Evaluation of Online Learning Systems on Vocational Education in the COVID-19 Pandemic

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ABSTRACT

Some online learning methods are experiencing very fast dynamics these days. The dynamics that are developing are a form of adjustment to the needs of lecturers and students when the Covid-19 pandemic is severe. Airlangga University's online learning system e-Learning Application (AULA) has tried to be maximized to face the current dynamics of change. This study aims to evaluate online learning in theoretical and practical classes. The evaluation is seen from the perceptions of students from the Vocational Faculty. This evaluation is used to analyze three main aspects of the use of AULA, namely delivery, interactive, and assessment in the implementation of theoretical and practicum courses. This evaluation research uses a quantitative approach with the main data collection is questionnaire. In addition, in-depth interviews were also conducted to confirm the questionnaire. The results of the analysis of this study indicate that the perceptions of students tend to be dissatisfied with the use of AULA in the practical class. Almost all sections in the interactive and assessment aspects have a fairly low score. The findings in this study indicate that the implementation of online practicum classes is still not able to accommodate students' interests related to the full mastery of skills from practicum classes. Although, the combination of vocational education and training with E-learning during a pandemic is considered the only logical choice. This is because learning objectives can only be achieved using this method compared to having to face to face during the Covid-19 pandemic.

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1.   INTRODUCTION

Online learning is increasingly playing an essential role in adapting during the COVID-19 pandemic. It is to ensure that learning outcomes are achieved even in different conditions from before. The massification of the online learning process has been felt by academics in almost all countries in the world, both at school and university (Jia, Hew, Bai, & Huang, 2021; Mathew & Chung, 2021), as experienced by various countries, such as India, Malaysia, USA, and China (Carpenter & Dunn, 2021; Day et al., 2021; Dhawan, 2020; Sim, Sim, & Quah, 2021). Online learning may not be new for some schools and universities (Salehudin, Zulherman, Arifin, & Napitupulu, 2021), including implementing a flipped classroom where students study material online first and then face-to-face learning where students can carry out discussions, problem-solving, and practicum offline (Wei, 2016). While all learning was carried out online during this pandemic, it is not surprising that e-learning has increased because e-learning is the viable platform to be used (Azhari & Fajri, 2021; Dhawan, 2020; Sim et al., 2021). Previous research has stated that e-learning is effective, especially in urgent situations due to the COVID-19 pandemic, although offline learning has a higher level of effectiveness (Imleesh, Humaida, & Hasibuan, 2020), especially if the learning model used is appropriate (Hamid et al., 2021; Issa & Khataibeh, 2021).

This situation also occurs in the online learning process at Airlangga University, which has become a particular policy during a pandemic (Airlangga, 2020). The data for March 2020 (before the pandemic) shows that the percentage of active subjects using e-learning is only 33.5%, then it increased dramatically in April 2020 (during the pandemic) to 65.9%. This data is the average percentage taken from all faculties and departments at Airlangga University. In the Vocational Faculty, the increase is higher than that of Airlangga University. Data in March 2020 (before the pandemic) shows that the percentage of active subjects using online learning methods is only 34.8%, then it increased dramatically in April 2020 (during the pandemic) to 70.2%. It is shown that online learning activities have increased by 35.4%.

Developing an online learning system has been developed simultaneously by many universities and educational institutions. One of the e-learning types is Learning Management Systems (LMS) that have been developed by almost all universities in the world, even long before the pandemic. Several studies have reported that several universities such as Al Ain University of Science and Technology (AAU), King Saud University, and several universities in Kenya have used LMS (Albarrak, Aboalsamh, & Abouzahra, 2010; Hadullo, Oboko, & Omwenga, 2017; Rahrouh, Taleb, & Mohamed, 2018). Airlangga University as one of University in Indonesia also developed LMS named "Airlangga University e-Learning Application" (AULA) as shown in Figure 1. This LMS has been developed since 2008, which is an integration between cloud computing and the e-learning platform system. Cloud computing is computing that utilizes computer network services, where the scale of the computation can be changed dynamically, and the resources are provided in the form of services via the internet. In cloud computing, all resources (software, platform, infrastructure) are provided by service providers so that users are no longer burdened with providing all resources (Ginting, 2018). The integration of e-learning and cloud computing is one solution to provide a platform that encourages effective and sustainable learning for students (Taib, Ramly, & Ramli, 2016).

