



Education on Pandemic Condition: The Utilization of SPADA UNRAM and Natural Laboratory in Science Learning

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Education is one of the most affected areas by the Covid-19 pandemic, especially learning. This learning is new in the PGSD Study Program at FKIP Mataram University, so monitoring and evaluation are needed. This research aims to describe the process and students' learning outcomes through the implementation of SPADA Unram and the Natural Laboratory. The research sample comprised 63 students who took Basic Natural Sciences or Ilmu Alamiah Dasar (IAD) courses—data collected for eight weeks in October–December. Data about activity and student learning outcomes include (1) the activeness in discussion forums, (2) the discipline in collecting assignments, (3) the skills in completing assignments, and (4) the ability to complete quizzes. Descriptive statistics analyzed data to determine the mean and proportion. Only a tiny proportion (<50%) of students participated in discussion forums. From the disciplinary aspect, the balance of disciplined students is the largest, but many are still not disciplined in uploading assignments at SPADA Unram. Students' skills in completing tasks are excellent, but their ability to complete quizzes is in the fair category. Indicates that improvements are needed to maintain and improve the quality of science learning processes and outcomes during the pandemic.

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INTRODUCTION

Blended learning is a popular learning method in Higher Education [1]. This learning combines face-to-face, offline, and online learning [2]. This learning has proven to be effective in improving learning outcomes and science process skills [3], scientific literacy [4], communication skills [5], and the skills needed in the 21st century. One of the advantages that become the key to its effectiveness is the variety of learning experiences experienced by students. Conventional learning, generally conducted only face-to-face in class, tends to be boring. Offline learning from blended learning utilizes the surrounding environment as a learning resource [6], thus making it more meaningful and has a positive impact because the learning resources that students can use are more varied. Another advantage is using tools, materials, media, and online learning resources that characterize learning in the digital era and super intelligent societies.

Implemented Blended learning can hardly be during the COVID-19 pandemic, which prohibits/does not allow face-to-face learning. Education must be done online or through distance learning to break the transmission chain and prevent new clusters. It negatively impacts students because they are not used to learning experiences this way. The learning carried out face-to-face, regardless of the learning model implemented, is suddenly "forced" to do online learning. Although face-to-face can be virtually using various platforms such as Zoom and Google Meet, students feel different sensations as learners. Face-to-face learning in classrooms, which have been "sitting pretty,"

and practicum in the laboratory to absorb various competencies, is forced to accept a learning atmosphere often disrupted due to network problems. [7], or inability to follow optimally due to low ICT literacy [8].

The rapid development of ICT makes it possible to implement various, more efficient ways of learning. The teaching and learning process can be done face to face, using specific applications [9], [10]. One solution is education by cost and the distance to a location quite far away. ICT allows teachers and students to meet face-to-face while using ICT tools to continue teaching and learning [11]. Technology plays a role as a medium in making interactions between educators and students in the implementation of online learning. In addition, technology also plays a role in facilitating educators to deliver learning material so that learning continues even though face to face. In the implementation of online learning, some obstacles become challenges for educational actors related to academic culture, including values, attitudes, knowledge, skills, and readiness of technology-related facilities and infrastructure [12].

These problems also occur in the Primary School Teacher Education Study Program, FKIP, Mataram University. [13] found student responses tend to be negative. Most of them do not prepare for online learning [14]. Based on the statements of several students interviewed directly, they felt like they were not studying. They also said they only absorbed a little bit of knowledge implemented. They have mastered only a tiny part of the learning objectives. In the Ilmu Alamiah dasar Course (IAD), can be observed low mastery of learning objectives from the quiz results. From the two quizzes that carried out, the proportion of students who completed is always less than 50%, namely 45.71% in the first quiz and 34.29% in the second quiz. In more detail, as many as 11.43% had good, and enough Mastery Degrees (MD), and 22.85 were in the less category in the first quiz. 2.86% had MD in the good class, 8.57% in the enough category, and 22.86% in the less category. These problems indicate that students need time to adapt and acclimatize.

