



Effect of Applying the E-Learning Learning Model as a Solution to the Covid-19 Pandemic on Student Learning Outcomes

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Abstract

The development of science and technology in this era is proliferating. The effect of implementing these regulations resulted in the teaching and learning process that should have been carried out face to face to become network-based learning. research method used is experimental research which is a method used to see whether there is a change that occurs after giving a treatment to research subjects who are a source of data for researchers. The use of E-learning media is expected to overcome learning. The research aims to improve students' knowledge and learning outcomes. So, when conducting research it was found that learning with E-learning media had not been able to provide satisfactory results on student learning outcomes, where student learning outcomes did not reach the target KKM value = 75. Many factors influenced this including not all students with smartphones and low network signal quality.

Keywords: E-learning, learning outcome,

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Introduction

Our country is a country that ever-growing needs reliable human resources to be able to compete with other countries. This reliable human resource can be seen in the improvement in the quality of education. Education is one of the important things in improving human resources. The quality of human resources depends on the quality of education. The role of education is to create an intelligent, peaceful, open, and democratic society. The quality of human resources in Indonesia is still low. Physics is one of the basic sciences that plays an important role in studying this subject. Physics is the science learn about materials or substances that include physical properties,

composition, changes, and energy produced (Sharma et al., 2020). Physics also plays an important role in mastering science and technology which is increasingly sophisticated and modern. The low interest of students is deemed necessary to evacuate the teaching and learning process by looking at the level of success of students in student self-confidence, reflecting on and improving learning models and strategies (Wanabuliandari et al., 2021). Student learning outcomes are influenced by two factors, namely internal factors and student external factors. Internal student factors include health problems, disabilities, psychological factors (intelligence, interest in learning, attention, talent, motivation, maturity, and readiness of students), and fatigue factors. The external factors that influence student learning processes and outcomes include family, school, and community factors. Student learning interest has many positive effects on learning processes and outcomes, high interest will lead to a level of attention and readiness level of students involved in learning objects to raise the possibility of success in learning (Wiradarma et al., 2021).

The world of education is currently being hit by massive duping due to the absence of face-to-face learning activities due to the COVID-19 pandemic until now (Fleming & Harley, 2024). Education currently carried out online has not been fully able to overcome learning problems (Palvia et al., 2018); (Lemay et al., 2021). The Indonesian government implements a Work From Home (WFH) policy for workers. This policy is applied to the community so that they can complete their work at home. Education in Indonesia is also one of the areas affected by the COVID-19 pandemic. there are restrictions on interaction The Ministry of Education in Indonesia also issued a policy, namely by closing schools starting from PAUD to student lectures and replacing the government's Teaching and Learning Activities (KBM) process by implementing online learning policies (online/E-learning) (Rijal et al., 2021); (Jamrizal & Umanto, 2023). By using this E-learning learning system, various problems faced by students and teachers sometimes arise, such as learning material that has not been delivered by the teacher and then the teacher replaces the task with another task (Seo et al., 2021); (Dwivedi et al., 2023). The transfer of teaching and learning activities using technology in the form of smartphones or laptops requires educators to be able to adapt to the current situation (Rusydiyah et al., 2020). E-learning learning is a form of utilizing internet technology for learning experiences. During the Covid-19 pandemic, E-learning was one of how the learning process was carried out. But in reality in the field, E-learning cannot be fully implemented or can replace the normal face-to-face learning process. So, on this occasion, researchers conducted a study of the effect of E-learning during the COVID-19 pandemic on the physics learning outcomes of class XI students at SMK Negeri 1 Tantom Tapanuli Selatan. The research aims to improve students' knowledge and learning outcomes.

Methodology

This research was conducted at schools and the homes of each student at SMK Negeri 1 Tantom Angkola. The population is a generalization area consisting of objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2012). The population in this study were all students of Tantom Angkola 1 State Vocational School, which consisted of class X to class XII, totaling ± 425 students. The sample is part of the number and characteristics possessed by the population. The research sample consisted of 2 classes, namely class XI TKJ 1 consisting of 36 students, 19 boys and 17 girls, and class XI TKJ 2 consisting of 34 students, 18 boys, and 16 girls.

So that the research method used is experimental research which is a method used to see whether there is a change that occurs after giving a treatment to research subjects who are a source of data for researchers. Data collection techniques were carried out by distributing pre-tests, post-tests, and questionnaires/questions. Questionnaires are used to determine student responses to the implementation of E-Learning, while tests are used to measure student learning outcomes as quantitative data to be analyzed.

