Science Learning Of Primary Teachers’ Students; an Analysis Study In Covid-19 Era

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Abstract. Covid-19 changes face-to-face learning to online, this also applies to science learning in elementary education students. This study aims to: 1) determine the learning outcomes and responses of elementary school students to science learning during the Covid-19 period; 2) to find out the obstacles/difficulties in implementing science learning for elementary school students during the COVID-19 period. This study used a descriptive method with a sample of 33 students. The data collection technique used essay test questions, questionnaires, and interviews. The data that has been obtained will be analyzed qualitatively and described in descriptive form as well as Ms. Excel. The results of data analysis showed 1) the average student learning outcomes was 71.06. The other 16 students scored below the KKM and the remaining 17 students had their scores met the KKM scores; 2) student response, almost all students said that online learning was fun, although there were still many obstacles in its implementation; 3) the obstacles faced include inadequate facilities, limited interaction, student interest in learning, lecturers cannot thoroughly control students who are involved in online learning and learning that takes a long time to make students experience boredom. This shows that the use of science learning for basic education students using online learning still needs to be optimized.

1. Introduction
In early 2020, the world was shocked by the emergence of the Covid-19 outbreak, almost all countries in the world were paralyzed in terms of economy and education. In the economic sector, many countries are experiencing an economic crisis and are on the verge of recession [1][2][3]. Meanwhile, in the field of education, schools were closed to prevent the spread of COVID-19 [4][5]. Countries in the world apply lockdown or in Indonesia, it is known as large-scale social restrictions (PSBB). With the enactment of the PSBB, the Ministry of Education and Culture issued a circular number 15 of 2020 concerning guidelines for organizing learning from home in the emergency period of the spread of Covid-19. One of the contents of the letter is an indication of the implementation of learning. Face-to-face learning has been temporarily eliminated and replaced by distance learning (PJJ) or the like [6][7]. This also applies to all levels of education, including in tertiary institutions. An example is in Science learning which is taught to elementary education students.

Science learning is one of the subjects taught to elementary education students [8]. One of the goals of teaching Science learning is to study the character of basic education students, science material to basic education, and how to plan to learn in Science learning in basic education and be able to apply creative and innovative learning models [9][10].
This research is more focused on the efforts of researchers in teaching Science learning during the COVID-19 era in elementary education students. Improving the quality of education, especially in tertiary institutions, cannot be separated from the role of lecturers. Lecturers must have good skills in compiling and designing learning. Including when the situation and conditions are not possible like now. Lecturers must be able to think creatively and innovatively to find learning alternatives [11][12]. One of the efforts that can be done in online learning.

Online learning is a renewable innovation that is used in the field of education. Online learning is different from face-to-face learning, where the lecturer/instructor is in a separate place [13][14]. However, both are united in the same telecommunication system. Not only the material conveyed to students, but also changes in the competencies obtained by students, for example, becoming technology literate [15][16][17].

Utilization of Science learning for basic education students using online learning, can use google classroom, google meet, zoom, or similar applications. The researchers themselves are more focused on using google classroom, google form, and zoom. All of them have different roles and functions but complement each other [18][19]. The benefit of online learning is that it results in a change in the learning culture. There are four components to building a learning culture in schools related to online learning, including 1) students are required to be independent to organize and motivate themselves; 2) teachers can develop knowledge and skills and facilitate learning; 3) availability of adequate infrastructure; 4) administrators who are creative in facilitating learning [20].

Previous research, regarding online learning during the Covid-19 pandemic, showed that the results of online mathematics learning activities had significant differences. Also, students show excellent online mathematics learning skills in a learning environment adequate to technology [21]. There was an increase in students' final grades and learning motivation using Inquiry-Based Distance Learning During the COVID-19 Pandemic [22]. Students prefer classes that use quizzes to improve learning effectiveness. Also, students feel that the flexibility of online classes makes it an attractive choice for studying [23].

From previous research, there were gaps, including the absence of research on Science Learning for Elementary School Teacher students during the Covid-19 period. Based on this study, the formulations of this study are: 1) how are the learning outcomes and responses of elementary school students to science learning during the Covid-19 era?; 2) what are the obstacles/difficulties in implementing science learning for elementary school students during the Covid-19 era? The objectives of this study were: 1) to determine the learning outcomes and responses of elementary school students to science learning during the Covid-19 era; 2) to find out the obstacles/difficulties in implementing science learning for elementary school students during the Covid-19 era.

From the above explanation, the researcher is interested in researching with the title Learning Science for Elementary School Teacher Students: Analysis Study in the Covid-19 Era.

2. Experimental Method
This research is a descriptive study that aims to describe the researcher's efforts in the science learning of primary teachers' students; an analysis study in the Covid-19 era. Quantitative research methods are research methods used to examine specific populations or samples. The sampling technique was carried out randomly, data collection using research instruments, quantitative/statistical data analysis to test the predetermined hypothesis [24][25]. The research was carried out on elementary education students of IKIP Siliwangi. The sample used was 33 students. Data collection techniques used in this study were test questions in essays, questionnaires, and interviews.