Adaptation and acclimatization require an intermediate process, a link between the old and new conditions. In this case, the old normal state is learning face-to-face, and the new normal condition is learning online. The intermediate process that we implement combines online and non-online learning: Online learning through the system owned by the University of Mataram (SPADA Unram) and offline education by utilizing the environment around the student's residence as a natural laboratory. Blended learning is relatively new, so monitoring and evaluating the process. Results of this learning are necessary—the learning process viewed attendance, discussion participation, and timeliness in submitting assignments at SPADA UNRAM—learning outcomes considered from student skills in arranging appointments and assessments through quizzes. This study's results can be used as a reference in further learning to provide better learning facilities.

METHOD

This research is a descriptive exploratory research type conducted on students of the PGSD study program who take IAD courses. The sample consisted of 63 students from two classes determined by purposive sampling. IAD learning in these two classes implements online learning through SPADA Unram and offline education using the environment around the residence as a Natural Laboratory. Learning facilities that students at SPADA Unram can access are media and teaching materials, group discussion forum menus and class discussions, virtual conferences through Big Blue Button (BBB), assignment upload menus, and services for implementing online quizzes. During learning, virtual conferences as a substitute for face-to-face learning using Google Meet as a substitute for BBB can't be used properly due to technical problems. Data collection for eight weeks in October - December 2020. Below are presented the stages of the research.