Results and Discussion

Initial class test data were obtained through a pre-test and post-test data were obtained through a post-test which was filled in by 36 students. The pre-test and post-test use 20 multiple-choice questions with a score of 0 – 100, so the theoretical score for the minimum score is 0 with $0 \times 5 = 0$ and the maximum score is 100 with $20 \times 5 = 100$. From the results of the pre-test, it was found that student learning outcomes were still below the KKM score = 75 while for the post-test results, it was also found that student learning outcomes were still below KKM = 75. The difference in physics learning outcomes is quite significant between before learning (pre-test) and after learning (post-test).

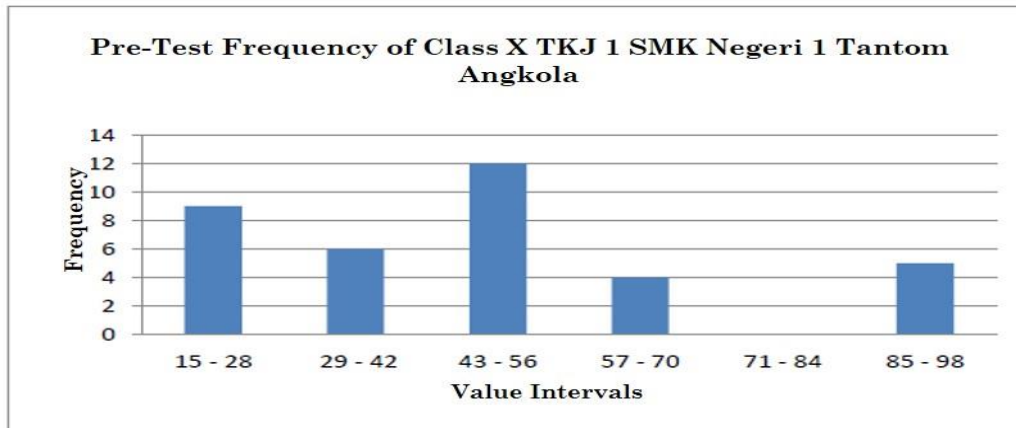


Figure 1. Pre-Test Frequency of Class X TKJ 1 SMK Negeri 1 Tantom Angkola

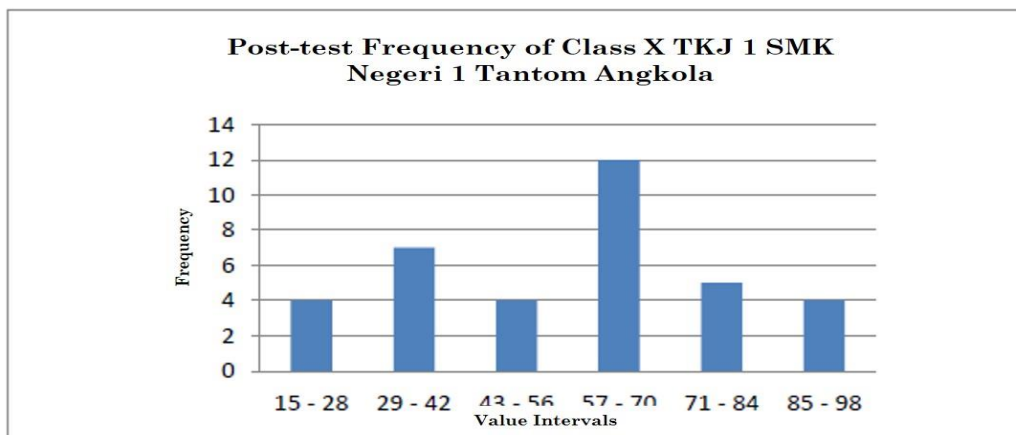


Figure 2. Post-test Frequency of Class X TKJ 1 SMK Negeri 1 Tantom Angkola

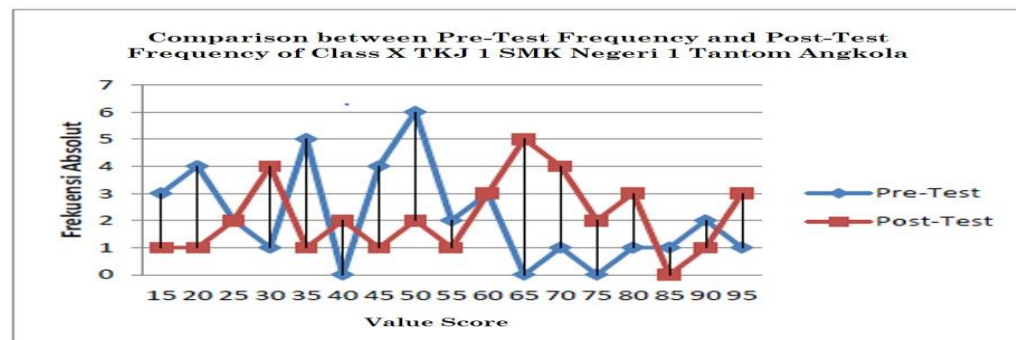


Figure 3. Comparison between Pre-Test Frequency and Post-Test Frequency of Class X TKJ 1 SMK Negeri 1 Tantom Angkola