The AULA platform already has various facilities that support online learning, namely online classes, online discussions, chat rooms, uploading and downloading of materials, online quizzes, and others. Before the COVID-19 pandemic, AULA was only used as an alternative for lecturers who could not be physically present in the classroom in the learning process (Figure 2). Since March 2020 or in the middle of the even semester 2019/2020, all learning activities are carried out online. This condition is following government and campus policies so that all activities of lecturers, students, and employees are carried out from home or Work from Home (WFH) as a consequence of the outbreak of the COVID-19 pandemic. The online learning system in AULA must fulfill three main aspects, namely D-I-A,

Delivery (delivery of learning materials), Interactive (discussion activity), and Assessment (Learning evaluation process).
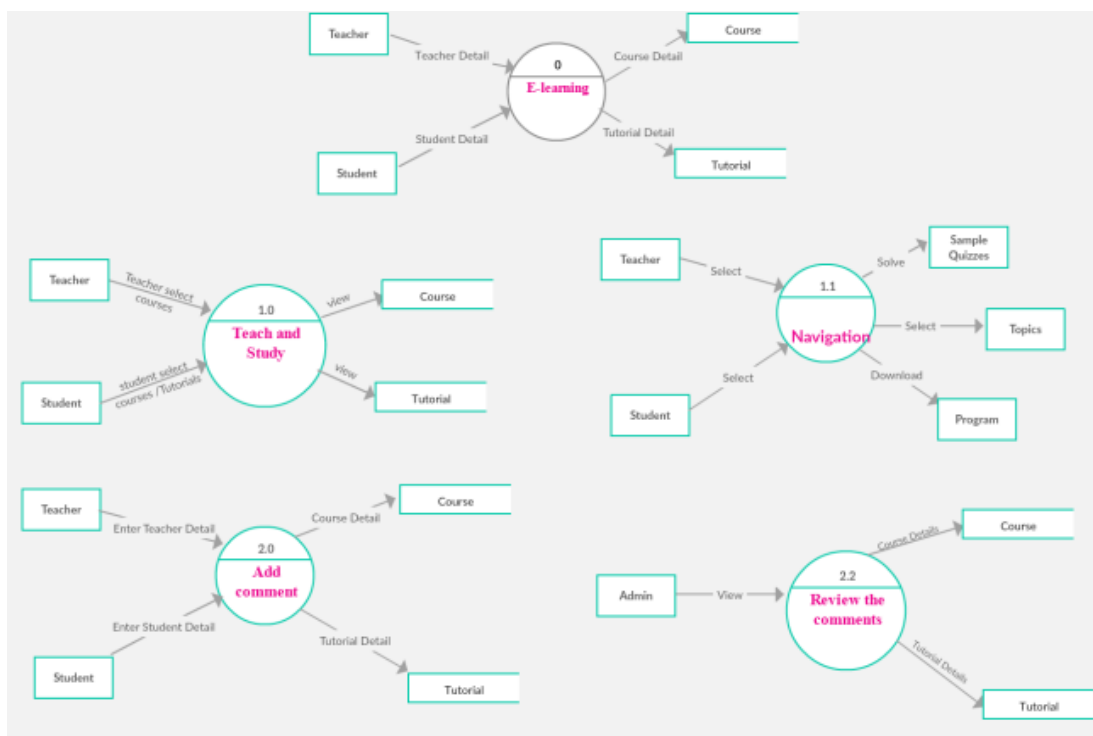

Figure 1. AULA E-Learning System

This aspect is used to measure the learning outcomes of students who have participated in online learning activities.
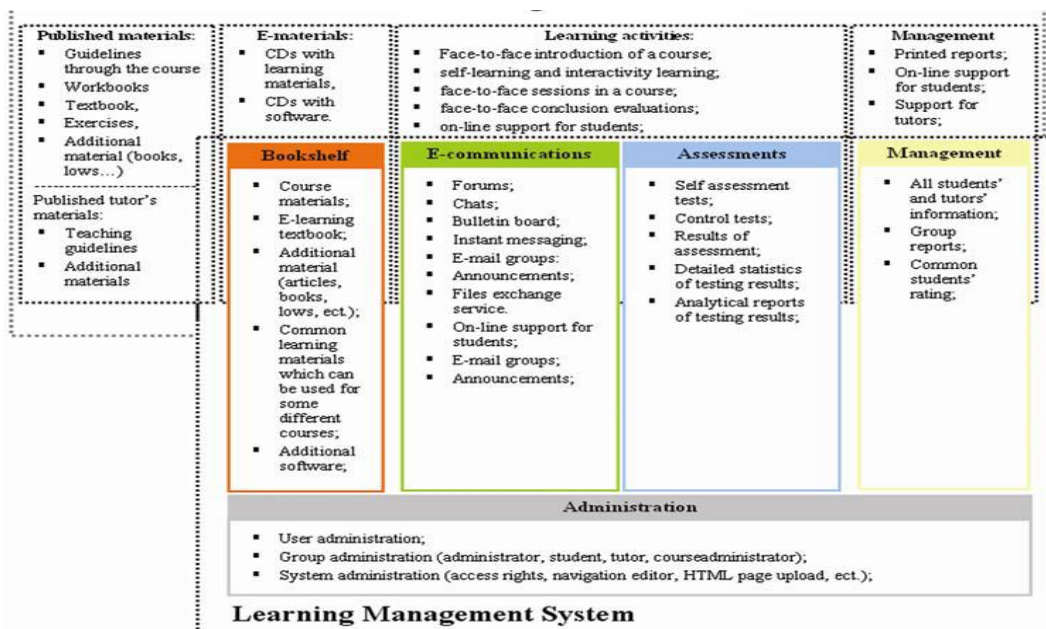

