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Utilization of Interactive Learning Media to Improve the Science Learning Outcomes of Students at State Junior High School 1 Huamual Belakang

Sally E. Untajana[1*], Ashari Bayu Prasada Dulhasyim[1], Fryan Sopacua[1], Venty Sopacua[1]

[1] Program Studi Pendidikan Fisika, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Pattimura, Ambon, Indonesia.

Abstract: Improving the quality of learning is one of the main focuses in the field of education. One factor that plays a role in enhancing students' understanding is the use of interactive learning media. This media allows students to be more active in the learning process, especially in understanding abstract concepts. However, based on interviews with teachers at State Junior High School 1 Huamual Belakang, it was found that the utilization of interactive learning media at that school is still very minimal. Therefore, this Community Service Program (PKM) aims to train teachers in using PhET, Prezi, Seesaw, and Renderforest applications as interactive learning media that can improve student learning outcomes. The method used in this activity is direct instruction, which includes material presentation, demonstrations of application usage, simulations, and discussion and Q&A sessions. The evaluation was conducted through a questionnaire filled out by teachers and students after the training. The analysis results from the questionnaire indicate that the use of interactive learning media received positive feedback from both teachers and students. Teachers felt more assisted in delivering the material, while students found it easier to understand abstract concepts. Thus, this activity has a positive impact on enhancing teachers' skills in utilizing learning technology and helps students understand the material more effectively. This program is expected to be implemented sustainably in other schools to improve the quality of education.

Keywords: Riverbank, Flood Control, Regulations, Conservation, Environmental.

Introduction

The government continues to commit to improving the quality of national education by refining the curriculum and encouraging teachers to innovate in teaching methods. One of the biggest challenges is creating an engaging learning environment, especially in subjects that are abstract and difficult to understand. This is where interactive learning media comes in as an effective solution, helping students to understand the material more deeply while also increasing their active involvement in the learning process. With interactive media, students are not only recipients of information but also active participants who are fully engaged in every step of learning (Rogti, 2024).

Interactive learning media are tools that allow students to actively participate in the learning process (Ismawati et al., 2023). The use of learning media should be an aspect that receives the teacher's attention in learning activities so that interaction between teachers and students can proceed effectively and efficiently. Teachers can create a more inclusive, engaging learning environment that is in line with current technological developments, which ultimately improves student learning outcomes (Wattimena & Batlolona, 2024). Some forms of this media include learning videos, simulations,

interactive quizzes, and learning applications such as PhET, Prezi, Seesaw, and Renderforest.

The PhET application is one of the interactive learning media. This PhET software contains abstract physics animations aimed at strengthening students' scientific concepts (Ndihokubwayo et al., 2020). The use of PhET simulations in learning can provide facilities in studying a subject, thereby building concepts and scientific process skills among learners (Correia et al., 2019). Meanwhile, for material presentation, Prazi software can be used.

Prezi is a presentation software that is also designed to display visual media, audio, and animations. It is structured as an example of linear presentations, or presentations in the form of mind maps. Prezi excels because this program uses the Zooming User Interface (ZUI) that allows Prezi users to zoom in and out of their presentation media (Aruan et al., 2020). Prezi is a software for internet-based presentations (SaaS). In addition to presentations, Prezi can also be used as a tool to explore various ideas on a virtual canvas (Chou et al., 2015).

The Seesaw application is a learning platform that allows each student to have a learning journal in the virtual classroom. Seesaw comes and brings a change in teachers' way of thinking about designing authentic assessments online. Through this application, teachers can provide information to parents about what students are doing in their classes and can jointly control children's behavior with teachers. In fact, teachers can also directly share texts, images, videos, and links that students can view on their Android/phones, using an app for iPhone, iPad, and Android devices (Rou & Yunus, 2020; Sari et al., 2022).

Renderforest is one of the digital-based learning media creation platforms favored by students. Renderforest is a digital platform that allows for the creation of animated learning videos equipped with slide presentations, and the creation of learning videos using Renderforest is free (Tengku et al., 2024). On the renderforest platform, a teacher or lecturer can create animated learning videos complete with music, moving images, a collection of slides, and can also be integrated with YouTube videos. With the renderforest application, a teacher can edit and create professional-quality learning videos (Sari & Fathoni, 2022). Furthermore, it is stated that the use of renderforest can create animation videos that can stimulate students' interest in learning (Nur Aeni et al., 2022). Students will learn joyfully and be able to express their creativity if the learning is delivered through the renderforest platform (Ramadhani & Oktaviarini, 2024).

Based on interviews with a teacher at the State Junior High School 1 Huamual Belakang located in the village of Allang Asaude, it was found that the school is not yet aware of or using applications such as Phet, Prezi, Seesaw, and Renderforest in the teaching and learning process. Therefore, the community service team from the Physics Education Study Program has formulated a community service project that the school needs, entitled "Utilization of interactive learning media to improve the science learning outcomes of students at State Junior High School 1 Huamual Belakang".

