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**Technology Adaptation in 21st Century Physical Education Learning: Literature Review**

**Ians Aprilo<sup>1</sup>, Poppy Elisano Arfanda<sup>2</sup>, M. Adam Mappaompo<sup>3</sup>, M. Sahib Saleh<sup>4</sup>, Hasbunallah<sup>5</sup>**

**1,2,3,4,5 Universitas Negeri Makassar**

**Jl. Wijaya Kusuma No. 14, Banta-bantaeng, Makassar, Sulawesi Selatan, Indonesia**

**Email: ians.aprilo@unm.ac.id**

**Abstrak**

The problem that arises is the use of technology in 21st-century physical education learning. Educators are required to use technology in every lesson that is carried out, to the demands and learning outcomes. The purpose of this paper is to present the advantages and disadvantages of technology in physical education learning based on the opinions of several previous studies. The writing of this article is a literature review in nature, analyzing reports that are relevant to the use of technology in learning. Literature was obtained using the search application on Google Scholar, Science Direct, Scopus, Web of Science, and books by entering the keywords "21st-century learning", "technology" and "physical education". The literature sources used are 2013-2023. The results of a review of several articles show that technology can help physical education learning, but some argue that physical education learning cannot be done using technology because the teacher's role cannot be replaced.

**Kata Kunci:** 21<sup>st</sup>-century learning, Technology, Physical education

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**INTRODUCTION**

Changes in the 21<sup>st</sup> century in the world of education require a change in the implementation of learning, this change is a shared responsibility to be able to implement in the learning process in Indonesia (Kaufman, 2013). When this change occurs, the demands and learning outcomes in this century will also change. Generations that grow up in this century must have 21<sup>st</sup>-century abilities/skills such as 4C, namely critical thinking (ability to think critically and ability to solve problems), creative (creative and ability to innovate), collaboration (ability to collaborate), and communication (ability to communicate). One of the elements in changing learning patterns in this century is the use of technology, where all students in this century will be faced with an explosion of technology and sources of information that they can access freely through internet media (Juditya et al., 2021).

The current condition in Indonesia is that physical education still only refers to psychomotor aspects (Permana & Habibie, 2020). So physical education has not been able to produce perfect cognitive improvement for students (Bulqini et al., 2021).

Scientific and technological advances not only affect changes in content and learning methods, but also change education, educational models, and educational systems and organizations. The application of modern educational technology is about how to manage educational technology problems, use the results of existing technology, maximize applications that can be used in education, and increase the efficiency of education through the reconstruction of education as a whole. Education for all ages must prepare society for the future and help people achieve self-fulfillment. Physical Education is an important school subject for comprehensive human development.

Technology has been used in all aspects of human life in modern society. The growth of technology in society is the impetus to digitize education. Technology adoption has become a topic of conversation in the field of physical education (Casey et al., 2017). Technology's role in physical education can be polarizing, with some in the profession supporting its advantages and others against it. The government decided that technology will remain a priority for education going forward. There are incentives to explore how technology can support physical educator work and the learner experience.

The purpose of writing this article is the need to consider the complexity of physical education learning and the adoption of the technology to be used.

## **RESEARCH METHOD**

This literature review analyzes relevant articles and focuses on physical education learning methods in the 21st century with the advantages and disadvantages of technology in learning. Writing this article uses a literature review, namely searching for several articles obtained using the search application on Google Scholar, Science Direct, Scopus, Web of Science, and books by entering the keywords "21<sup>st</sup>-century learning", "technology" and "physical education". The literature sources used are 2013-2023.

## **RESULTS AND DISCUSSION**

### **Result**

21<sup>st</sup>-century educators can access an almost unlimited number of technologies to enhance the learning experiences of 21<sup>st</sup>-century learners. Most of the educational technologies used today are accessed through the many interactive curricula, programs, applications, and assessment tools that are widely available for educators to enrich the learning experience in the classroom. One of the responsibilities of educators is to prepare future educators to integrate technology to improve the quality of learning (Krause et al., 2020).

The real objects of multimedia technology are computer technology products, while other simple things, such as film, television, audio, etc., are not included in the multimedia technology category. Media in multimedia technology refers to the first, namely the use of computers to digitize media information such as text, graphics, images, animation, sound, and video. Multimedia learning can display certain educational and learning information to students through text, sound, images, or video.

With more and more available technology, physical education educators are beginning to explore the application of technology related to the regulation of physical activity, examples of technology that have been widely used are watches to monitor calories and heart rate, or educators use video game applications in physical education learning. for example is a motion analysis application (Krause et al., 2017).

### **Discussion**

#### **Advantages**

The use of technology in 21<sup>st</sup>-century learning theoretically enriches educational content, changes perceptions about education, and changes traditional education that has been carried out so far. Technology also has the potential to enhance practical learning for educators by conveying it to students, reconstructing physical education learning, and encouraging sustainable development (Lee & Lee, 2021).

Technology can be an aid in learning that is not only intended to change learning, but also to intensify the relationship between students and educators, reduce gaps related to the

accessibility of information and supporting resources, and help meet the needs of individual students (Krause et al., 2020).

A study in France conducted by Legrain (2015), found that physical education integrated with technology would be effective in focusing students attention and interest, which resulted in a higher level of motivation toward physical education learning.

In another study in Australia Casey & Jones also found a positive effect of using video analysis software to increase students understanding of throwing and catching. They concluded that the use of technology will be meaningful if educators act as catalysts (people who cause change) in increasing students appreciation of the application of skills in real situations, increasing the verbalization of deeper understanding, and transferring knowledge (Legrain et al., 2015).

In addition, educational staff needs to be reflective practitioners and be able to appreciate that learning practices can shape and be shaped by the socio-cultural environment. while engaging in online social spaces (James Robson, 2018) or integrating technology into physical education learning (Henderson et al., 2017)(Selwyn, 2016). Physical education learning that is being carried out at this time must adapt to the social environment so that the implementation of the curriculum can run well.

The implementation of traditional learning must more or less be slowly eroded and replaced with the use of technology (Carpenter & Krutka, 2014). The use of technology has the potential to improve the quality of learning and increase student involvement in physical education learning (Stephen Harvey & Brendon Hyndman, 2018).

In addition, the use of technology can provide information on assistance and guidance for students to study independently when they encounter difficulties so that student learning can run smoothly. Some learning software that has full features can also provide certain learning evaluation information and appropriate guidance (Chunquan Zhu, 2020). So that students can do learning anytime and anywhere.

### **Disadvantages**

However, with the positive findings above, questions still arise about the role of technology in physical education. Guard (2014) expressed concern about the role of technology in health and physical education. The use of digital technology in physical

education has the potential to eliminate educators role in physical education learning. Adoption of technology in physical education learning can create a learning environment where the main role of educators in physical education is only to supervise students use of technology, it is considered that technology has the potential to replace educators (Williamson, 2015).

Likewise, the attention is given by educators who show concern for students in learning. He stated that technology would influence curriculum, pedagogy, and assessment. In other words, the selection of content and pedagogy by educators in physical education learning is limited by time. Often technology is not used correctly and innovatively and as a result, it fails to have a positive effect on physical education learning (Henderson et al., 2017)(Selwyn, 2016).

## **CONCLUSION**

Based on traditional learning modes, learning using multimedia is combined with high technology. It can greatly stimulate students learning enthusiasm, help educators fully explain technical behavior in teaching, and effectively promote learning technology innovation. That is, the new learning mode can maximize the enthusiasm and interest of students. So the use of technology can be beneficial for educators and students in learning physical education in the 21<sup>st</sup> century.

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