Figure 2. E-Learning Course Before Pandemic

Full-time online learning through various platforms such as AULA certainly significantly impacts students taking vocational education. Learning activities in vocational education are not the only theory in the classroom but also skills by practicing in the laboratory and the field (Han, 2018; Syauqi, Munadi,

& Triyono, 2020). Therefore, when learning has to be done from home, students become less maximal because they lose the primary learning resources they cannot find when studying. This problem gets worse if the student's financial condition is terrible, where students are unable to provide various materials used to carry out independent practicum at home (Shdaifat, Shdaifat, & Khateeb, 2020). Because of that, it is essential to evaluate the use of AULA by collecting students' perceptions of online learning that can be used as a basis for evaluating learning so that better online learning can be formulated for vocational education students (Syauqi et al., 2020). The formulation of online learning is expected to ensure that students can learn and master the material optimally (Aydin, Akkan, Arpaz, & Koparan, 2015).

This study is the first study to evaluate the use of AULA during the Covid-19 pandemic with the subject of students from the Vocational Faculty, Universitas Airlangga. Before the Covid-19 pandemic, an evaluation of the AULA was carried out, namely by Lestari (2015), who evaluated the acceptance and use of the AULA involving students from the Faculty of Nursing and research conducted by Rahmawati & Made (2019), who examined the actual usage of the AULA and the factors affecting the use of the AULA that can influence it. This study is different from the two studies because this research was conducted during the Covid-19 pandemic where the use of AULA is not only a supplement as in regular learning, but AULA acts as one of the leading learning platforms that can be used during distance learning. The platform, which was initially only a supplement, then turned into the central platform; of course, many things must be evaluated to maximize its use.

Therefore, this study was conducted to analyze and evaluate the perceptions of Vocational Faculty students about their satisfaction after participating in online learning in both theoretical and practical classes as a characteristic of vocational education (Arh, Pipan, Blazic, Debevc, & Peternel, 2009; Lindberg, 2003). This perception will be reviewed by involving the components of the online learning platform (AULA) and the learning characteristics that students have participated in there. In the next stage, this research also summarizes students' recommendations as research objects for strengthening the online learning system, especially in the implementation of practicum. Students' recommendations will be used as evaluation material for the improvement of online learning, both for learning in the theory and practical classes and the use of AULA as an LMS.

2. METHODS

2.1. Research Design

This study uses quantitative research approach with the research type is a program evaluation. The evaluated program is AULA. This research is intended to monitor program implementation, determine the effectiveness of ongoing programs, improve and refine programs, and provide recommendations for program improvement based on research results. This research must be carried out to improve the program because, through this research, valid and reliable recommendations will be obtained based on the aspirations given by students (Yusuf, 2017). This research was conducted at Airlangga University because this university is one of the universities in Indonesia that implemented distance learning during the Covid-19 pandemic by utilizing LMS as e-learning. The research was conducted online during July 2020.

2.2. Participants

Participants are Vocational Faculty students who have completed lectures in the even semester 2019/2020 which were taken using a purposive sampling technique. A total of 380 students filled out the questionnaire from the total Vocational Faculty students of around 3600 students who have carried out online learning activities in the even semester 2019-2020. As many as 7.7% of the participants were from the 2017 class, 44.3% of the participants were from the 2018 class, and the most were from the 2019 class at 48%. The representative aspect of the department has been fulfilled by the participants. 14% came

from the Department of Engineering, 42% came from the Department of Health, and 44% came from the Department of Business.

