
THE EFFECTIVENESS OF ONLINE LEARNING PROCESS IN THE COVID-19 PANDEMIC ON ELASTICITY TOPIC

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Abstract

This research aims to: 1) knowing the student's response to online learning process on elasticity topic during pandemic COVID-19, 2) knowing the teacher's response to online learning process on elasticity topic during pandemic COVID-19, and 3) knowing the effectiveness of online learning process on elasticity topic carried out during the COVID-19 pandemic. This type of research is quantitative using a survey method. The instrument used was a student questionnaire and a teacher questionnaire in the form of a Likert scale. The results showed that the responses of both students and teachers to online learning on elasticity topic based on the criteria, i.e., online learning planning, processes, and evaluations, on average could be categorized as good, the effectiveness of online learning on elasticity topic can be categorized as effective, level of student mastery and the level of learning completeness can be categorized as good and complete, but there are still many difficulties during the implementation process.

Keywords: Effectiveness, Online Learning, Elasticity Learning, Covid-19 Pandemic

COVID-19 has disrupted human activities all over the world, including the economy, education, entertainment, social contact, commerce, and politics. Because of the pandemic, most human activities are now carried out at home in order to decrease the number of confirmed COVID-19 cases. Many countries have closed schools and colleges, by substituting online learning for face-to-face instruction. The Minister of Education issued Circular Number 4 Year 2020 Regarding Implementation of Education Policy in an Emergency for the Spread of Coronavirus Disease (COVID-19) which states that the learning process is carried out at home through online / distance learning to provide meaningful learning experiences for students.

The advancement of technology in the sphere of education has the potential to make online learning more accessible. Learning can be done using video conferencing apps, i.e., Zoom and Google Classroom, WhatsApp groups, and LMS platforms like Schoology, Google Classroom, and Moodle, among others. The use of technology in learning can save time, save resources and reduce costs, increase interaction between teachers and students, and can increase interest, independence, and creativity because students are expected to be able to seek and learn knowledge from the internet independently, students can also choose sources learning that is interesting to them so that it can increase students' interest in learning (Olszewska, 2020: 111). The success of online learning depends on several factors including the speed of the internet connection, the availability of learning resources, the ability to master technology, the availability and accessibility of technology,

the use of video conferencing applications and LMS platforms, and the behavior of the students. Students can be regarded to be successful in online learning if they are able to fulfill their learning objectives and are actively involved in their learning rather than teacher centered.

The COVID-19 pandemic has caused most schools in Indonesia to close. This of course has an impact on students, teachers, and also students' families, because many of them are not familiar with online learning. There are still many teachers and students who are not ready to do online learning, the problem of internet and network access is also a problem in the implementation of online learning (Arizona et al, 2020: 66-67). Students who used to learn face-to-face with teachers at school are now required to learn online at home. According to Kusnayat et al (2020: 163), the use of online learning technology in Indonesia has a significant impact on students' mentality, which is a challenge for both students and parents. Many parents, who are usually busy with work outside the home, are now confused because they must participate in guiding their children to learn online. This study is necessary because we need to learn more about the impact of the COVID-19 pandemic on teaching and learning activities, particularly in elasticity topic in the five schools, as well as determine whether online learning carried out during the pandemic was classified as effective or not, so that improvements can be made to online learning during the pandemic and both teachers and students get used to online learning even when the pandemic is over.

METHODS

This research was conducted at 5 high schools in Medan, i.e., SMAN 2 Medan, SMAN 12 Medan, SMAN 14 Medan, SMA Darussalam, and SMA Kartika I-2 Medan (the name of the school will be replaced with a code) for class XI MIPA in the odd semester of the academic year 2021/2022. The research sample was 53 students from SMA A, 28 students from SMA B, 41 students from SMA C, 55 students from SMA D, and 65 students from SMA E. This type of research is quantitative research using survey methods. The instrument used in this study was a teacher questionnaire and a student questionnaire about the effectiveness of online learning process during the Covid-19 pandemic on elasticity topic, while learning outcomes were obtained from a list of student scores on elasticity topic. The questionnaire's results were examined by calculating the average score obtained on three indicators, i.e., online learning planning, process, and evaluation. Learning outcomes were used to determine the student mastery level and the learning completeness level.