Method

Community service activities (PKM) have been carried out at State Junior High School 1 Huamual Belakang, West Seram District. The number of teachers participating in this activity was 9 out of 12 teachers and the number of students was 30. This activity took place on Saturday, November 2, 2024. The main speaker for this event was Sally E. Untajana, M.Pd. Community Service activities are a team activity consisting of Sally E. Untajana, M.Pd (Science Education - Physics), Ashari Bayu P. DulHasyim, S.Pd, M.Si (Physics), Fryan Sopacua, S.Pd, M.Si (Physics), and Venty Sopacua, M.Pd (Science Education - Physics), who are lecturers from the Physics Education Study Program. Before this activity is carried out, the team conducts initial observations with the school to prepare by agreeing on the right time to carry out the training activities.

The method used in this activity is direct instruction, which includes delivering material, demonstrating the use of applications, simulations, and discussion and question-and-answer sessions. The important topic presented in this training activity is "Utilization of interactive learning media (Phet, Prezi, Seesaw, and Renderforest) to improve student learning outcomes." In this activity, an introduction was made by the Head of the Community Service Team and the Principal of the State Junior High School 1 Huamual Belakang.

This activity aims for training participants, namely teachers, to be able to: Enhance teaching creativity where teachers can present materials more attractively using Prezi for interactive presentations or Renderforest for educational videos, as well as facilitate learning assessments with Seesaw, allowing teachers to assign digital tasks, monitor student progress, and provide immediate feedback. In addition, it can enhance learning efficiency with simulations from Phet, allowing students to experiment virtually without the need for physical laboratory equipment, thus saving time and costs. For students, this activity aims to improve conceptual understanding where interactive media like Phet helps students visualize and practically understand concepts, especially in science and mathematics subjects, and can also increase learning motivation. The use of

technology in learning makes the classroom atmosphere more interesting and interactive, thus motivating students more. In addition, by using Prezi, Seesaw, or Renderforest, students become accustomed to using technology for presentations and independent learning, which can enhance their digital skills and accommodate various learning styles since these media support different learning styles (visual, auditory, kinesthetic) making it more inclusive for all students. Furthermore, the presenter gives participants the opportunity to use the applications being learned.

Result and Discussion

The implementation of community service activities at State Junior High School 1 Huamual Belakang began with the attendance list being filled out by participants, followed by introductions and an opening for the community service activities. This event was opened by the Principal, Mrs. Naomi Tandi Upa, S.Pd, who expressed her gratitude and highest appreciation to the community service team and all parties who contributed to this activity. Innovation in the world of education, especially through the use of technology, is very important in improving the quality of learning. Therefore, the principal strongly supports the implementation of interactive learning media such as Phet, Prezi, Seesaw, and Renderforest in the teaching and learning process at our school. The principal also stated that science subjects are often considered difficult by some students. Therefore, engaging and interactive learning methods are essential to help them understand complex concepts. With the presence of interactive learning media, the principal hopes that students can be more motivated to learn, easier to understand the material, and more active in the learning process. Furthermore, it is hoped that this activity can enhance the competencies of teachers in integrating technology into learning. In this way, we can together create a more innovative and effective learning environment in accordance with the times.

Figure 1. Introduction and opening by the principal of State Junior High School 1 Huamual Belakang

The Community Service activity was followed by a presentation on interactive learning media Prezi, Seesauw, and Reenderforest (Speaker 1), followed by a presentation on Phet simulation media (Speaker 2), then continued with a question and answer session (discussion) and a simulation of media usage, and finally the completion of response questionnaires from teachers and students.

Interactive learning media is a tool or technology that allows students to interact directly with learning materials, either through simulations, animations, or other digital-based activities (Hamada & Hassan, 2017). Interactive learning media refers to the use of multimedia elements such as text, images, audio, and video designed to enhance understanding of concepts through active interaction (Zawacki-Richter et al., 2019). Interactive learning media is any form of aid used in education that allows for active student engagement in understanding the material (Al Husaeni et al., 2022). Interactive learning media is a tool designed to provide a learning experience that involves direct participation from students, thereby enhancing the effectiveness of knowledge transfer (Nazlidou et al., 2024). In the digital era, technology plays an important role in education. Teachers and students need innovative learning media to improve the effectiveness of learning. Several interactive platforms like Prezi, Seesaw, and Renderforest have emerged as solutions for presenting learning material that is more engaging, visual, and interactive.