2.3. Data Collection

The research data were obtained using a questionnaire that was filled out online by students. Each question point is measured using a Likert scale, namely: Strongly Disagree / SD (1), Disagree / D (2), Agree / A (3), and Strongly Agree / SA (4). Furthermore, the researcher also conducted semi-structured interviews with randomly selected students to further explore their perceptions.
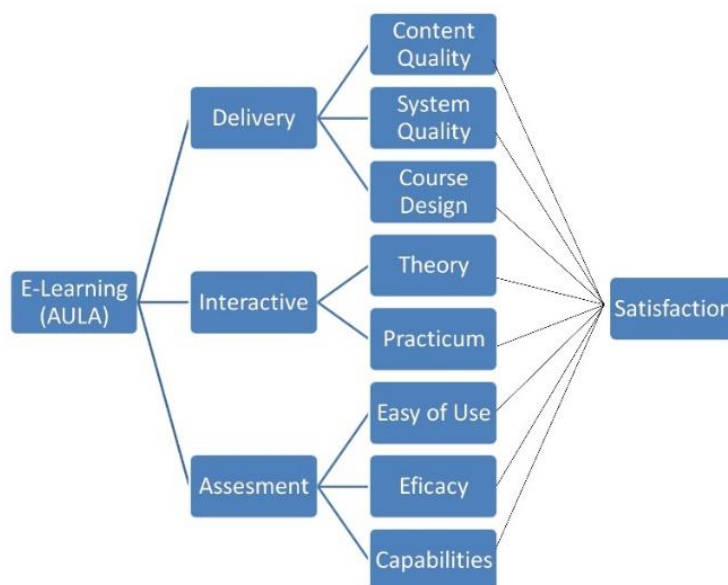

Figure 3. The relationship between online learning and student satisfaction

The questionnaire consists of 5 main parts, shown in Table 1.

Table 1. Participants' Activity During Data Collection

Part	Participants' Activity
One	Participants are required to fill in the origin of the department, year batch, age, and other demographic characteristics.
Two	Participants are asked to submit their opinions regarding the delivery aspect which consists of 3 sections, namely:
	Content Quality (This section aims to see how far the quality of content in the online teaching and learning process (PBM) is applied at the Vocational Faculty)
	System Quality (This section aims to see how far the quality of the system is in online PBM media)
	Course Design (This section aims to understand the online PBM implementation model)
Three	Participants are asked to express their opinion regarding the Interactive aspect which consists of 2 sections, namely:
	Theoretical (This section aims to see the level of student satisfaction when taking theory classes online)
	Practical (this section aims to see the level of student satisfaction when taking practicum classes online)
Four	Participants are asked to submit their opinions regarding the assessment aspect which consists of 4 sections, namely:
	Easy of Use (This section aims to understand the level of ease of facilities in conducting online exams)

| Efficacy (This section aims to understand the level of reliability of students in maximizing online PBM facilities to participate in learning evaluations) |
| Capabilities (This section aims to understand the ability of student equipment to support the online learning process) |
| Five | Participants are asked to convey their level of satisfaction in following the online learning process in both theoretical and practical classes. This is important to understand students' perceptions after participating in online learning. Frequency distributions, percentages, and cross-tabulations are then used to determine the most frequently experienced challenges and recommendations from participants on how to overcome AULA shortcomings and expectations for learning in the coming semester |

2.4. Data Analysis

The data obtained in this study are quantitative and qualitative. The quantitative data is in the form of a percentage of the questionnaire results, while the qualitative data is the result of in-depth interviews. The quantitative data were analyzed descriptively qualitative-quantitative. The results of the student evaluation in the form of qualitative statements on each aspect of the questionnaire were converted into quantitative data based on a predetermined scale, namely 1 for the option "Strongly Disagree (SA)," 2 for the option "Disagree (D)," 3 for the option "Agree (A)," and 4 for the choice of "Strongly Agree (SA)." After that, the students' choices for each item in each aspect will be added up to know the number of students who chose SA, D, A, and SA. This amount is presented in graphical form based on three aspects: Delivery, Interactions, and Assessment. The data obtained were then analyzed and interpreted. Data interpretation was strengthened by conducting literature studies on relevant previous studies. Qualitative data analysis is done by sorting and grouping the same data, then analyzing and drawing conclusions from the overall data obtained based on the answer mode. Most answers will be accommodated and used as additional information to strengthen the previously generated quantitative data.

