

Physical Education Teacher's Knowledge of ICT-Based Learning Media at Primary School

Misran¹, Razali¹, Syamsulrizal¹, Fachrizal Ambia¹, Amanda Syukriadi¹, Jul Fajrial¹, Budi Valianto², Myrza Akbari³, Rahmati³

¹ *Syiah Kuala University*

Jln. Teuku Nyak Arief, Darussalam, Banda Aceh, Aceh, 23111, Indonesia

² *Medan State University*

Jl. William Iskandar Ps. V, Kenangan Baru, Kec. Percut Sei Tuan, Kabupaten Deli Serdang, Sumatra, 20221, Indonesia

³ *Samudra University*

Jalan Prof. Syarif Thayeb, Meurandeh, Langsa Lama, Aceh, 24416, Indonesia

DOI: 10.22178/pos.103-9

LCC Subject Category: GV1100-1150.9

Received 21.03.2024

Accepted 25.04.2024

Published online 30.04.2024

Corresponding Author:

Razali

razali.ismail@usk.ac.id

© 2024 The Authors. This article is licensed under a [Creative Commons Attribution 4.0 License](#) 

Abstract. This research aims to determine the level of knowledge of Physical Education teachers regarding ICT-based learning media. This type of research is descriptive research with a quantitative approach. The subjects of this research were 56 elementary school physical education teachers in Pidie Jaya Regency. The instrument used in this research is a knowledge test instrument, which contains multiple-choice test questions. Data analysis uses completeness level and percentage formulas. Based on the results of data analysis, it can be concluded that 1) The level of knowledge of Physical Education teachers regarding ICT-based learning media in elementary schools as a whole with an average of 72.54% is in the medium category; 2) The level of mastery of indicator 1 in designing learning media in the form of images with an average of 81.91% is in the excellent category; 3) Level of mastery of indicator two regarding making learning media in audio form with an average of 74.01% in the sufficient category; 4) Level of mastery of indicator three regarding making learning media in audiovisual form with an average of 65.17% in the medium category; 5) Level of mastery of indicator four regarding projecting learning media in visual form with an average of 67.09% in the poor category; 6) Level of mastery of indicators 5 in internet browsing-based learning media with an average of 73.66% in the medium category.

Keywords: ICT; Physical Education; Primary School.

INTRODUCTION

The challenges of a teacher in the Industrial Revolution 4.0 era are getting bigger; education in the 4.0 era must be oriented towards using digital technology in learning. Every teacher is required to have competencies related to the use of technology. UNESCO's Information and Communication Technology (ICT) competency framework for teachers (ICT-CFT) seeks to help countries develop comprehensive national teacher ICT competency policies and standards and integrate ICT holistically in education plans [1].

Successful integration of ICT into the teaching and learning process requires rethinking the role of teachers in planning and implementing ICT to improve and transform learning [2]. Furthermore, integrating ICT into education can make it easier for teachers to carry out their duties and functions and for students to achieve the expected competencies [3]. The national education system must ensure that all teachers can utilize technology.

The digital era is a fusion of the Industrial Revolution 4.0 era, where there are rapid changes in society regarding accessing information, politics,

business economics and even the world of education [4]. The digital era must not be resisted or avoided but must be balanced and accepted by society, including teaching staff in the teaching and learning process. Many changes have occurred in people's lives due to the development of technology in this digital era, from the economic, social, and business world to education [5]. Technological advances in education support educators in creating, adapting, utilizing and sharing online learning media content in planning and implementing learning.

The concept of "freedom of learning" continues to be intensified by the Ministry of Education to prepare a reliable generation for the future. One of the programs being intensified by the Ministry of Education is about independent learning, which provides freedom for educators and students to innovate and be creative through the *PembaTIK* (Information and Communication Technology-Based Learning) program from the Ministry of Education. According to [6], implementing the 21st-century curriculum must combine knowledge, thinking, innovation skills, media and Information and Communication Technology (ICT) literacy. Teachers must be motivated to know and understand the importance of using ICT-based learning media.

Using learning media will make the learning process more effective [7]. ICT can make teachers more innovative and creative in packaging learning so that students absorb every material presented. ICT can convey information or messages to students while transferring knowledge to them. With good use of ICT, students and educators will benefit from the technology [8].

The Learning Implementation Plan must include ICT in the form of learning media. Every learning process must start with planning and following the goals to be achieved. Physical Education, Sports, and Health are among the most essential school subjects. It is even one of the subjects in Law No 3 of 2005 concerning the national sports system.