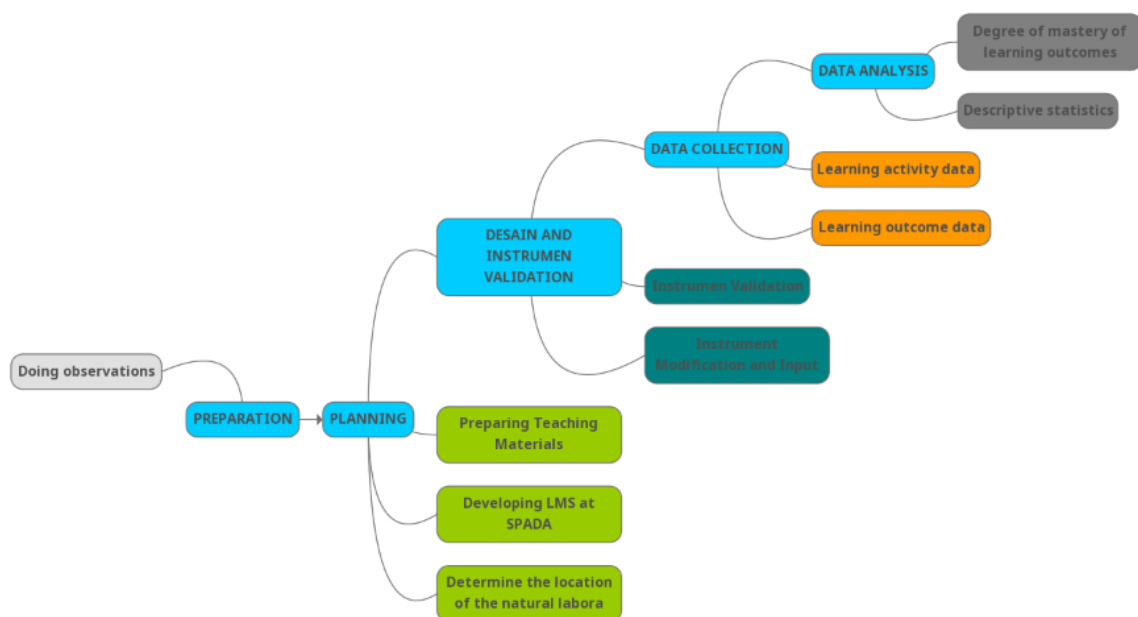


Figure 1. Research Stages

The research data includes activeness in discussions, discipline in submitting assignments through the submit menu in SPADA Unram, skills in completing tasks, and the ability to take quizzes. They determined the forum's effectiveness by student involvement in asking questions, answering questions, responding to answers, adding answers, providing rebuttals, or making suggestions. They record all of these activities in SPADA Unram. Students' accuracy in uploading assignments on the menu provided determines discipline in submitting assignments. Students are said to be disciplined if they upload on time and are called undisciplined if they do not upload or upload tasks after the specified time limit. The ability to complete assignments is measured based on the assessment rubric, and the ability to complete quizzes is measured using essay test instruments.

Data were analyzed using descriptive statistics to determine the proportion of students active in discussion forums and disciplined and undisciplined in submitting assignments to assess student understanding, a descriptive assessment of the completion of the used quiz tasks given. The mastery degree of the student is converted into a value in the form of qualitative data with ranges A - E and interpreted into five categories ranging from very poor to excellent based on the Academic Guidelines of the University of Mataram [15]. The mastery degree data of students were analyzed using descriptive statistics to determine the mean and proportion of students in each category of value interpretation results.

RESULTS AND DISCUSSION

Activeness in discussion forums

On average, the proportion of student activeness in virtual discussion forums at SPADA Unram is 32.62%, where the ratio ranges from 8.57% to 64.29% (Figure 1). During the eight virtual meetings based on the lecture schedule, there were six discussions from the second to the seventh meeting. At the second meeting (first discussion), the proportion of active students was 28.57%. At the third meeting (second discussion), it decreased to 22.86%. Likewise, the balance has continuously reduced to 8.57% in the third and fourth discussions. However, at the sixth meeting, there was an extreme increase to 60% and peaked at the seventh meeting with a proportion of 64.29%.