The research procedures carried out are as follows: 1) the preparation stage, preparation of learning plans according to conditions during the Covid-19 era, analyzing online learning needs that will be used, and compiling instruments in the form of written tests, questionnaire sheets, and interviews then the instruments are tested try it out; 2) the implementation stage, implementing the learning scenario according to the previously designed online media such as google classroom and zoom; 3) the evaluation stage after the learning material delivery process is complete, an evaluation is carried out in
the form of giving written tests, questionnaire sheets and interviews which are then analyzed descriptively to determine the student learning process with online learning.

The data that has been obtained will be analyzed qualitatively and described in descriptive form with the help of Ms. Excel. All data in this study were processed employing qualitative analysis from the results of the questionnaire sheet.

3. Result and Discussion

3.1. Result

Results of research on science learning for basic education students using online learning in the COVID-19 era can be seen in the following table.

| Table 1. Student Learning Outcomes Data |
|----------------------------------------|
| No | Student Identity | Value |
|----|------------------|-------|
| 1  | S1               | 65    |
| 2  | S2               | 60    |
| 3  | S3               | 75    |
| 4  | S4               | 80    |
| 5  | S5               | 75    |
| 6  | S6               | 85    |
| 7  | S7               | 75    |
| 8  | S8               | 60    |
| 9  | S9               | 75    |
| 10 | S10              | 90    |
| 11 | S11              | 80    |
| 12 | S12              | 75    |
| 13 | S13              | 55    |
| 14 | S14              | 60    |
| 15 | S15              | 65    |
| 16 | S16              | 70    |
| 17 | S17              | 60    |
| 18 | S18              | 90    |
| 19 | S19              | 85    |
| 20 | S20              | 60    |
| 21 | S21              | 85    |
| 22 | S22              | 75    |
| 23 | S23              | 80    |
| 24 | S24              | 55    |
| 25 | S25              | 60    |
| 26 | S26              | 55    |
| 27 | S27              | 75    |
| 28 | S28              | 65    |
| 29 | S29              | 70    |
| 30 | S30              | 65    |
| 31 | S31              | 60    |
| 32 | S32              | 75    |
| 33 | S33              | 85    |
| Total |                  | 2345  |
| Average |                | 71.06 |

Student learning outcomes can be described from the highest score, lowest score, and average value in the following table.

| Table 2. Descriptive Statistics of Student Learning Outcomes |
|-------------------------------------------------------------|
| Ideal Value | KKM | The highest score | Lowest Value | Average |
|-------------|-----|-------------------|--------------|---------|
| 100         | 75  | 90                | 55           | 71.06   |
From the statistical data above, it can be seen that most of the students get learning results above the predetermined KKM. Thus it can be concluded that learning science conducted online in the Covid-19 era gave good results. Moreover, if learning can be optimized, it is possible that the value obtained will be even greater. Besides, researchers provide questionnaires to students. The questionnaire was made to determine the response of basic education students using online learning in the Covid-19 era in science learning. The questionnaire used in the study consisted of four answer choices, namely strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS). These four options are used to avoid students' doubts about the questions and answers given. Students must put a tick (√) in one of the questionnaire fields that have been provided. Questionnaires are given to students after learning in class is carried out. The questionnaire given contains 10 statements, each statement contains four responses. The following will describe the questionnaire given based on the indicators.

### Table 3. Recapitulation of Questionnaire Results

| No. | Question                                                                 | Type | SS   | 42.42% | 33.33% | 6.06% |
|-----|---------------------------------------------------------------------------|------|------|--------|--------|-------|
| 1   | I enjoy learning science online.                                          | +    | 18.18%| 42.42% | 33.33% | 6.06% |
| 2   | I feel bored if I take too long in learning science online.               | -    | 18.18%| 36.36% | 39.39% | 6.06% |
| 3   | I don’t do anything when I don’t understand the material that is being studied. | -    | 6.06% | 21.21% | 39.39% | 33.33% |
| 4   | At the time of the lesson that was conducted, I was excited to participate in it. | +    | 48.48%| 42.42% | 6.06%  | 3.03% |
| 5   | If there is a material that is not yet understood, I will ask the lecturer or friend until I can understand the material. | +    | 51.52%| 30.30% | 15.15% | 3.03% |
| 6   | When I can’t do the teacher’s assignment, I become discouraged.          | +    | 9.09% | 21.21% | 54.55% | 15.15% |
| 7   | I have difficulty explaining material in science learning.               | -    | 12.12%| 18.18% | 51.52% | 18.18% |
| 8   | I not only know but also understand the materials in science learning.   | +    | 27.27%| 45.45% | 24.24% | 3.03% |
| 9   | Using the zoom application and google classroom helps me in online learning. | +    | 15.15%| 45.45% | 6.06%  | 3.03% |
| 10  | Studying online was very difficult for me.                                | +    | 15.15%| 21.21% | 45.45% | 18.18% |

Based on the analysis of Table 3, there are three main aspects of the questionnaire given to students, namely: 1) student responses to online science learning; 2) student responses to learning materials; 3) student responses to online application implementation. Overall the responses given by students are very positive. This is inseparable from the role of the lecturer in preparing the given learning. The next research instrument was the interview. Interviews were conducted through the zoom application after a learning evaluation was given. This interview is to dig deeper into information in the form of factors that support and hinder basic education student science learning using online learning in the Covid-19 era.