Sports education is physical education, and sports are part of a regular and sustainable educational process to acquire knowledge, personality, skills, health, and physical fitness [9].

In general, physical education lessons at school aim to improve students' physical fitness through cognitive and affective psychomotor activities. Physical Education teachers must be creative and

innovative in teaching and learning, including creating learning media so students can easily understand them. For students still studying in elementary school, it is easier to understand learning if it is taught using media that is more interesting and follows reality, such as displaying audiovisual press [10].

In the technological era, teachers must use ICT in the learning process. From the observations, researchers found that there are still Physical Education teachers who do not understand the use of ICT and are not yet able to create emails and operate computers [11]. Data that researchers found from the education office from 2018 to 2022 showed that only one physical education teacher passed the teacher competency exam to take part in the professional teacher education program.

From the description above, the author wants to know the extent of elementary school physical education teachers' understanding of the use of ICT-based learning media through research entitled "Primary school Physical Education Teachers' Knowledge of ICT-Based Learning Media."

METHOD

This research uses a quantitative approach with a descriptive type. This research was conducted with a sample size determined based on the existing population.

This study's population was 73 elementary school physical education teachers in Pidie Jaya Regency, Aceh Province, Indonesia. Because the population is less than 100 people, this research does not use a research sample; the entire population will be studied (total sampling).

The general steps for compiling/developing tests are as follows [12].

1. Determining the test objectives. The first step in developing a test instrument is to determine its objectives. The test objectives must be formulated clearly to provide direction and scope for further test development.

2. Preparation of the test grid. The purpose of preparing the grid is to determine the scope and as a guide in writing questions. Grids can be either format or matrix. The test grid describes the scope and content of what will be tested and provides details about the questions required by the test. The grid generally contains 1) details of

the learning material/aspect to be evaluated, 2) the behaviour to be measured along with a description of the indicators, 3) the proportion and number of questions, and 4) the form of the questions.

3. Writing questions. When writing questions, the writer must pay attention to the rules for writing questions. Writing questions translate competency indicators to be measured into questions whose characteristics correspond to the grid.

4. Study the questions. Question review is reviewing the test questions that have been prepared. This study was carried out by examining three aspects: material, construction, and language. Usually, when reviewing questions, other people check and revise them.

5. Test questions, including analysis. The questions that have been created and have been reproduced or increased are tested on a predetermined number of samples. The test sample must have characteristics that are more or less the same as the characteristics of the actual test participants. Based on the data from the test results, analysis was carried out, especially analysis of the items, which included the difficulty level, item validity, and distractor function.

6. Assembling the questions into a test set. When assembling tests, it is necessary to group the items according to their form rather than according to the type of material or according to the level of knowledge to be measured.

7. Test presentation. After obtaining the standardized test, the test script is ready to be given or presented to the test taker. Things that need to be considered when giving a test are the time of presentation, clear instructions on how to answer or take the test, and the room and seat of the test taker.

8. Scoring. Scoring is done according to the form of the test or questions.

9. Reporting test results. After carrying out the test and scoring, the test results need to be reported, for example, to the student concerned, to the student's parents/guardians, to the principal, and so on.

10. Utilization of test results. Test results, which are only measurement results, can be used to improve systems, methods, or teaching and learning strategies and to determine policy.

The grid of the elementary physical education teacher knowledge test regarding ICT-based learning media is as follows:

Table 1 - Research Instrument Grid

Variable	Indicator
Physical Education Teacher's Knowledge Of ICT-Based Learning Media At Primary School	Designing learning media in the form of images
	Creating learning media in audio form
	Create learning media in audiovisual form.
	Projecting learning media in visual form
	Exploring Internet-based learning media

Before this test instrument is used, it is first tested in two stages: validity and reliability. Researchers carried out these two stages using a trial sample of 17 people who were not included in the research sample. The knowledge test instrument used during the trial consisted of 50 questions. The trial results found that 40 questions were declared valid, and 10 were declared invalid/invalid.

Based on the data collection results in Table 4.1, which were carried out using a knowledge test instrument of 40 questions regarding the knowledge of Physical Education teachers, results were obtained using the following (1).

$$\text{Knowledge level} = \frac{\sum \text{correct answer}}{\sum \text{to Questions}} \times 100 \quad (1)$$

After the data is collected, the data is interpreted using the percentage assessment norms in Table 2.