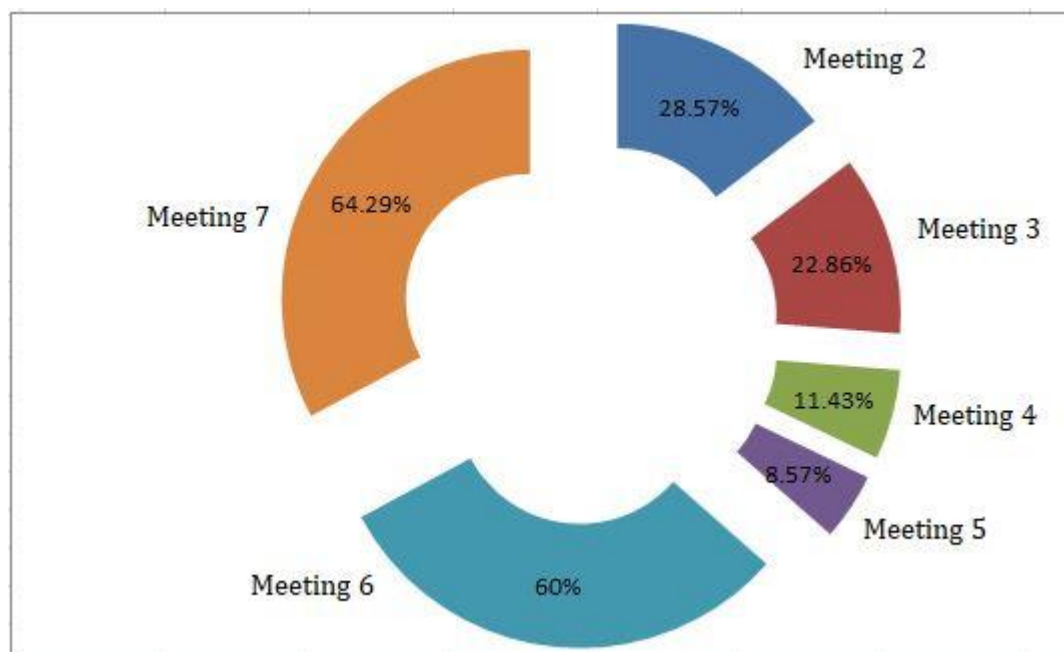


Figure 2. Student activeness in discussion forums at each meeting

Discipline in collecting assignments

The proportion of disciplined students (Disc) in collecting the assignment fluctuates and is always the highest in all terms, before or after revision, compared with students who are not disciplined (Figure 3). Classified undisciplined students into two groups: (1) submitting an assignment by uploading it in SPADA Unram after the deadline (AD), and did not submit their work (NS). The proportion of undisciplined students, because they are late in submitting assignments, is always more significant than those who are undisciplined because they do not abandon homework. The proportion of students from the last group was always the smallest; even in assignment one, there was none. The highest proportion occurred in the collection of revision of task 1 (task 1-r), which was 4.76%. In other assignments, the proportion ranged from 1.59% - 3.17%.

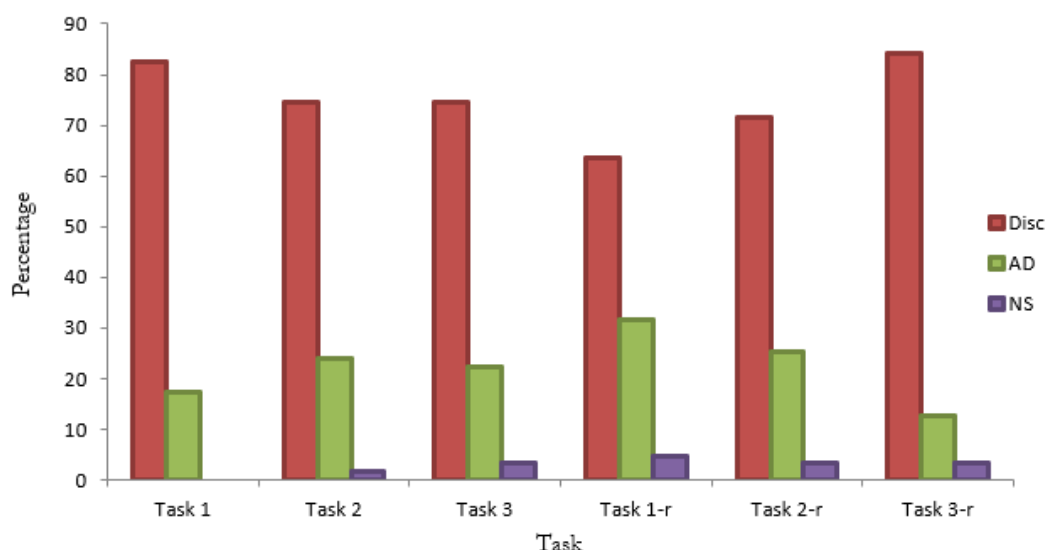


Figure 3. The proportion of students' discipline in collecting assignments

Task completing skills

On average (mean), students' task skills are excellent for all jobs. Mastery degrees Evidenced by the that ranged from 85.87 in task 3 to 92.17 in task 2. The minimum mastery degree on all charges is 0 except for task 1 (Figure 4). The highest mastery degree is 100 with excellent category. Based on the proportion, students who complete their assignments in the superb class are predominant, with a

percentage above 80% on all terms (Figure 5). The ratio in the excellent category on task 2 is more than 90%. A small proportion of students have good category skills, and there are still students with skills in the inferior category, with a ratio ranging from 1.59% to 4.76%.