RESULT AND DISCUSSION

Research Result

The results of the research include student learning outcomes on the elasticity topic, the results of student responses to student questionnaires that consisted of 27 items, and teacher responses to teacher questionnaires that consisted of 25 items. The student mastery level and the percentage of learning completeness level can be seen in Table 1, it was obtained that the student mastery level of class XI MIPA in the five schools on elasticity topic with an average score of 81.82 can be categorized as high, it means that most students have mastered the elasticity topic. The average of student learning completeness level in class XI MIPA in five schools is 78% which means students have not complete learning. There were 2 schools where the student learning completeness level in their class reached 100%, that are SMA C and SMA E, which means these two schools get the highest level of learning completeness of the five schools.

Table 1 The Student Mastery Level and the Percentage of Learning Completeness

School	Average Score	Student Mastery Level	Learning Completeness (%)	Category
SMA A	84.81	High	83%	Learning not complete
SMA B	86.79	High	93%	Learning complete
SMA C	82.90	High	100%	Learning complete
SMA D	67.56	Low	24%	Learning not complete
SMA E	87.22	High	100%	Learning complete
Average	81.82	High	78%	Learning not complete

Based on student responses to the effectiveness of online learning on elasticity topic, the average percentage is different in each school, but overall, the average percentage of the five school is 70% with good criteria. For the score on each question item, the highest average score is question number 2 "The facilities provided by my parents for doing online learning are good" with an average score of 82% and good criteria, it means that most students already have facilities which can be used to carry out the online learning process, while the lowest average score is question number 19 "I often have difficulty learning elasticity topic online" with an average score of 43% and poor criteria, this is shows that most students often find it difficult to learn elasticity online. The results obtained can be seen in Table 2 below!

Table 2 Student Response to the Effectiveness of Online Learning

Indicator	Percentage (%)					Average	Criteria
	SM A A	SM A B	SM A C	SM A D	SM A E		
<i>Online learning planning</i>	75	72	78	76	82	77	Good
1. Online learning facilities	77	76	80	76	83	78	Good
2. Readiness to carry out online learning	76	72	80	77	81	77	Good
3. Student attendance	76	70	74	75	88	77	Good
4. Student interest in learning	72	70	77	73	78	74	Good
<i>Online Learning Process</i>	67	65	70	70	70	68	Good
5. Effectiveness of online learning	58	55	64	65	60	60	Fair
6. Media used in online learning	71	70	76	74	71	72	Good
7. Student enthusiasm during the online learning process	73	72	75	74	79	75	Good
8. Difficulties in the online learning process	58	52	55	57	64	57	Fair
<i>Online Learning Evaluation</i>	67	64	68	66	73	68	Fair
9. Students' understanding of the topic	68	64	69	67	68	67	Fair
10. Homework and quiz	69	68	71	70	79	71	Good
11. Student achievement	65	58	61	58	73	63	Fair
Average	69	66	71	70	75	70	Good

Based on the teacher's response to the effectiveness of online learning on elasticity, it obtained an average score of 80% with good criteria. For the score on each question item, there are four questions with the highest average score of 92%, contained in question number-3 "I always motivate students to keep the spirit of carrying out online learning", contained in question number-5 "I have made Elasticity topic lesson plans for online learning which consist of introductory, core, and closing activities", question number 13 "I am able to keep the classroom atmosphere conducive", and question number 19 "I conduct assessments and evaluations of learning processes and outcomes students" with very good criteria, while the lowest average score is found in question number 23 "I feel students are less motivated to do the assignments I give" with an average score of 48% and includes poor criteria. The results obtained can be seen in Table 3 below!

Table 3 Teacher Response to the Effectiveness of Online Learning

Indicator	Score (%)	Criteria
<i>Online learning planning</i>	84	Good
1. Online learning facilities	86	Very Good
2. Motivate students to learn	92	Very Good
3. Preparation for online learning	81	Good
<i>Online Learning Process</i>	79	Good
4. Media used in online learning	81	Good
5. Time Allocation	84	Good
6. Student learning persistence	85	Very Good
7. Pay attention to student character	80	Good
8. Difficulties in the online learning process	67	Fair
<i>Online Learning Evaluation</i>	75	Good
9. Assessment and evaluation of the learning process	87	Very Good
10. Students' understanding of the topic	68	Fair
11. Ease in the process of assessing learning outcomes	66	Fair
Average	80	Good