Table 2 – Knowledge Level Norms

No	Knowledge level, %	Predicate of Success
1	90-100	Very Good
2	80-89	Good
3	70-79	Medium
4	< 70	Poor

Using the following formula, calculate the percentage classification of Physical Education

teachers' knowledge of ICT-based media at the elementary school level.

$$P = \frac{F}{N} \times 100\%$$

where P – Percentage; F – Frequency; N – Sample; 100% – Fixed number.

Very Good	$P = \frac{18}{56} \times 100\% = 32,14\%$
Good	$P = \frac{15}{56} \times 100\% = 26,78\%$
Medium	$P = \frac{7}{56} \times 100\% = 12,51\%$
Poor	$P = \frac{16}{56} \times 100\% = 28,57\%$

Table 2 – Recapitulation of Overall Knowledge Percentage Calculation Results

Category	Frequency	%
Very Good	18	32,14
Good	15	26,78
Medium	7	12,51
Poor	16	28,57
Total	56	100

RESULTS AND DISCUSSION

From the results of the calculations above, it can be stated that the percentage of knowledge of Physical Education teachers regarding ICT-based media in Pidie Jaya district elementary schools, with an average of 72.54%, is in the sufficient category, with the following details: 1) excellent category, as many as 18 people (32.14%), 2) good category as many as 15 people (26.78%), 3) medium category, as many as seven people (12.51%), 4) category poor, as many as 16 people (28.57%).

Next, analyze the data on the level of mastery and knowledge of Physical Education teachers based on the indicators that have been prepared, which consist of 5 indicators, namely

- 1) Designing learning media in the form of images,
- 2) Creating learning media in the form of audio,
- 3) Creating learning media in the form of audiovisual,

- 4) Projecting learning media in visual form,
- 5) Exploring internet-based learning media.

The data analysis of the level of mastery and knowledge of Physical Education teachers is based on indicators that have been prepared, which consist of 5 indicators, namely

- 1) Designing learning media in the form of images,
- 2) Creating learning media in the form of audio,
- 3) Creating learning media in the form of audiovisual,
- 4) Projecting learning media in visual form,
- 5) Exploring internet-based learning media.

Furthermore, the results of research and data analysis of Physical Education teachers' knowledge about ICT-based media in elementary schools using a percentage formula based on categories, namely excellent, good, medium, and poor with a range of values:

- 1) the level of knowledge in the excellent category is at 90-100%,
- 2) the level of knowledge in the excellent category is 80–89%,
- 3) the level of knowledge in the medium category is 70–79%,
- 4) the poor category's knowledge level is <70%.

The results of data analysis calculations on Physical Education teachers' knowledge about ICT-based media in Pidie Jaya Regency Elementary Schools can be grouped based on the following indicators:

- a) the level of mastery and knowledge of Physical Education teachers in indicator one regarding designing learning media in the form of images is in the excellent category,
- b) Physical Education teachers' mastery level and knowledge in indicator two regarding creating learning media in audio form is in the medium category.
- c) the level of mastery and knowledge of Physical Education teachers in indicator three regarding creating learning media in audiovisual form is in the medium category,
- d) the level of mastery and knowledge of Physical Education teachers in indicator four regarding

projecting learning media in visual form is in the poor category,

e) Physical Education teachers' mastery level and knowledge in indicator five regarding exploring internet-based learning media is in the medium category.

Furthermore, the results of data analysis calculations on the level of knowledge of Physical Education teachers regarding ICT-based media in elementary schools show that the average is 72.54% in the medium category. This means that it can be concluded that Physical Education teachers' knowledge about ICT-based learning media is still in the medium category; they still need support from stakeholders from the government to increase Physical Education teachers' knowledge about ICT-based learning media so that they can reach a percentage level above 95%, to support educational progress.

Industrial Revolution 4.0 is a change in society regarding accessing information, politics, business economics, and even the world of education. Technological advances in education support educators in creating, adapting, utilizing, and shar-

ing online learning media content in planning and implementing learning.

CONCLUSIONS

Based on the results of the research that the authors obtained, it can be concluded that the achievement motivation level of football players is 131.68 (in the medium category) with the following details: as many as three respondents (13.63%) are in a low type, six respondents (27.28%) are in the medium category, and the remaining 13 respondents (59.09%) are in the high class.