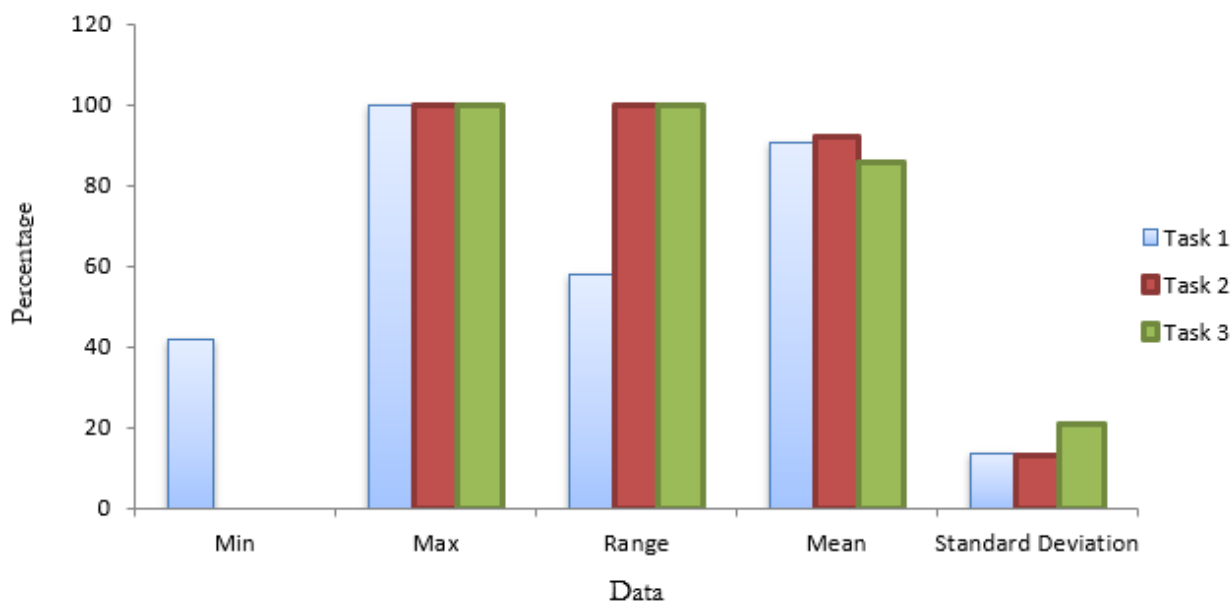


Figure 4. Student skills in completing assignments

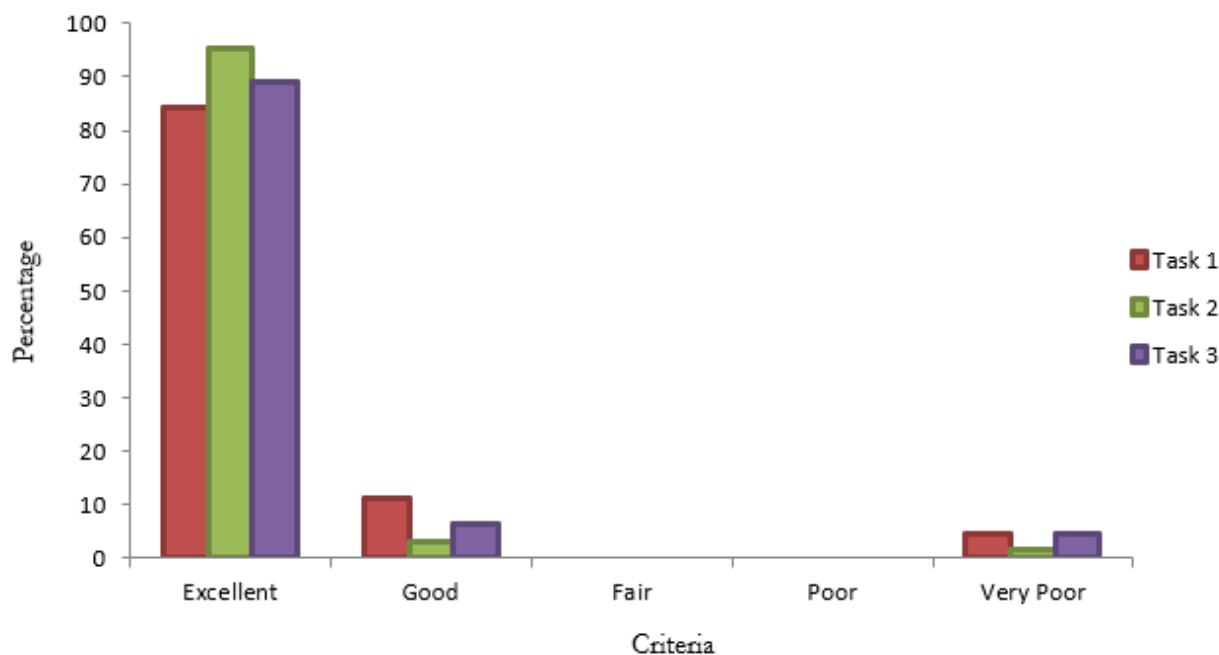


Figure 5. Proportion of student skills in completing assignments

The ability to complete quizzes

On average, students' ability to complete the quiz was in the sufficient category, with a degree of mastery of 57.33. The lowest mastery degree is 0.00 with an inferior type, while the highest is 100.00 with an excellent sort. Based on the proportion, the dominant mastery degree is cheap, with a percentage of 30.16%. However, the ratio of mastery degrees with good and excellent categories ranks second and third with a balance of 28.57% and 19.05%, respectively (Figure 6). The degree of mastery with a fair type was more significant than that with a poor category (12.70% > 9.52%).