3.   FINDINGS AND DISCUSSION

The questionnaire instrument has been filled in completely by vocational students on the aspects of delivery, interaction, and assessment which can be detailed as follows:

3.1. Delivery of Learning Materials (Delivery)

In the delivery aspect, the majority of participants expressed satisfaction with each component. Figure 4 shows the average level of participant satisfaction, reaching 52%. It is an indicator that the majority of students have received the material well from the lecturers. The material in the electronic form developed by lecturers will be significant and valuable for students (Shdaifat et al., 2020). Quality material delivered in a fun way will make students more motivated and understand the material better (Mathew & Chung, 2021; Syauqi et al., 2020; Yates, Starkey, Egerton, & Flueggen, 2020). The variety of material presented in online learning is one of the factors that determines the quality and results of online learning (Nguyen, 2015).

Included in the delivery aspect is that students have no problem using the AULA platform because most participants easily understand the platform's features. One thing that is still an obstacle in using the e-learning platform is the frequent occurrence of system errors (Belaya, 2018). The results of the interviews showed that the majority of students did not have problems regarding network conditions, the devices/gadgets used, and the availability of internet packages. Based on more interviews, the error system on the AULA e-learning platform occurs during active lecture hours starting at 10:00 - 15:00 WIB
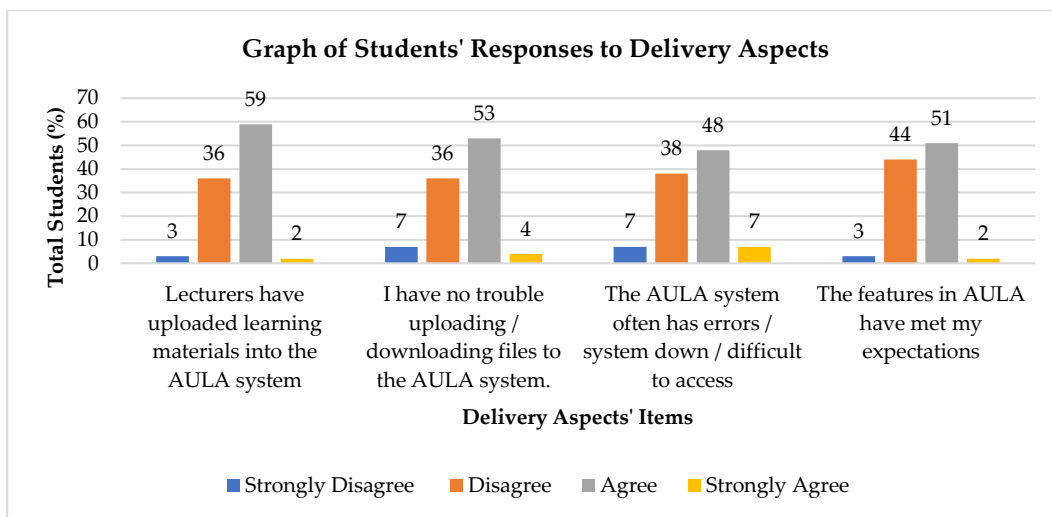
Graph of Students' Responses to Delivery Aspects