Discussion

Based on the results, it was found that student responses to the effectiveness of online learning on elasticity topic in SMA A, SMA C, SMA D, and SMA E were categorized as good, while SMA B was categorized as fair. In the implementation of online learning, the readiness of students is quite good, students have adequate facilities to carry out online learning activities and students are also able to operate it, but some students have problems during online learning such as limited quotas and unstable internet network which can hinder the online learning process. The presence of students during online learning can be categorized good, but there are some students who have problems with attendance with various reasons, besides that during the online learning process not all students are active, there are only a few students who are active throughout the online learning process. Students also feel that this online learning allows students to study anywhere and anytime without being limited by time, and allows students to find more references that can be used to study. For more details, the comparison of student responses to the effectiveness of online learning on the elasticity topic in each indicator can be seen in Figure 1 below!

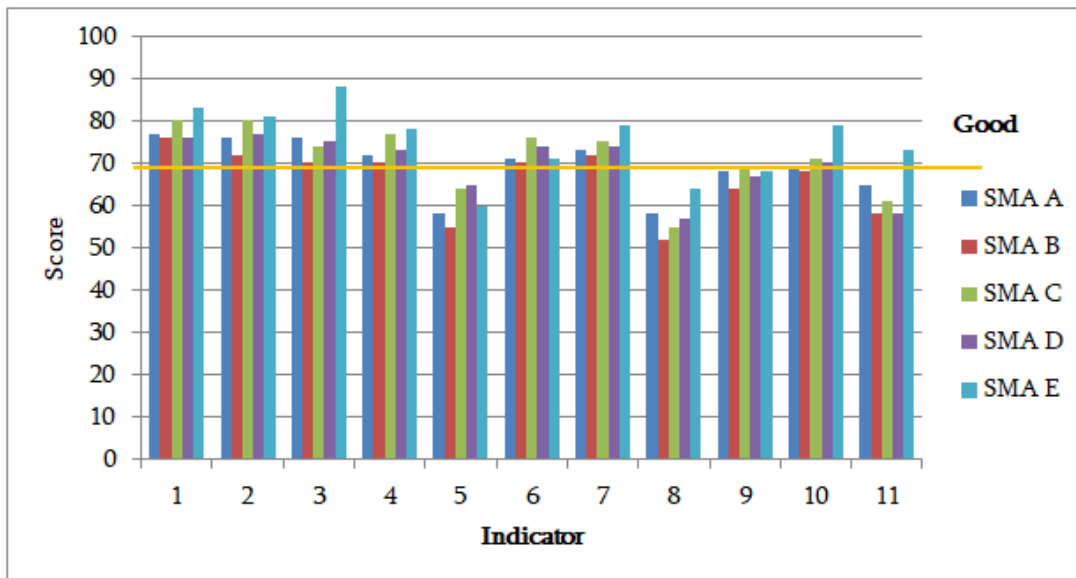


Figure 1 Diagram of Student Response to the Effectiveness of Online Learning on Elasticity Topic

Based on the results of interviews with several students, it was found that the media that really help students while learning elasticity online was Zoom, because the topic was easier to understand if it was explained by the teacher, and students could interact more easily with the teacher by using this app. In addition, Google Classroom and learning videos from YouTube are also media that help students during the online learning on elasticity topic process. The elasticity topic prepared by the teacher has been systematic, and the learning media used is also interesting so that it helps students more easily understand the elasticity topic being taught.

Most students do the assignments given by the teacher even though they find it difficult to do assignments, many students feel these assignments are hard because they do not understand the topic, and there are also those who feel the number of questions given are too many while they still do not understand the topic. This is in line with Hidayah's et al study (2020: 55) that students feel pressured because of the many questions that must be done and sometimes must be completed late at night, at this point, students feel that giving assignments is not effective because they still have difficulty understanding the topic presented by the teacher.