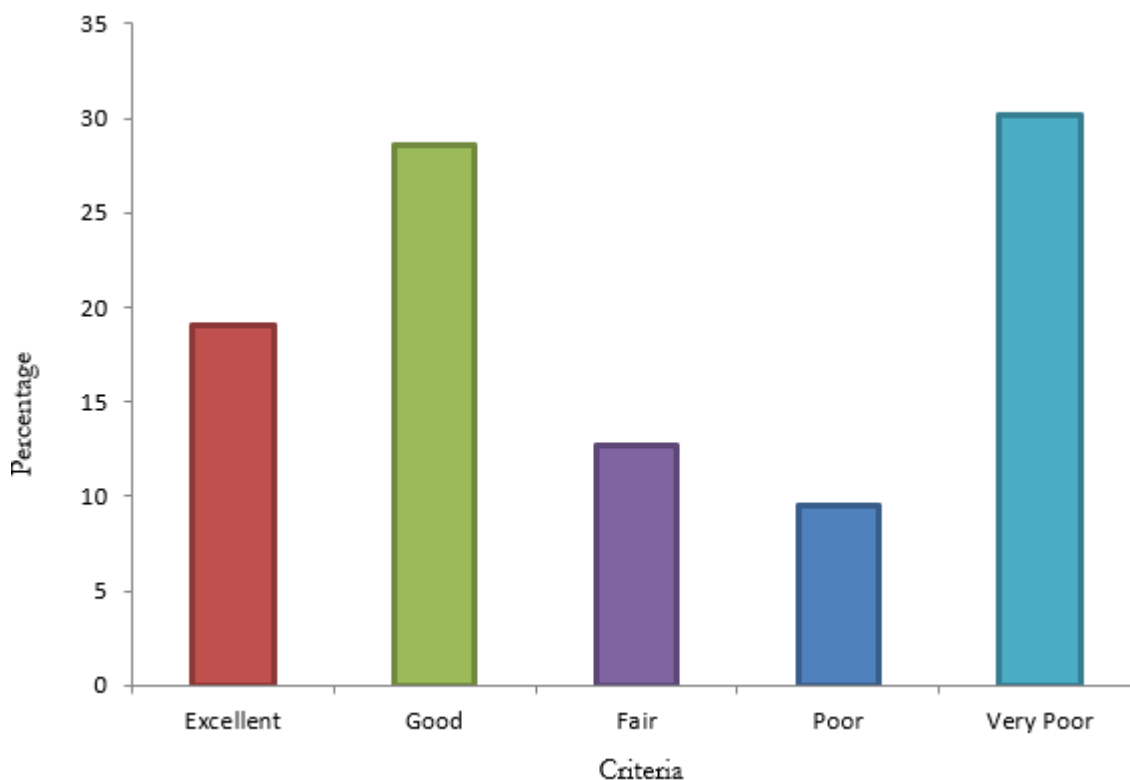


Figure 6. Proportions of student ability in complete quizzes

Discussion

Student activeness in discussion forums on IAD learning during the pandemic by implementing SPADA Unram and Natural Laboratory was 32.62%. The equivalent of 10 to 11 students asking, answering questions, adding answers, arguing, or providing criticism and suggestions during learning in class at PGSD FKIP Mataram University, with an average of 33 students per class. The number of students active in this learning is more than those involved in applying conventional education, which ranges from 3 to 7 students. This student activity data shows that implementing SPADA Unram and the Natural Laboratory impacts students' self-confidence to participate in virtual discussion activities. Even though it was during the pandemic period with various technical and non-technical obstacles [7], [8], Online and offline mixed learning applied to IAD courses can improve the quality of education, namely the proportion of active students during discussions.

Variations in learning experiences through the implementation of online learning at SPADA Unram and offline education in the Natural Laboratory, and variations in learning experiences on blended learning through face-to-face, online, and offline learning [2] like two analog learning models. That means they are syntactically different but have relatively the same function, namely, to provide a learning experience that is not monotonous. During this pandemic, offline learning by utilizing the surrounding environment as a Natural Laboratory solves student discomfort due to bold education, low ICT literacy, and minimum experience learning due to unstable networks [16]–[18]. The SPADA Unram, accessed for 24 hours, provides a more significant opportunity for students to express their knowledge in writing outside of scheduled learning.

The positive impact of learning through implementing SPADA Unram and Natural Laboratory, with a proportion of 32.62%, is still relatively small. Most (> 67%) students are still passive. That means the learning applied to the IAD course is still unable to get rid of the shyness in asking questions and apathy for most students in education. Their negative perception of online learning triggers applications due to the COVID-19 pandemic [13] and little or no preparation for online learning [14]. However, at two meetings, namely meeting six and meeting seven, 60% and 64.29% of students were actively involved in discussion forums (Figure 2). At the two meetings present, the review results, namely the deficiencies of each task, were arranged based on observations in the Natural Laboratory. From this fact, Transparency of work results can increase student's active