Figure 4. Results of the Delivery Aspect Questionnaire

3.2. *Discussion Activities (Interaction)*

The interactive aspect as shown in Figure 5 reflects the two-way discussion process between lecturers and students to achieve learning goals (Inah, 2015). However, the participants' responses showed different results between theoretical and practical understanding. There are 55% of students who have difficulty understanding practicum material in online learning, as happened in previous studies, where in online learning during the COVID-19 pandemic, the material became more challenging to master (Shdaifat et al., 2020). It is possible because students' interaction, participation, and attachment to online learning have decreased (Jia et al., 2021). In addition, this situation is also more common in practical classes because practical activities directly in the practical classes cannot be replaced by using various content that can only be observed by students virtually, so learning in the practical classes becomes less effective (Dhawan, 2020). Even so, lecturers have tried to optimize the online learning they can afford so that according to 51% of students, lecturers have facilitated discussions and questions and answers and respond to any questions that arise during the online learning process.
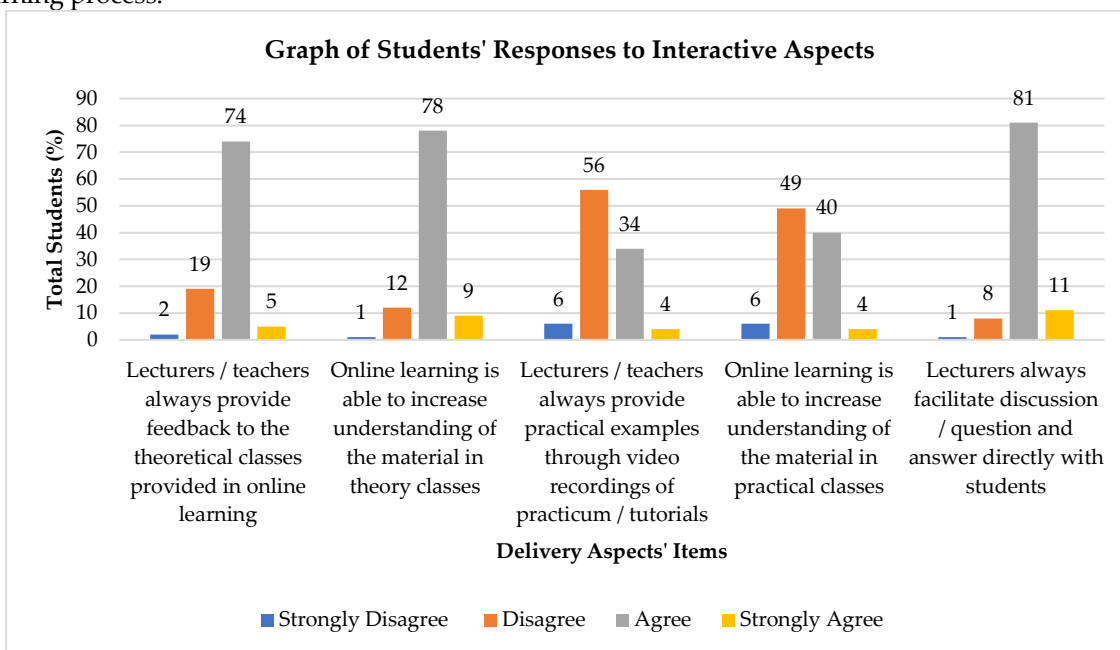
Graph of Students' Responses to Interactive Aspects

Figure 5. Results of the Interactive Aspect Questionnaire

3.3. *Learning Evaluation Process (Assessment)*

An assessment aspect as shown in Figure 6 is a form of evaluation of learning from a series of processes in the delivery and interactive aspects. As many as 62% of participants did not experience problems taking online exams. It can be seen from the semester assessment index score, where vocational students feel pretty satisfied with the scores obtained. Students also do not experience problems in taking online exams, where one of the reasons is that the lecturers provide enough time to do the test optimally. Time was one of the aspects that became an obstacle for students in previous research, where in the study, students stated that they needed more time, both in completing assignments and exams, especially for students who have network problems (Mathew & Chung, 2021).

Although, students are pretty overwhelmed in doing assignments from lecturers during online learning activities. It is indicated by 59% of participants who are less severe and less active in doing lecture assignments during online learning. Collecting assignments in online learning is more accessible, where students simply send via AULA, email, or other online platforms so that students do not need to spend a lot of money and time to print and collect these assignments as in offline learning (Mathew & Chung, 2021; Syauqi et al., 2020). However, various reasons such as being lazy to do assignments, the large number of assignments given by other courses, and students who have difficulty having discussions with their friends to complete tasks are the reasons where students become less severe and less active in completing tasks (Sim et al., 2021).
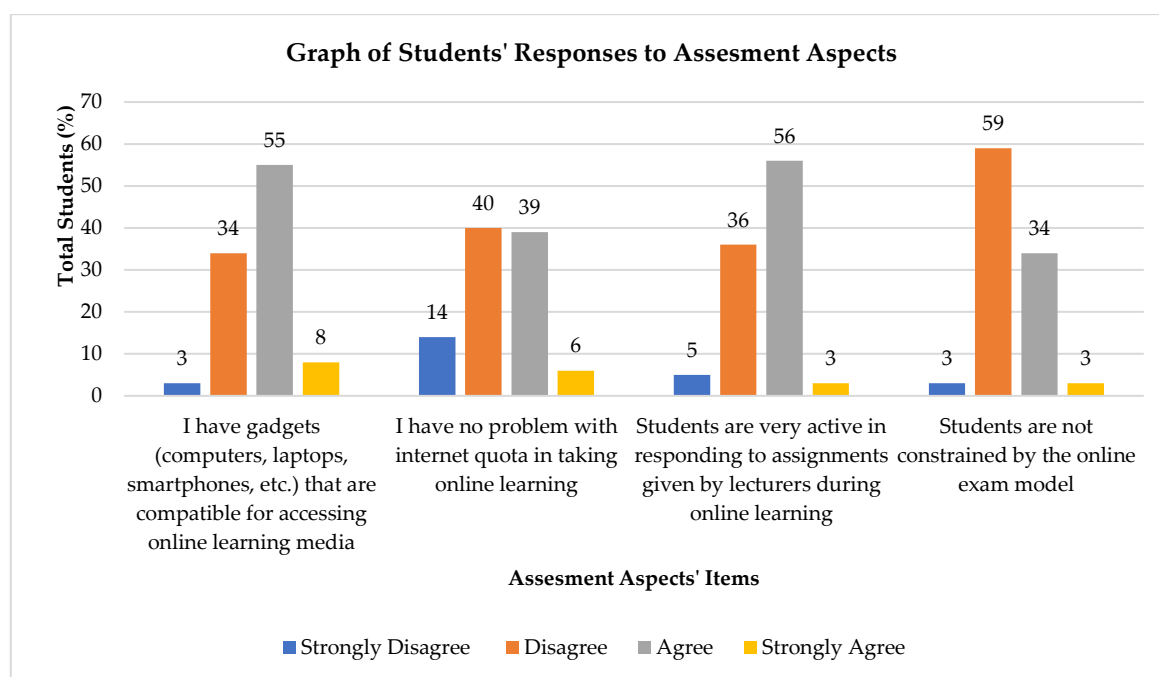

