Online Learning During the Covid-19 Pandemic with ELISA Assistance on The Concept of Dynamic Fluid: Student Response Analysis

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Abstract. Elisa is a new type of e-book developed by combining e-books with scientific literacy skills that will be trained in students. Elisa which has been developed on the topic of dynamic fluids is a teaching package. In the learning process, Elisa includes features of dynamic fluid material and is combined with training students' scientific literacy skills. Elisa is designed to improve students' listening skills in Indonesia in line with international program at high school level. A total of 42 students of class XI MIA-3 in one MA Ma'arif Blitar have used Elisa in the learning process. This study is devoted to analyzing the responses of students in using Elisa. As a result, students found Elisa as a positive learning experience in all aspects content of material, language, media, learning and aspects of scientific literacy on average. The percentage of student response is 85.80% with the very good category. However, in this study it was found that the response of students to aspects of scientific literacy ability had the lowest score (82.34%) compared to other aspects, this was because the students of class XI MIA-3 in one of the MA Ma'arif Blitar were just introduced. scientific literacy in the learning process.

1. Introduction
The corona virus pandemic (COVID-19) has infected almost all countries in the world including Indonesia. The Covid-19 pandemic has led to a new paradigm in learning, namely all learning activities are carried out remotely (online). In carrying out distance learning, media is needed that can facilitate so that learning goes well learning science (biology, physics, chemistry) has a significant contribution to technological development, this is because science is the basic science that underlies technological development [1]. The International Council of Associations for Science Education / ICASE (2008) argues that students need to have adequate scientific literacy, in order to be able to live productively and obtain the best quality of life as the goal of science education itself. This is in line with the research of which states that science is very important in all aspects of life, because it needs to be studied so that all Indonesians achieve scientific literacy (science literacy community) but still have national character [2].
Program for International Student Assessment (PISA) is a test system initiated by the Organization for Economic Co-operations and Development (OECD) which aims to evaluate the education systems of 72 countries around the world every three years [3]. PISA defines scientific literacy as the capacity to use scientific knowledge, identify questions, and draw conclusions based on facts and data to understand the universe and make decisions from changes that occur due to human activities [4]. One of the characteristics of individuals with high scientific literacy skills is being able to master concepts and be able to understand their application in life and technology [5]. The fact of the 2018 PISA results regarding the results of the scientific literacy test shows that the scientific literacy ranking of Indonesian students in 2018 is still ranked 72 out of 78 countries with a score of 403 [6]. This shows that the scientific literacy skills of Indonesian students are still low.

In essence, teaching and learning is a communication process. In the learning process, a message or material is conveyed by the teacher or a learning resource in a visual or verbal communication symbol. Delivery of material to students must be arranged as attractive as possible so that students can be motivated and learning can be meaningful to students. [7] The state that in science learning, meaning can be obtained if the students' scientific literacy skills are good. Meaningful learning can occur if students are able to connect new knowledge with previous knowledge [8].

One form of effort to support learning with the 2013 curriculum that leads to 21st century competence by taking advantage of advances in science and technology is the replacement of conventional student handbooks into digital books or electronic books (e-books). Using e-books in the learning process is one way that teachers can integrate the use of technology in the learning process [9]. E-Book is an application program that should be developed in order to provide a fun learning process by promoting conceptual understanding in students. E-books are designed in the form of text, video or animation which can be used to show real situations that are more convincing for students to understand the concept than design in the form of printed text, images.

The research on e-book based on literacy and will be called ELISA is different from the others. The difference is that in ELISA there are features that can train students' scientific literacy and provide examples of the use of physics concepts in everyday life. So that a common thread can be drawn that this research aims to analyze the responses of students in using ELISA during online learning in the midst of the current Covid-19 pandemic.

2. Method
This study used a quantitative descriptive research design using a response questionnaire instrument and analyzed using quantitative descriptive analysis. The aspects that are assessed in this section are the operation of the e-Book, learning motivation, understanding of the material and scientific literacy skills. The assessment of the responses of these students uses a Likert scale according to Table 1.

The scoring criteria for the student response questionnaire are shown in Table 1.

| Score | Information             |
|-------|-------------------------|
| 4     | Strongly Agree (SS)     |
| 3     | Agree (S)               |
| 2     | Disagree (TS)           |
| 1     | Strongly Disagree (STS) |

The percentage of student response sheets is calculated using the formula:

$$\text{Persentase Skor} = \frac{\sum \text{Skor yang diperoleh}}{\sum \text{Skor maksimum}} \times 100\%$$ (1)
The criteria for the percentage of student response sheet scores can be seen in Table 2, and Elisa (scientific literacy e-Book) is said to be effective if the percentage of students' responses $\geq 61\%$.

| Percentage | Information   |
|------------|--------------|
| $0\% < x \leq 20\%$ | Very less |
| $21\% < x \leq 40\%$ | Less |
| $41\% < x \leq 60\%$ | Enough |
| $61\% < x \leq 80\%$ | Well |
| $81\% < x \leq 100\%$ | Very good |

3. **Results and Discussion**

Student responses to ELISA were assessed using a response questionnaire given to 36 students in class XI-MIA 3 after the learning process was carried out. The response questionnaire analysis was carried out quantitatively and qualitatively. The quantitative analysis is arranged based on a Likert scale of 0 - 4 in the form of statements consisting of aspects of learning, material, language, media, and aspects of scientific literacy. Qualitative analysis is prepared based on comments and suggestions written by students on the response questionnaire. The results of the analysis of students' responses to ELISA that were developed can be seen in Figure 1.