participation in learning. This technique also motivates students to be more disciplined in submitting assignments.

The discipline of students in collecting assignments in IAD class during the pandemic through the implementation of SPADA Unram and the Natural Laboratory was 75.13%. They classified undisciplined students into two groups: late submitting assignments with a proportion of 22.22% and as much as 2.64% not uploading works at SPADA Unram. From the three terms given, plus their revisions, student discipline ranged from 63.49% to 84.13% (Figure 3). The proportion of field students collecting assignments in this study is lower than during the pre-pandemic learning period; the ratio is above 90% to 100%. Before the pandemic, tasks were generally in file or printout form and submitted during face-to-face meetings. Regarding technical changes, assignments, and the period before and during the pandemic, students have limited quota factors and unstable networks, such as the findings [14]. Several students complained about the low signal and internet quota [19]–[21].

Evidence shows that the quota and network factors constrain undisciplined students. First, all students uploaded assignment one, but a few were late. Second, the proportion of students who submitted work decreased continuously from works 1 to tasks 1-r, but the proportion who were undisciplined due to late uploads had increased. Third, the balance of disciplined students increases constantly, starting from 1-r to 3-r assignments, while the proportion of disobedient students has decreased (Figure 3). Fourth, recordings of student activity at SPADA Unram show that there are several groups whose members have not uploaded their assignments, while other members have uploaded. Fifth, there is confirmation via the WhatsApp Group (WAG) from students who have uploaded their jobs late that they are having network problems. It happens because some students complete and upload assignments on the last day, which is the deadline for submission. Sixth, they can complete all tasks well. In line with research conducted by Putri et al. (2020), which stated that several factors made students unable to send assignments smoothly during the COVID-19 pandemic, one of which was the factor that students sent work at the last time submission of assignments [22].