Figure 6. Results of the Assessment Aspect Questionnaire

3.4. *Students' Satisfaction with Online Learning*

Student satisfaction with online learning is grouped into two aspects: satisfaction in learning in theoretical and practical classes, as shown in Figures 7 and 8 below.

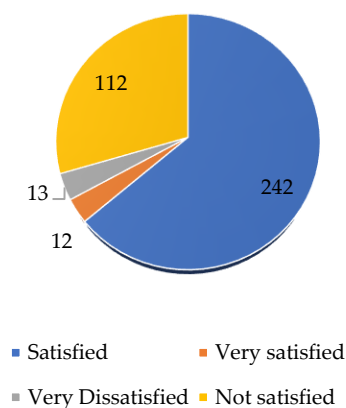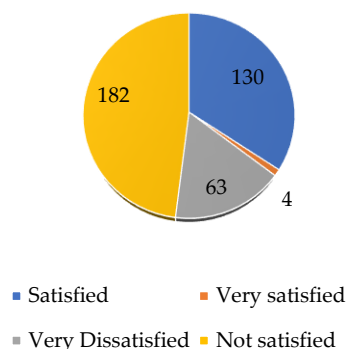**Figure 7.** Student's Satisfaction with Learning in Theoretical class

Figure 8. Student's Satisfaction with Learning in Practical class

Based on the Figure 7 and 8 above, it can be seen that students tend to be more satisfied with learning in the theoretical classes than in the practical classes. Even so, in both theory and practice classes, some students also expressed dissatisfaction. It is indicated by the questionnaire results, which showed that as many as 242 or 64% of students were satisfied in the theoretical classes, as many as 112 or 30% of students were dissatisfied. Conversely, far more students in the practical classes were dissatisfied than students who were satisfied, where 130 or 34% were satisfied, and 182 or 48% were dissatisfied. It is important to know the level of students' satisfaction and the underlying reasons for using e-learning, because it will affect students' ability to learn (Panyajamorn, Suanmali, Kohda, Chongphaisal, & Supnithi, 2018).

In the theoretical classes, student dissatisfaction is caused by several things. Among them is because the lecturer only provides material, for example, in the form of power points, but the lecturer does not explain the material further and even immediately asks students to do assignments. Lecturers are also very minimal in providing examples that occur in everyday life so that learning becomes less contextual. Lecturers sometimes do not even provide any material or explanation, and then students are

asked to find their explanations on the internet, while on the internet there are also no learning resources that can provide understanding to students, so some students consider their learning to be in vain. In addition, students also experience disappointment because the lecturer provides the material right at the time of lecture so that students cannot learn it first, and in the end, students find it challenging to take part in learning.

More than the theoretical classes, students also feel dissatisfied during the practical classes. Student dissatisfaction, in general, is not due to the lack of maximum effort by the lecturer, but due to the characteristics of the material which requires students to do practical work offline, so that the existence of online learning is not sufficient to replace the role of offline practicum where students can come into contact with objects, hone skills directly, even getting feedback from lecturers on practicum activities that have been carried out so that students can learn based on their mistakes. This activity cannot be replaced by simply viewing the demonstration video uploaded by the lecturer.