### Table 4. Summary of Interview Results

| No. | Questions                                                                 | Answers                                                                 |
|-----|---------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1   | What do you think about learning science using online learning in the Covid-19 era? | Quite fun, even though there are many obstacles in its implementation. |
| 2   | What are the obstacles when you follow science learning using online learning in the Covid-19 era? | Internet network, wasteful of quota, availability of inadequate supporting facilities such as laptops, etc. |
3. How do you feel when the teacher gives assignments in google classroom? Not a problem, quite fun.

4. Where do you get learning resources other than the sources provided by the lecturer? Search results on google, senior-level tasks.

Analysis of the results of the interview, it is increasingly clear that learning science for basic education students using online learning in the Covid-19 era can have a positive impact. From this interview, researchers can find constraining factors when students take part in science learning using online learning in the Covid-19 era. This obstacle is an important note to develop and find a solution.

3.2. Discussion

Many of the findings that researchers found when the research was related to science learning of primary teachers’ students; an analysis study in the Covid-19 era. The results of this study are described as follows.

In the initial stage, researchers prepared a learning plan according to the conditions during the Covid-19 era. Learning that was originally going to be carried out face-to-face was replaced with online learning. The applications used in the research are google classroom, google form, and zoom. All three have different roles and functions but complement each other [26][27]. The use of google classroom is more dominant in providing material/ppt, reference sources in the form of ebooks, photos, rpp/learning syllabus, and collection of assignments assigned by researchers. The use of google classroom is very useful in learning [28][29]. The Google form is used by researchers to provide questionnaires to students. Meanwhile, the zoom is more on the delivery of material that is delivered verbally, student absences directly, and questions and answers about the lectures given. Using this application, there is a face-to-face interaction between students and researchers via virtual. Zoom application helps students to interact directly through the display sharing feature [30][31]. At this stage, researchers also formulated instruments in the form of written tests, questionnaire sheets, and interviews. The instrument was validated by experts and tested first. Processing of data using the help of ms. Excel.

After the instrument is ready for use, the researcher enters the implementation stage. At this stage, the researcher carries out the learning scenario according to what was designed previously through online media such as google classroom, Google form, and zoom. At the beginning of learning using online applications, there were many obstacles, such as problematic internet networks, both from researchers and students, the microphone sound in the zoom application was not muted by students so that the sound came from all directions, less participation because students had difficulty entering the application. The use of zoom requires thorough preparation to be even more effective. This is also to avoid fatigue due to overuse [32]. At the end of the lecture, researchers provide learning materials that students will learn through google classroom and will be taught at the next meeting. Besides, researchers also asked students not to focus on the learning resources that were provided. They were asked to look for materials related to the learning given to themselves. This is to create independence in learning. Independence can appear in learning activities carried out through online or print media [33][34]. The deficiencies in the first lesson become evaluation material for further learning.

The second meeting and the next, learning was better than before, but the obstacles that arose were still in terms of internet networks. Not all students at home have wifi installed, they only rely on the internet quota from their cellphones. Not to mention the geographical location of the student residence which is around the hills/mountains, causing the network to be obstructed. Often when zooming in on a meeting, researchers find students outside the home searching for internet networks. Connection problems in rural areas become a challenge for students to take advantage of online learning [23].

After the learning material delivery process is complete, an evaluation is carried out in the form of giving written tests using google classroom, giving questionnaires via a google form, and interviews.
via zoom. The data obtained were then analyzed and described. Student learning outcomes showed an average score of 71.06. There are 16 students whose grades are below the KKM and the remaining 17 students whose scores meet the KKM scores. The results of interviews with students, almost all students said that online learning was fun, although there were still many obstacles in its implementation.

The obstacles that occur require the right solution because it does not rule out that the Covid-19 era will last longer than previously predicted. Lecturers, at the forefront of learning, must be creative and innovative in dealing with changes in teaching and learning activities. Besides, the government as a policymaker must be alert and responsive to facing the worst [35]. The availability of evenly distributed facilities and infrastructure has a very important role in facing the Covid-19 era.

4. Conclusion
Based on the results and findings of the previously described research the conclusions of this study are 1) the average student learning outcomes are 71.06. 16 other students scored below the KKM and the remaining 17 students had the following grades: 2) The results of interviews with students, almost all students said that online learning was fun, although there were still many obstacles in its implementation; 3) the obstacles faced include inadequate facilities, limited interaction, student interest in learning, lecturers cannot thoroughly control students who are involved in online learning and learning that takes a long time to make students experience boredom. The suggestions for further research in carrying out online learning in the Covid-19 era include 1) availability of facilities and infrastructure; 2) the readiness of students when participating in learning; 3) relevant reference sources, whether books, ebooks, journals, etc. which help in the learning process. Besides, online learning can encourage student learning independence. This shows that the use of basic education students' science learning using online learning still needs to be optimized.

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