A simple understanding of physics from an Islamic perspective at the As-Shofa Islamic School Pekanbaru

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ABSTRACT

In this modern era, scholars and experts in science and social sciences have provided each other with assistance and solutions to face the problem of understanding science, especially physics, completely. The problems faced are quite realistic in everyday life, especially for students in education at every school and college. Complicated understanding makes students confused and requires initiative steps with a religious science approach. This service method is carried out in a hybrid manner (during and offline) by providing short material and some motivation for various physical phenomena that occur in everyday life according to Islamic views. This service analysis was carried out by collecting data on all students who took part in the learning process. Qualitative and quantitative assessments based on the number of students attracted by the learning materials being promoted. The students involved in this activity seemed very enthusiastic in paying attention and understanding all the material presented. Before starting innovative learning activities, students first take a short and quick test in natural science questions, especially physics. The results of the first exam turned out to be still in the unsatisfactory category. Then the service program was implemented by providing innovative learning and motivation for teachers with several interesting questions. Testing of insight and skills is carried out after learning activities by taking short and quick tests. The results of the second exam were very satisfying with an increase of 85% from the previous one.

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1. INTRODUCTION

Education has a very important and main role in developing a person's personality. Education creates potential in oneself in the form of religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed to be able to live in a society with conscious and planned effort [1-3]. Learning and learning activities are educational interaction processes in order to achieve educational goals [4]. Learning is a system and method contained in the learning process, consisting of several components that interact with each other, consisting of teacher, students, objectives, materials, media, methods, and evaluation [5, 6]. Learning is a teaching and learning activity related to education that will bring about changes in behavior in the form of attitudes, skills, knowledge, and experience so that the learning process provides convenience and helps students to be able to learn well in accordance with the goals to be achieved [7-9]. Successful learning requires collaboration with school components: teachers, facilities, infrastructure, parents, and the student environment [10, 11].

The goals of education will be disrupted and difficult to achieve optimally, especially during the corona virus disease (COVID)-19 pandemic where the learning system in schools is no longer carried out face-to-face and directly in class [12]. This is of course a challenge for teachers and other components in preparing learning material that will be delivered online so that learning objectives can

be achieved and students can understand the learning material well despite the COVID-19 pandemic [13, 14]. Science learning, especially Physics, requires broader teacher competence, not only carrying out activities in the form of transferring knowledge in the form of theory alone or only in the form of visual images because understanding physics requires an understanding of broad natural phenomena, rational evidence, sensory experience and certainty of facts on naturally happens [15-17]. This results in an incomplete understanding of the material. Besides that, the learning process that is far from students (remote learning) will be difficult to control, not only in terms of knowledge but also the soul, mental, and social development and growth of students is very limited [18, 19]. At the same time, students look for challenging activities, free opportunities, and other ideas to keep themselves busy, reducing their educational concerns by spending a lot of time playing with gadgets/cellphones [20].

The problem faced in the field of education in this modern era is the decline in the quality of education for all students over time due to understanding that is complicated and far from Islamic views. This is because monotonous learning methods and the lack of a better approach make students less active in the learning process, which makes understanding the material, especially physics, difficult to understand. So it is necessary to promote physics through digital media in the form of short material and interesting practical videos so that this can make it easier for students to learn. Qualitative and quantitative analysis needs to be carried out by collecting data on the number of students who take part in the learning process through digital media, especially social media.

Thus, efforts and solutions in physics management are through promotion in the development of today's digital media to overcome problems that occur in the education sector. In today's digital developments, it is easy to dig up information via the internet, so that students can participate in learning via online media easily. This service method is carried out online by providing short material and several practical videos that explain various physical phenomena that occur in everyday life.

2. FORMS AND METHODS OF ACTIVITIES

This service is planned to take place from June to November 2023, including the period for making proposals until the final report. This service is carried out in a hybrid manner at the As-Shofa Pekanbaru Islamic School and the Plasma Physics and Photonics Laboratory is used as the admin center for controlling communication and information.

Figure 1. As-Shofa Islamic School Pekanbaru.

This research consists of primary and secondary data. Primary data was obtained by filling out an online questionnaire regarding interest in physics from several materials or short video footage posted via social media. This data contains information on several factors that can determine whether or not you are interested in physics. Meanwhile, secondary data comes from how many viewers there are and who likes posts or videos about learning physics. This data can be a support for primary data which is useful for analyzing specific data.

Data collection was carried out by providing an online form in the form of a questionnaire to all media users, especially students. The form contains statements and responses regarding interest in physics that has been studied by providing short material and practical videos. This technique is for collecting primary data. Secondary data collection is carried out by saving or exporting data on the

number of viewers and likes from several videos posted via official service media. Collecting all this data can provide information on the management of the physics learning process through digital media.

