# LEARNING THE PHYSICS CONCEPTS USING TECHNOLOGY TO IMPROVE STUDENT'S CREATIVITY AND ACHIEVEMENT

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## ABSTRACT

The rapid development of information and communication technology affects various fields of life, including education. Many studies show vast opportunities to improve multiple skills using technology. This paper discusses Phypox applications in physics learning concerning increasing creativity and learning outcomes. Teachers can use Phypox to teach various physics concepts better. The literature review results show that Phypox with student-centered learning strategies can increase creativity and learning outcomes. The obstacle encountered in this application is the teacher's skills in the application that need to be improved.

**Keywords:** information technology, physics learning, creativity, learning outcome.

## 1. INTRODUCTİON

Education is an effort made by people who are given the responsibility to teach students to have high self-confidence and creativity so that they can achieve educational goals, namely increasing learning achievement. Education today is an education strongly influenced by the revolution's development, where education makes more use of technology in the learning process. With the help of technology, it will be possible to solve educational problems because the learning process is not limited by space and time. Students can access the learning process anywhere and anytime [1]. Advances in science and technology affect teaching and learning activities. They help use teaching aids in schools or other educational institutions so that educators have high skills to solve a problem in learning activities. The utilization of technology in education to increase learning effectiveness needs to be developed various creative and innovative concepts [2]. One of the exciting things in the educational environment these days is the technology-based learning environment at various levels of education, from elementary to tertiary education. This technology-based learning covers different school learning subjects, including physics learning [3]. In this case, the use of technology in learning physics will increase students' creativity and problem-solving skills. In addition, the use of technology in learning physics will improve student achievement.

## 2. USE OF TECHNOLOGY WİTH PHYSİCS CONCEPTS

In an era where the times are increasingly advanced, technology is often used in educational institutions as a learning medium. One of the uses of technology in learning is for learning physics. Physics subjects are still one of the subjects considered difficult by students. This situation is undoubtedly a problem. Understanding concepts and learning outcomes are still shallow. The contributing factor is that the educational design displayed is not following the nature of learning and teaching physics [4, 5]. Utilizing technology as a learning medium makes it easier for teachers or students to manage, convey information, and provide different learning experiences [6]. The role of technology in learning physics is very diverse, for example, the Phyphox application on smartphones. The Phyphox application is an example of technology with physics concepts widely used for learning physics in schools. This technology dramatically facilitates teachers in delivering examples of physics experiments. There are various kinds of experiments in this application, such as pendulums, springs, magnetic spectrum, sound, and others.

Experiments on the Phyphox can be accessed anytime and anywhere, overcoming the time constraints experienced when accessing a physical laboratory for only a short time. In addition, the use of the Phyphox can provide students with skills to solve a problem in the surrounding environment. Students tend to learn more about phenomena or issues in the atmosphere by readily experimenting with these technologies. Then, in this way, students can apply what they have learned together with teachers and friends at school. Teachers also easily guide students to learn the technology. It is undoubtedly one of the advantages of teachers because, with this technology, teachers can quickly provide learning with technology-based physics concepts. Education with this technology-based physics concept must be developed and applied in various schools or other educational institutions. Students must get learning that follows the progress of today's developments because technology will positively impact students because life today is very compatible with the technology. With this technology-based physics learning, it can help students reduce the negative impact of smartphones and will get more benefits.

## 3. INCREASİNG STUDENT CREATİVİTY WİTH TECHNOLOGY

Student-centered, increasing student creativity, creating pleasant learning conditions and valuable learning experiences. One of the principles in the learning process, namely the principle of growing student creativity, is a principle that must always be applied and developed by teachers in learning activities. Student creativity can be improved by how the teacher teaches or the learning he receives. At this time, technology helps students understand knowledge; because of that, students can also readily explore their potential. The potential in students will continue to grow and increase along with the learning they receive. Thus, educational institutions or schools need to pay attention to the learning model applied. In the learning process in the classroom, technology has become a necessity and a demand in the current era. Technology is used to increase creativity and student learning outcomes. Thus, various creative learning media need to be developed [7]. Creative and innovative learning can attract students to learn. Students tend to want a fun learning style with facilities and infrastructure that keep up with the times.

Technology-based learning should have been applied to all schools. Teachers must not rely on technology, but teachers must also have the ability to teach by using appropriate technology-based learning and still pay attention to students' material, time, and skills in class. Thus, it is hoped that this learning can generate student creativity and be readily accepted by students [7]. Technology-based learning will provide more learning experiences for students because students can explore all information and technological advances. This strategy will build students' self-confidence if they have to meet a problem one day, and then students will quickly solve the problem with the help of technology. Technology will help students study educational issues and allow them to develop their creativity in dealing with learning situations that are required to keep up with the times.

## 4. IMPROVİNG STUDENT ACHİEVEMENT İN SCHOOL

According to Ref [8], learning achievement is one of the characteristics that describes students' level of success in learning at school. For student achievement to be achieved well, then between teachers, students and schools must support each other. It implies that teachers must be responsible for determining students' success in schools, and schools must provide the best facilities and infrastructure in schools. Thus, teachers, students, and schools are interrelated and have their respective roles in determining the success of student achievement in school. According to Ref [9], the technology-based teaching and learning process is believed to solve problems wholly seen from the development of student achievement. Namely, changes in student achievement that are getting higher—improving the quality of learning- is one of the factors that the school can do through the learning process.

Quality learning is learning that is under development and curriculum. However, nowadays, students also need an education that helps increase their knowledge and creativity. Technology-based learning will more easily help students in learning activities to improve student achievement in school. If the facilities and infrastructure are adequate, the learning process will occur well. According to Ref [10], learning media can channel messages that can stimulate students' thoughts, feelings, and willingness so that it can encourage the creation of a learning process in students. The continuity of the learning process per the times and circumstances of students will make students more enthusiastic about learning so that students can place themselves as students who want to study seriously. Their learning environment influences students' desire and enthusiasm for learning. If the place where students learn is adjusted based on the times, such as using technology, students will increasingly try to improve their learning achievement. The increase in student achievement in schools is also influenced by changes in mindsets and the development of student creativity in the learning process. Students who have high creativity will be easier to accept and develop learning because the attitude that will affect student performance will make students more enthusiastic about learning to add insight, especially in the field of technology in education. Thus, the more students obtain information and knowledge, will increase student achievement in school.

## 5. CONCLUSİON

Technology-based education dramatically facilitates the learning process in schools today, especially in learning physics, which most students consider difficult. Technology-based learning with physics concepts such as the Phyphox will make it easier for students to carry out various experiments anywhere and anytime. Thus, students can explore their potential and creativity by conducting these technology-assisted experiments. Technology-based learning can help students solve problems so that students can also increase their creativity through technology. Students who have high creativity and enthusiasm for learning will quickly increase their learning achievement. Improved student learning achievement in schools can occur because of adequate education with facilities and infrastructure. Therefore, students will be more enthusiastic about learning because they will find various information and knowledge to help their learning at school. Thus, students will be more devoted to education and improve their learning achievement at school.

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