Figure 7.

Unlike courses that are given theoretically in class, vocational courses that need to be acquired by practice face some constraints. During online learning, students could not directly in hand doing practice in laboratories. This condition is also realized by students, and if this condition continues, they strongly disagree (66% of the respondents). The comparison of online and offline teaching can be seen in Figure 8.

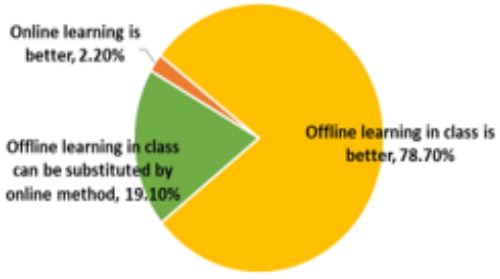

Figure 8 Comparison of Online and Offline Teaching

However, if it is considered that these conditions can no longer hold this way, the grades obtained during this online learning are vastly different between students who gain better grades during online learning and students who gain better grades during offline learning. Furthermore, better-graded students during offline learning are almost twice as the opposite. However, students who can manage their learning spirit still have good grades, regardless of any kind of learning they have been through, a less enjoyable and less effective learning process. This can be concluded that almost half of the students (44,7%) have fully grown and have strong responsibility for their own life. Details of this data are shown in Figure 6.

Having discussed the respondents' attitudes towards the pandemic situation, it is noteworthy to explore why some said that online lectures should be reconsidered, yet the grades obtained during online and offline lectures show the same results. This can indicate that there are possibilities that can be developed related to improvements, both resources and facilities, for supporting the online learning process. Moreover, with the development of the Independent Campus Program (Program Kampus Merdeka) that will most likely use one of the online technologies, the learning process in this pandemic period can be used as an initial parameter in welcoming Independent Campus activities and Independent Learning (Merdeka Belajar Kampus Merdeka).

CONCLUSIONS

From the data obtained, the online learning management system has not been fully utilized for the learning process in vocational higher education institutions. This is due to most lectures that must be carried out through practical learning. Having observed the data, some interesting factors needs to be studied further, namely that some students get better grades in the evaluation process (19,1%), while some students obtain similar result between online and offline lectures. This needs to be investigated further related to the process that has been performed, whether some opportunities need to be developed, and performance needs to be improved to support the online learning process. Another fact that becomes a challenge for lecturers and students is learning practicum materials in the laboratory, which must be delivered online.

Improvements need to be made by the Department of Energy Conversion Engineering in dealing with this online learning process, especially for laboratory courses. Providing facilities for the online learning process can also be an alternative that can support the implementation of online learning, such as providing videos containing the real implementation of activities in the laboratory. A way to help students comprehend more about lecture materials before running simulations using certain software applications.

Evaluation for lecturers in the implementation of online learning is also needed to be done immediately. So the department will quickly detect obstacles experienced during the process. A periodic evaluation process can also be performed so that it will be easier to identify some aspects that cannot be accomplished yet and to discover solutions to improve them. This activity can be applied to achieve continuous improvements periodically.

The research has surveyed lecturers and students in one semester only. Further research can be done by overviewing the whole year of learning (two semesters) to portray a more comprehensive pattern in vocational-technical education.

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