Data can be analyzed quantitatively and qualitatively. Quantitatively, it can be explained by plotting a curve about the interest of online students from the number of viewers and likes each week. Data that is negative (unlike) can be used as a comparison in the analysis curve. Every week different materials and videos will be provided. Meanwhile, qualitatively, it can be analyzed using statements and direct responses from students to learning materials and videos posted via social media. From all this data there are at least positive and negative reviews, this can be used as an important factor that needs to be analyzed by comparing the two characteristics of the data in order to correct deficiencies in the physics learning process.

The initial stage of research was carried out by studying topic selection to promote physics through digital media that could be easily understood and attract the attention of all students. Digital media to promote physics can be done through social media applications such as YouTube, Facebook, Instagram, TikTok, and websites. This promotion was carried out by explaining various physical phenomena in everyday life from a summary of the material and a short video. Several types of aspects can provide motivation and encourage students to increase their knowledge of physics in everyday life. Apart from that, promotional activities also introduce organizations related to physics at local and national levels, such as PSI (Physical Society Indonesia). This provides students with knowledge about the association of physicists throughout Indonesia who have carried out research in the development of intellectual technological advances. This process is a step to brand the unique characteristics of physical science which, without realizing it, is present at all times in the environment of everyday life. Then collect data from all the promotional plans that have been mentioned. The data that has been collected is analyzed and validated. Next, the research output is carried out by publishing an article in an accredited national journal and other outputs, and the next step ends with a report on performance results during the service process.

3. ACTIVITY IMPLEMENTATION

In general, teaching staff at schools are around 30-40 years old with little teaching experience. The ratio of male teaching staff is very small compared to women, around 1:4 of the total present. However, the enthusiasm for learning among teaching staff can be seen in the success of improving teaching abilities from practical simulations. With this program and the potential that exists within the teaching staff, it is hoped that physics or science teachers will be able to develop teaching methods using simple practical tools to attract students' interest in learning and broaden their knowledge of learning and teaching in the classroom.

Figure 2. As-Shofa Islamic School teachers' association.

The students at the As-Shofa Islamic secondary school, who are relatively young, have the potential to expand their knowledge with enthusiasm for learning. Therefore, innovative learning service activities need to be carried out using interesting methods with simple practicums. Apart from

that, in today's modern technological world, learning can be done during or offline with several interesting methods and videos of course.

Students or teachers are required to have an up-to-date spirit or know the development of existing knowledge, especially physics and science at the secondary school level. However, this requires motivation and guidance for teachers to realize innovative and interesting learning with service activities carried out by lecturers from Riau University colleges. The potential for empowering teachers can be seen in the enthusiasm for participating in learning as in Figure 3.

Figure 3. Enthusiasm of As-Shofa Islamic School teachers.

Increasing the knowledge insight of students or teachers needs to be done by providing motivation and innovative learning in physics and science using simple practical methods. This activity is very important with a visual approach and interesting things that have never been practiced. This activity was carried out directly after the end of the COVID-19 pandemic.

Figure 4. Implementation of service activities in the room.

The learning service program for teachers is implemented in various secondary schools at the As-Shofa Islamic School. Developing students' insight is also carried out by providing practical videos or simple research regarding physical and scientific phenomena. Apart from that, the assessment of service achievement indicators is carried out using short and quick tests on teachers. The indicator in question is increasing the knowledge and skills of students in learning physics and science in the classroom. Figure 4 shows the implementation of physics learning activities using simple teaching aids.

Community service activities in developing creativity in physics learning using simple practical tools directly have been successfully implemented. The teaching staff at As-Shofa Islamic School have a high level of enthusiasm to work together to make the community service activities that have been carried out offline a success. The level of achievement can be seen from the indicators obtained from

short and quick tests on teachers. However, before starting learning activities, students are given a test first to measure how much insight and knowledge they have. The results of the first exam obtained were still less than satisfactory for all students. Therefore, innovative and motivating learning by lecturers is carried out for teachers.

This learning activity is carried out offline by practicing several physical and scientific phenomena using simple tools. Then for each experiment, the teachers were given the opportunity to ask questions and try it, and then they were given some interesting material from the lecturers. After the learning activities are carried out, a short and quick test is carried out to determine changes in indicators of achievement in increasing knowledge and skills. The results of the second exam were very satisfactory with an increase in indicators of 85%. These results prove that learning physics and science can be more easily understood with the help of a visual approach from practical work using simple tools. Figure 5 displays the success of implementing community service.

Figure 5. The success of the empowerment service for As-Shofa School teachers.

4. CONCLUSION

Innovative learning service activities and simple offline practicums have been successfully implemented. This activity is educational in nature in order to achieve educational goals. This is an advantage for teachers and other components to think creatively and innovatively in learning. This activity was carried out by all students at the As-Shofa Islamic secondary school. The students involved in this activity seemed very enthusiastic in paying attention and understanding all the material presented. Before starting innovative learning activities, students first take a short and quick test in natural science questions, especially physics. The results of the first exam turned out to be still in the unsatisfactory category. Then the service program was implemented by providing innovative learning and motivation for teachers with several interesting questions. Testing of insight and skills is carried out after learning activities by taking short and quick tests. The results of the second exam were very satisfying with an increase of 85% from the previous one.

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