In Figure 1, Figure 2 and Figure 3 you can see the difference. It was found that the average student pretest score was 47.56 while the average student post-test score was 56.89. This is caused by the many student complaints in the online learning process or with E-learning learning. Obstacles faced by students include not all students having smartphones, package quotas, signals and students not being active in the online learning process. Then by using a questionnaire, the results obtained from the distribution of the frequency of the questionnaire show that the score for choosing doubtful is in the interval 40 - 59.9 with a percentage value of 63.89%. The score that appears the most is a score of 56 with 8 students which can be seen in Figure 4.

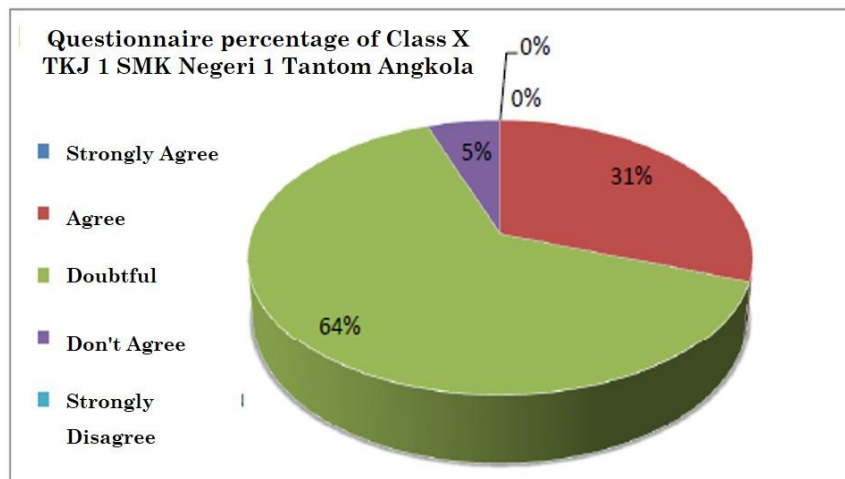


Figure 4. Questionnaire percentage of Class X TKJ 1 SMK Negeri 1 Tantom Angkola

E-learning can also be seen as a form of innovation in the learning process that can be designed properly, which is more user-centered, more interactive which has various conveniences for users because it can be accessed anytime and anywhere (Alokluk, 2018); (Reinartz et al., 2019); (Ahmad, 2020). E-learning is a way of utilizing digital technology for the learning process so that learning can be more open, distributed, and flexible (Kumar Basak et al., 2018); (Haleem et al., 2022). The e-learning system is a form of implementing learning using the internet through websites and weblogs with multimedia content which is a process of transformation and digitization of conventional learning. E-learning allows individuals to plan and direct their learning process so that each student takes responsibility or learns according to their awareness (Jin et al., 2023). E-learning systems vary from simple ones, namely just a collection of learning materials placed on a web server with additional communication forums via e-mail separately, to integrated ones, such as e-learning portals that contain various learning objects enriched with multimedia and combined with academic information system, evaluation, communication, discussion, and various other educational tools (Mhlongo et al., 2023). One of the reasons that support why students have to study independently is that nowadays there are many learning resources that students can get from various media (Radjuni, 2022); (Stoian et al., 2022). Learning is not limited to school only but can be anywhere and anytime. Now the teacher is no longer the only source of learning for students. It is students who must actively learn independently to build their knowledge. The application of technology in the learning process in schools has slowly begun to be implemented in Indonesia. In line with the continued development of technology and the expansion of these technological advances to the interior, even with the limitations, learning can now be done via a computer that has access to the internet.

Conclusion

Based on the research results, learning using E-elearning learning media in physics learning is significantly less good than without using e-learning because student activity is lower. Especially

during the time of the coronavirus (COVID-19), the Indonesian government announced that all schools should study online instead of face-to-face as usual. At the beginning of learning, the conditioning of students in the WhatsApp group experienced a few obstacles. Students are still confused because learning media with e-learning is still a new thing for them. Not all students have smartphones and low signal quality in the regions is one of the obstacles that results in not optimal learning with E-learning learning media.

Conflicts of Interest

The authors declare no conflict of interest.

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