This follows the [13] statement, which explains that achievement motivation is a fundamental mental skill that athletes need. The motivation that athletes need to have is achievement motivation cause athletes who have achievement motivation will race with excellence, both self-advantage and other people's excellence, even to achieve performance in training tasks and competitions.

REFERENCES

- Hinojo Lucena, F. J., López Belmonte, J., Fuentes Cabrera, A., Trujillo Torres, J. M., & Pozo Sánchez, S. (2019). Academic Effects of the Use of Flipped Learning in Physical Education. *International Journal of Environmental Research and Public Health*, 17(1), 276. doi: [10.3390/ijerph17010276](https://doi.org/10.3390/ijerph17010276)
- Moreno-Guerrero, A.-J., Alonso García, S., Ramos Navas-Parejo, M., Campos-Soto, M. N., & Gómez García, G. (2020). Augmented Reality as a Resource for Improving Learning in the Physical Education Classroom. *International Journal of Environmental Research and Public Health*, 17(10), 3637. doi: [10.3390/ijerph17103637](https://doi.org/10.3390/ijerph17103637)
- Rocu Gómez, P., Blández Ángel, J., & Sierra Zamorano, M. Á. (2019). Construyendo aprendizajes en Expresión Corporal a través de WebQuest: un estudio de caso múltiple. *Revista Complutense de Educación*, 30(4), 1013–1029. doi: [10.5209/rced.59905](https://doi.org/10.5209/rced.59905)
- Hutabarat, H. H., Razali., Ahadin., & Akbari, M. (2021). Implementation of Management Functions in Football Clubs. *Journal of Physical Education, Sport, Health and Recreation*, 10(3), 109–112.
- Meng, J. (2021). College Physical Education Teaching Aided by Virtual Reality Technology. *Mobile Information Systems*, 2021, 1–11. doi: [10.1155/2021/3052895](https://doi.org/10.1155/2021/3052895)
- Liu, S., & Chen, Q. (2022). College Sports Multimedia Network Based on Wireless Communication and Deep Learning Network Environment. *Wireless Communications and Mobile Computing*, 2022, 1–12. doi: [10.1155/2022/3267639](https://doi.org/10.1155/2022/3267639)
- Rodriguez, R., & Avila, C. (2022). Digital competences in university students and teachers in the area of Physical Education and Sports. *Retos*, 43, 1065–1072.
- Killian, C. M., Espinoza, S. M., Webster, C. A., Long, B., Urtel, M., Mays Woods, A., & D'Agostino, E. M. (2022). Flipping the Script: An Initial Exploration of Flipped Learning as an Enhanced Alternative to Traditional Physical Education Lessons. *International Journal of Environmental Research and Public Health*, 19(22), 15188. doi: [10.3390/ijerph192215188](https://doi.org/10.3390/ijerph192215188)

9. Said, L. R., Anisah, H. U., Firdaus, M. R., Rusniati, R., & Rachman, M. K. (2022). The Impact of Perceived Benefits of Corporate Social Responsibility Initiatives on Wetland Farming Communities in Indonesia. *Wseas Transactions On Business And Economics*, 19, 402–413. doi: [10.37394/23207.2022.19.36](https://doi.org/10.37394/23207.2022.19.36)
10. Long, N. J. (2022). Afterlives and Alter-lives. *Social Analysis*, 66(4), 112–133. doi: [10.3167/sa.2022.660406](https://doi.org/10.3167/sa.2022.660406)
11. Pomportes, L., Brisswalter, J., Hays, A., & Davranche, K. (2016). Effect of Carbohydrate Intake on Maximal Power Output and Cognitive Performances. *Sports*, 4(4), 49. doi: [10.3390/sports4040049](https://doi.org/10.3390/sports4040049)
12. Zhang, H., Liu, X., Xie, Y., Gou, Q., Li, R., Qiu, Y., Hu, Y., & Huang, B. (2022). Assessment and Improvement of Urban Resilience to Flooding at a Subdistrict Level Using Multi-Source Geospatial Data: Jakarta as a Case Study. *Remote Sensing*, 14(9), 2010. doi: [10.3390/rs14092010](https://doi.org/10.3390/rs14092010)
13. Szajna, G., Bak, R., & Kulasa, J. (2019). *Application of conflict algebra in the analysis of fencing and tactical preparation methods*. Retrieved from <https://www.proquest.com/openview/afaf2f900c45674c315323e266032013/1?pq-origsite=gscholar&cbl=5371637>