Prezi was developed as an alternative to PowerPoint to create more dynamic and interactive presentations. With the concept of a Zooming User Interface (ZUI), Prezi allows the presentation of material in a non-linear format, making it more engaging and easier for students to understand. *Seesaw* was developed as a digital learning platform that enables interaction between teachers, students, and parents. This platform supports project-based learning, student portfolio documentation, and more effective communication in the school environment, and Renderforest is a cloud-based platform used for creating animated videos, presentations, and infographics. This platform helps in creating more engaging learning content through professional visualizations without the need for high design skills. Thus, the use of Prezi, Seesaw, and Renderforest in education provides significant benefits to the education world, especially in creating a more visual, interactive, and effective learning experience. By leveraging this technology, students can more easily understand learning concepts and become more involved in the learning process.

Figure 2. Presentation of material by Speaker 1 and Speaker 2

In the material presentation session, both teachers and students seemed to pay attention with enthusiasm. There were 2 teachers who asked about the advantages and disadvantages of the Prezi, Seesaw, and Renderforest applications, and whether PhET simulations could be used for all subjects. In addition, there are also students who asked about the differences between Prezi and PPT, as they believe that PPT can also use various interesting features such as creating videos and animations. The students also seemed enthusiastic about simulating the creation of educational videos in front of the class.

Figure 3. Simulation students create learning videos

After providing the material, a response questionnaire was distributed to the teachers. The questionnaire contained questions regarding the use of simulation media, as shown in Figure 4. The results are as follows:
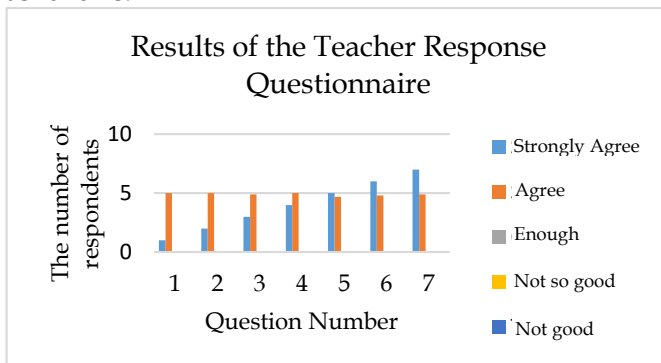
Figure 4. Results of Teacher Response to Community Service

Based on the results of the questionnaire shown in Figure 1, it was found that the community service program at State Junior High School 1 Huamual Belakang has a positive impact. This is seen in the range of responses from respondents overall from agreeing to strongly agreeing. Teachers and students at State Junior High School 1 West Seram felt interested, happy, and beneficial when given material on interactive learning media; Prezi, Seesaw, Renderforest, and Peth.

The Phet application simulation presented is about electricity, which includes series and parallel circuits, making teachers and students interested in participating in the virtual laboratory simulation. This is because through the Phet application, students do not need to memorize concepts or formulas as they will discover the concepts or formulas themselves through the application. Several relevant studies on this conclude that the use of PhET Simulation proves to enhance students' understanding of physics concepts (Perkins, 2020). This is also in line with the results of other research stating that the use of virtual media in conducting experiments or practical work facilitates students in understanding physics concepts through representations of abstract concepts (Pranata, 2024). This proves that students' understanding of science concepts can be improved through the use of PhET Simulation media. Meanwhile, for the applications Prezi, Seesauw, and Renderforest, teachers feel it is easier to design presentation media, as well as to monitor students completing assignments.

Prezi provides users the opportunity to display high-quality information and skills in a dynamic spatial arrangement. Prezi offers a more liberating space to express creations and ideas in the creation of presentation slides (Ningsih et al., 2023). One of the advantages of Prezi is its use of Zooming User Interface (ZUI), which allows Prezi users to zoom in and out of the presentation media. Seesaw is a learning platform that allows students to have a learning journal. Teachers can directly share texts, images, videos, and links that students can view on their Android/phones, using an app for iPhone, iPad, and Android devices. Meanwhile, Renderforest is a digital platform that allows for the creation of educational animated videos complete with slide presentations.

Overall, the use of interactive learning media not only enhances student understanding but also assists teachers in creating more innovative and engaging teaching methods. Schools and teachers should start adopting technology-based learning media to improve the quality of education in this digital era. Furthermore, at the end of this activity, there will be the formation of a collaborative network among participants, namely schools and study programs, in building future

cooperation in terms of education, research, and community service.

Figure 5. Group photo after the community service activity

Conclusion

This community service activity has been running well and has provided benefits to the participants, as well as having a positive impact on improving the quality of science education in schools. From the implementation of this activity, the conclusion that can be drawn is:

Overall, this activity provides significant benefits for students, teachers, and schools in improving science learning outcomes as well as encouraging the use of technology as an innovative and effective learning aid, also increasing students' interest and motivation to learn. Furthermore, teachers can also be involved in learning innovations. It is hoped that this program can continue to be implemented and further developed so that its benefits can be felt sustainably.

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