Based on the teacher's response to the effectiveness of online learning on elasticity topic, it can be categorized as good. Teachers have adequate facilities to conduct online learning and are able to operate it. Most teachers feel that face-to-face learning is easier to implement than online learning, because the limited time makes it difficult for teachers to explain the topic in detail, also it is difficult to control students directly, it is difficult to see whether students are really focused on paying attention to the class, and whether the students have understood the topic. Some teachers

feel that students are less motivated to do the assignments given, this is in accordance with the statements of some students who stated that they had difficulty in doing the assignments given by the teacher because it is too much and they still not understand the topic, this is in line with Rahmatia's et al study (2020: 348) who found that there were still many students who did not understand the topic, this was proven by giving assignments to students through the Google Classroom, it turned out that the task was not done immediately and it was difficult to discuss assignments because it was through the WA Group. For more details, the comparison of teacher responses to the effectiveness of online learning on the elasticity topic in each indicator can be seen in Figure 2!

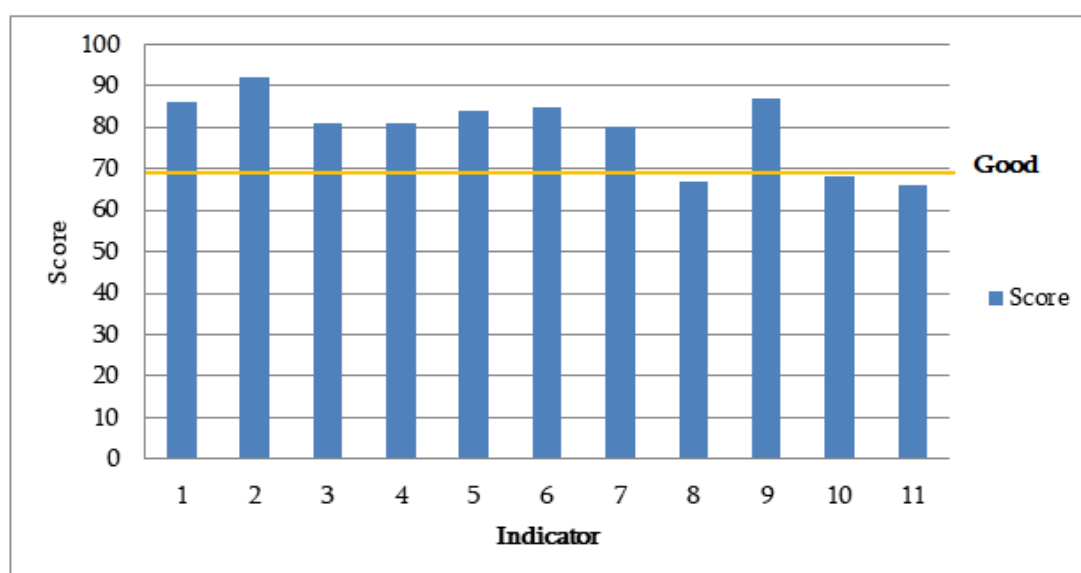


Figure 2 Diagram of Teacher Response to the Effectiveness of Online Learning on Elasticity Topic

Based on the student mastery level of the elasticity topic, on average, the students from the five schools mastered the elasticity topic taught by the teacher in class. The level of student learning completeness in three schools can be categorized as students have complete learning, and there are two schools whose students are categorized as still have not complete learning because there are some students who do not reach the KKM score. Although during the learning process students find it difficult to understand the topic, but to overcome these difficulties some students look for alternatives by study through related videos on YouTube, looking for references from the internet, or by studying with their tutors, this can help students understand the elasticity topic better. The graph of the level of student mastery on elasticity topic in the five schools can be seen in Figure 3!