![Student Response to ELISA](image)

Based on Figure 1, the responses of students show very good categories in every aspect. In the learning aspect, the percentage was 88.33%, 85.83% on the material aspect, 84.88% on the language aspect, 87.60% on the media aspect, and on the scientific literacy aspect, the percentage was 82.34%. In general, the percentage of student responses is 85.80% with the very good category. This result is in accordance with the research of regarding the application of science-based science literacy teaching materials with the theme of electricity in life with a student response percentage of 89.50% [11]. Thus, Elisa who was developed received a very good response from students as one of the requirements for the e-Book to be declared effective.

As for the response of students for each aspect after using ELISA in online learning, it can be seen in the student response diagram for each aspect as follows:
3.1. **Student Responses to Aspects of Learning**

![Figure 2. Student Response Diagrams on Aspects of Learning](image2.png)

In the learning aspect, on average all aspects get a very good response from students, this is evidenced by the percentage obtained which is 88.33%. Learners admit that Elisa which is used to simplify the learning process, raise questions related to the material being studied, and facilitate the delivery of information because it is equipped with pictures, videos, and animations, but the ELISA criteria can raise questions about dynamic fluids having the least response.

3.2. **Student Response to The Material Aspect**

![Figure 3. Student Response Diagrams on Material Aspects](image3.png)

In the material aspect, students respond very well, students admit that ELISA which is used to increase motivation to learn physics, encourage curiosity, make learning more active, interesting and fun, and can more easily learn and understand dynamic fluid material. This is evidenced by the percentage of responses obtained in the material aspect of 85.83% with the very good category.
3.3. Student Response to The Language Aspect

![Image of Student Response Diagrams on the Language Aspect](image)

**Figure 4.** Student Response Diagrams on the Language Aspect

In the aspect of language, students respond that the language used in ELISA is easy to understand, effective, namely concise and clear, and explanation of phenomena in accordance with the image or video shown. This is evidenced by the percentage of responses obtained in the language aspect of 84.88% with the very good category.

3.4. Student Response to The Media Aspect

![Image of Student Response Diagrams on the Media Aspect](image)

**Figure 5.** Student Response Diagrams on the Media Aspect

In the media aspect, on average all students responded very well. This is evidenced by the percentage of responses obtained in the media aspect of 87.60% with the very good category. Learners admit that ELISA which is used easy to operate, the facilities available in ELISA quite complete,
images, animations and videos presented are in accordance with the material, as well as the material in ELISA which is easier to understand with the presence of videos, pictures, and animations.

3.5. Student Responses to Aspects of Scientific Literacy

![Student Response Diagrams on Aspects of Scientific Literacy](image)

Figure 6. Student Response Diagrams on Aspects of Scientific Literacy

In the aspect of scientific literacy, students respond that ELISA can practice the problem-solving process, provide explanations related to dynamic fluid problems. In addition, students also recognize that using e-Book easier to learn the concept of dynamic fluids and their application in everyday life. This is evidenced by the percentage of responses obtained in this aspect which is equal to 82.34%.

Student responses to the use of ELISA in online learning are also shown in the form of responses / comments written in the comments of column in the response questionnaire. The following are some of the responses given by students:

| Response                                                                 | Student |
|-------------------------------------------------------------------------|---------|
| *I think this e-Book is very good, it's my first time seeing an e-Book so I think it's very inspiring & creative in learning methods.* | (1st student) |
| *This e-Book is fun and interesting to learn, because the appearance in this e-Book is attractive and there are many beautiful color combinations as well as animations and videos available that make me understand more about dynamic fluid material, so that we are motivated to improve learning again.* | (2nd student) |

The students' responses above show that the presentation of the contents and physicality of the e-book developed is interesting and contains content that is easy for students to understand, students are very interested in using Elisa in learning because it can motivate them to learn physics.

This research is in line and complementary with previous research. According to [12] states that technological developments such as devices and the internet have influenced the lifestyle of information and communication technology. These technological advances need to be balanced with an increase in the quality of human resources (HR) so that Indonesian citizens are no longer only users, but also as quality information technology developers. In order to be able to compete in the international standard world of
work, Indonesian citizens are expected to be able to master technology, especially the younger generation, for that, an appropriate strategy is needed, especially in the world of education to implement digital literacy in schools. This research is also in line with research [13][14] which states that students' literacy skills will increase if they use scientific literacy-based teaching materials as well as skills in utilizing internet media and computer devices so that they can display moving images, audio, and videos that can make learning activities more real. The results of this study are also relevant to research [15][16][17] which states that the use of interactive e-books and e-books based on literacy is very effective and efficient to improve students' scientific literacy skills.

4. Conclusion
Based on analysis, the research data can be concluded that online learning dynamic fluid material assisted by ELISA media during the Covid-19 pandemic at one of the MA Ma'arif Blitar, East Java received a very good and positive response.

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