The AULA portal, the official LMS for e-learning at Airlangga University, remains an essential component for e-learning for Vocational Faculty students. AULA is considered an integration between cloud computing and an e-learning platform that allows material distribution, interaction, and assessment. However, simultaneously, web services provided via the internet are also an essential component in student e-learning. For example, through video convention applications such as Google Meet and Zoom, students feel like they are in an offline class to meet face-to-face and ask questions directly, even though virtually. As for other platforms such as WhatsApp, Telegram, and Facebook Groups, students do not meet face to face virtually, but the advantage is that at any time, they can open and review material through writing, images, and videos that are sent and discussed in the group (Boholano & Cajes, 2021; Mathew & Chung, 2021).

The idea to facilitate online practicum lectures was directed by developing a Virtual Laboratory (V-Lab) on the AULA platform. A virtual laboratory is a system that can be used to support conventional practical systems. V-Lab can provide opportunities for students to carry out practicum virtually. The development of V-Lab has become a concern for many parties to be developed in conjunction with the vocational education system (Bacca, Baldiris, Fabregat, Kinshuk, & Graf, 2015; Cheung & Liu, 2016; Herlandy, Amien, Pahmi, & Satria, 2019). In the in-depth interview process, vocational students as participants did not show a negative response in the mastery of technology, but they explained some problems about its use and implementation in practical classes to make it more attractive. The response of vocational students to the development of V-Lab was the highest affirmed by students from the engineering department.

Almost all participants stated that they wanted the practical lecture to be held face to face even though they implemented a strict protocol for preventing COVID-19. These results are in line with research conducted by Arribathi et al. (2021) and (Mulyanti, Purnama, & Pawinanto, 2020), which states that the students do not like online learning and prefer offline learning by implementing strict health protocols. The online learning system is considered to cause competency mastery problems that can only be achieved through the offline practicum. For the majority of participants, this condition is considered a weak point of online learning. Research that has been conducted by Albarrak et al. (2010) confirms this so that LMS used for vocational education that requires practicum must be specially designed, where the level of interactivity must be higher than that of LMS in other study programs. If it cannot meet these criteria, it is, like the students said, that the LMS can only reach the interests of lectures in theoretical classes. Lectures in practical classes are better organized in absolute terms, or there are system improvements on the AULA platform.

Based on the results of the questionnaire, students provided several suggestions for improving the AULA. The input was for the AULA to be made general improvements; enlarge the server so that it does not experience downtime when accessed by many students simultaneously during the final exam; provide greater capacity in uploading videos so that all learning videos can be accessed through AULA, without using other platforms such as Google Drive, considering that through these platforms sometimes the link is not active, takes a long time to upload, and requires a large internet quota; provide

access to students to be able to download videos uploaded by lecturers so that students can study them offline, and provide notifications or reminders to students if there are assignments that must be submitted.

Apart from AULA, students also provide input regarding learning in both theoretical and practical classes. Among them is using blended-learning whose effectiveness has been proven by Stapa et al., (2015), where learning in theoretical classes is carried out online and learning in practical classes is carried out offline by applying strict health protocols, even though it is only done for a few meetings and by applying the shift system. Others input are the lecturer provides material which is equipped with sample questions, practice questions, voice notes, and video tutorials if needed; the lecturer provides clear explanations, instructions, and instructions for practicum activity; the lecturer conducts and makes his video tutorials that will be given to students and ensure that the activities in the practicum give the correct results because some similar videos on the internet are not all successful; and lecturers can maximize the use of simple tools at home so that students get reasonable interpretations in carrying out practicum if the implementation of the offline practicum is not yet possible to do.

The recommendations from these students will be used as material for Airlangga University, especially the Vocational Faculty, in evaluating the learning process and the use of AULA. This evaluation can also be used as a guideline for other universities in Indonesia and even the world so that the implementation of online learning and the use of LMS in the online learning process can be improved so that online learning can be better.

4.   CONCLUSION

The findings in this study indicate that the implementation of online practicum classes is still not able to accommodate students' interests related to the full mastery of skills from practicum classes. In the practical class, the role of a lecturer is still limited to being a teacher, not an instructor. Apart from this dichotomy, the combination of vocational education and training with E-learning during a pandemic is considered the only logical choice. This is because learning objectives can only be achieved using this method compared to having to face to face during the Covid-19 pandemic.

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