Student skills in completing assignments are in the excellent category, with mastery degrees on all assignments above 80.00 (Figure 4). The data on the mastery degree indicates that implementing SPADA Unram and the Natural Laboratories trains students' skills in effectively completing assignments. The learning facilities provided to equip students in completing assignments include (1) templates for each assignment, (2) demonstration of how to do a template-based assignment via video conference, (3) assistance through discussion forums at SPADA Unram, (4) transparency of work results by showing the results of the review of the assignments of each group, and (5) students are allowed to revise their assignments based on the results of the review—various learning facilities such as the use of multimedia in one lesson. Based on the research results, using media can help students learn and make it easier for them to master learning goals [23]. In this study, the learning objective is to be skilled at completing tasks. The use of learning media that facilitates students during the COVID-19 pandemic helps students become experienced in completing the tasks given [24]–[26].

The excellent skills of students in completing assignments are supported by the proportion data with unique categories above 80% on all works, and tasks two even above 90% (Figure 5). In assignment 1, 4.76% of students whose skills to complete the assignment were in the inferior category had a mastery degree of 41.94. In assignment 2 and assignment 3, the mastery degree of 1.59% and 4.76% of students with significantly less skills was 00.00. The poor category for a small proportion of students in completing assignments is due to the absence of revisions. Soft files uploaded in the revised task menu are the result of previous work or do not upload as in task 2 and task 3. If students do not submit assignments before and after the revision, the mastery degree is considered 00.00, with an inferior category. This group of students may experience network and quota constraints or ICT literacy and low learning motivation in accessing SPADA Unram, such as common obstacles that occur in the application of online learning [8]. Apart from that, students who do not submit assignments due to lack of motivation to study during the Covid-19 pandemic [27]–[30].

Students' skills in completing assignments were not positively correlated with their ability to complete quizzes. The mastery degree of the student in completing the quiz was 57.33, with a fair category. These results indicate that implementing SPADA Unram and Natural Laboratory has not effectively facilitated students in solving quizzes. Students still need more time to adapt and

acclimatize to the application of online and offline mixed learning. Referring to activity records at SPADA Unram and research results from [13] and [14], the core problem is more dominant in the application of online learning during the COVID-19 pandemic. Another factor is the low level of science process skills [31]. The quiz was conducted to determine the extent to which students had mastered the concept of science, and the fundamental skills needed were science process skills [32].

Individually, some students can complete the quiz in the excellent and in the good category. The proportion is in the third and second place under the proportion of students in the inferior class (Figure 6). The total ratio of both categories is 47.62%. That means the implementation of SPADA Unram and the Natural Laboratory is effective in increasing the ability of this group of students to solve quizzes. They can also adapt and acclimatize to non-face-to-face learning during this pandemic. It can be observed from the results of research from [13] that not all students have negative perceptions of online learning. [14] only most students had low ICT literacy and did not prepare for the online learning process. The uncertainty factor related to the re-application of face-to-face learning at the University of Mataram provides research data that can support efforts to innovate learning during the pandemic, especially in the science clusters in PGSD.

CONCLUSION

Implementing SPADA Unram and Natural Laboratory during the COVID-19 pandemic has not been optimal in improving the quality of the student learning process in IAD courses. Even so, the learning outcomes, on average, show the mastery degree with good and excellent categories. This online and offline combined learning can be one of the learning solutions in a pandemic, but there is a need to improve the student learning experience. It is hoped that future researchers will pay attention to media use in learning. Every assignment given must take into account the student's condition. Learning facilities also need to be considered by a lecturer when carrying out learning both online and offline.

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