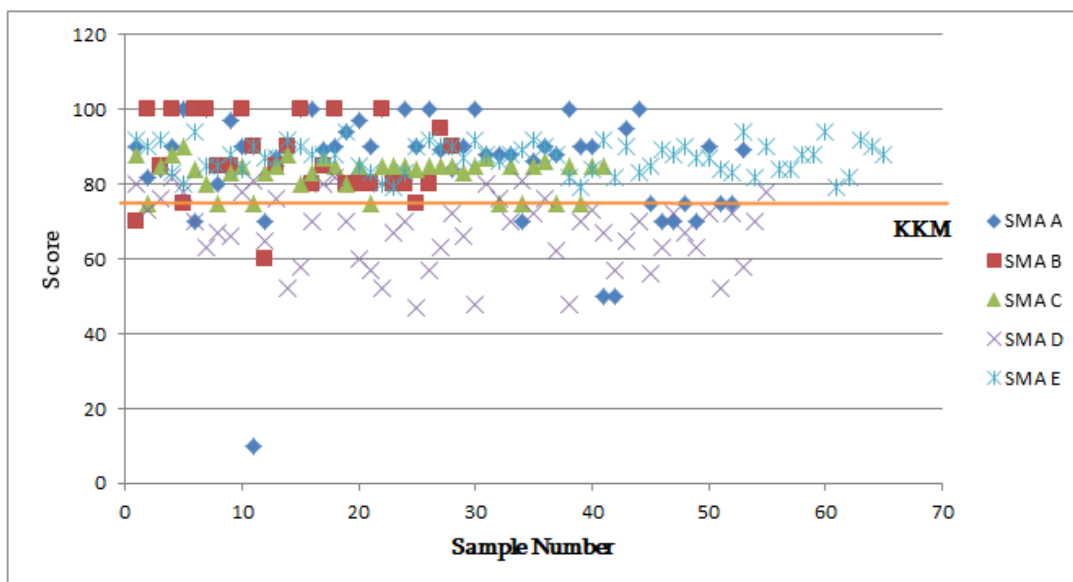


Figure 3 The Level of Student Mastery on Elasticity Topic

Based on teacher and student responses to online learning on elasticity topic can be categorized as good, student mastery level and student learning completeness if averaged can also be categorized as complete learning, so the online learning on elasticity topic can be categorized as effective, it is in line with the study conducted by Wrenn (in Myrna, 2021: 2175) who found out that based on student academic achievement results, virtual classrooms were effective. But its is can't be categorized as fully effective because of the student's behavior and also there are many difficulties faced by the students during the online learning. The results of Hanum's research (2013: 100) state that learning interactions can work if there are learning managers (teachers), learning resources, learning subjects (students), interactions between teachers/teachers. Both teachers and students have prepared the things needed to carry out online learning, teacher explain the elasticity topic well and students follow the online class as they should and do their tasks or homework's from the teacher, but at the time of its implementation there were several difficulties.

Myrna (2021: 2174) state that to assess online education student satisfaction is critical because it determines the effectiveness of learning, which is a reflection of course quality. The most important factor is also interaction. One of the problems during online class is the lack of interaction between teachers and students, because learning was not always carried out using video conferencing applications due to limited quotas, also not all students are active during the learning process and teachers also cannot monitor students directly. In addition, students find it difficult to focus during online learning because it is done from home where there are many distractions that can distract students, this is in accordance with Kurniasari's et al research (2020: 251), and students

also feel not free to ask questions about topic that has not been studied they control. Time constraints also make the teacher unable to convey the topic in detail so that students find it difficult to understand the topic and formulas given as well as difficulties in working on the questions given by the teacher, this situation is in accordance with Hidayah's et al statement (2020: 56) the difficulties felt by the teacher, students and their parents include a lack of understanding of the topic because educators only give assignments, internet network disturbances, saturation, limited mastery of technology, limited infrastructure and internet quota costs.

Online learning carried out in the five high schools can be said to be effective, although both students and teachers feel that face-to-face learning is more effective, it is evident with Olszewska (2020: 119) who found out that students prefer traditional learning in normal circumstances, and their performance is usually better when they are in a classroom setting. Online learning can be even more effective if the difficulties that exist during online learning can be overcome, also the character of students during online learning is expected to change by following the learning process properly.

CONCLUSION

Student responses to online learning on elasticity topic in the five schools based on the criteria, i.e., online learning planning, process, and evaluation on average could be categorized as good. Students are prepared for online learning and said that the teacher is doing good in it, but in the implementation some students facing some difficulties that made them hard to understand the topic explained.

The teacher's response to online learning on elasticity topic in the five schools based on the criteria, i.e., online learning planning, process, evaluation, on average can be categorized as good. Teachers are ready to teaching online, but some teachers said that face-to-face learning is easier than online learning because it is hard to monitoring the students.

The effectiveness of online learning on elasticity topic in the five schools can be categorized as effective, based on the questionnaire results, level of student mastery, and the average level of learning completeness the school is categorized as good and complete, but students behavior can make it less effective, also based on the interview result there are many difficulties faced by students during the implementation process, as well as the lack of interaction between teachers and students during online learning, limited time, and the internet connection.

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