62. The Role of Physics Teachers in Digital Learning

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The Role of Physics Teachers in Digital Learning

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Abstract.
This research aimed to determine the role of physics teachers in digital learning. Library research methods were used and this discussion is based on expert opinions and the results of previous research on digital learning. The teacher's task is to design, implement, and evaluate learning. During current times, teachers, including physics teachers, face far more complex challenges when compared to the previous era. Teachers are faced with technological advances, diverse learners, and more complex subject matter. Physics teachers must be able to teach digitally but still facilitate science process skills. This paper describes the role of physics teachers in digital learning, namely in teaching and managing classroom activities effectively, practicing science process skills, building effective relationships with students, using technology to improve the quality of the learning process, and reflecting on continuous learning.

Keywords: physics teacher, digital learning

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1. Introduction

In Indonesia, the duties of teachers are regulated in the Indonesian Teacher and Lecturer Law of 2005, namely planning lessons, implementing quality learning processes, and assessing and evaluating learning outcomes. Educating is related to morals and personality. If viewed from the process, then education is related to providing motivation to learn and follow the rules or regulations. Meanwhile, if viewed from the aspect of strategies and methods used, educating is more about using examples and habituation. Teaching is a scientific process in managing the learning environment as well as possible so as to create opportunities for children to learn, with the main components, namely teaching content, communication, and input [1]. The teaching process is carried out by giving examples to students or practicing certain skills or applying concepts to skills that can be used in everyday life. Guiding is related to norms and rules. Guiding students can be done by conveying science, technology, and art using certain learning methods

or strategies. Guiding also provides motivation and coaching to students in learning. While training is done by being an example (role model) and role model in terms of morals and personality, as well as certain skills, which can be done through practice and simulation.

The teacher's role in 21st-century learning is increasingly complex and the sources of knowledge are broad and unlimited [2]. In 21st century learning, teachers are expected to be able to teach technology-oriented. In addition, it must be able to meet the needs of students in heterogeneous classrooms and create a student-centered atmosphere, a good learning environment, and offer opportunities for inquiry through dynamic learning.

The success of 21st-century learning is influenced by the availability and use of digital technology [3]. Therefore, there is a transformation of the teacher's role from conveying information or knowledge to being a facilitator or coordinator which requires teachers to be more flexible in dealing with their new assignments. The role of the teacher has changed and will continue to change so that the teacher is able to become a mentor, trainer, facilitator, and creator of a quality learning environment. Currently, it can be said that a good teacher is one who is able to facilitate and guide students to learn online or to design, implement, and evaluate digital learning.

Digital learning can include a variety of specific learning strategies and methods that use digital technology or a mixture of these strategies and methods. Several types of digital learning are blended learning, e-learning, the use of technology/computer/internet in the classroom, and adaptive learning. Through digital learning, it is hoped that students can learn according to the times and become more effective.

Physics teachers must prepare themselves to be able to do digital learning. Digital learning in physics subjects is certainly different from other subjects. Teachers become collaborators and mediators of learning [4]. This causes physics teachers to take a maximum role in learning physics so that the objectives are achieved. This paper will describe the role of physics teachers in digital learning.

2. Method

This research uses the literature study method. The special characteristics used as the basis for developing research knowledge include: This research is confronted directly with data from texts or literature, not with field data/field observations. Researchers only deal directly with sources that already exist in the library or data are ready to use, and use secondary data [5]. The literature research process is carried out by reviewing the literature and analyzing the relevant topics that are combined [6]. Bibliography searches

can take advantage of sources in the form of journals, books, dictionaries, documents, magazines, and other sources without conducting field research. The secondary data that has been collected is then analyzed descriptively qualitatively. Drawing conclusions is an act of concluding findings. The analysis is carried out by generating general conclusions that lead to specific conclusions about the role of physics teachers in learning physics.

3. Results and Discussions

Physics teachers have an important role in educating students. In this digital era, a physics teacher must understand his duties well. The great responsibility for student development is held by the teacher, which includes the responsibility for cognitive, affective, and spiritual aspects, as well as psychomotor [7]. Teachers have professional duties in education and learning. In digital learning, physics teachers play a role in teaching and managing classroom activities effectively, practicing science process skills, building effective relationships with students, using technology to improve teaching quality, and improving learning continuously.

In digital learning, physics teachers must be able to be good facilitators, namely by providing the availability of facilities to facilitate learning activities for students. The digital learning environment should be designed not to be stressful, the classroom atmosphere is fun and allows interaction between teachers and students, between students. The role of the physics teacher as a digital learning facilitator, namely: 1) the teacher provides all learning tools starting from the syllabus, lesson plans, teaching materials, evaluations, and assessments; 2) provides digital learning methods and media; 3) the teacher acts as a student partner.

In essence, learning physics should facilitate students to learn science process skills. The physics teacher as professional must be competent in understanding the process of scientific thinking. Science process skills reflect the behavior of a scientist, an ability that can be applied in various disciplines [8]. Another opinion states that it is a basic skill that helps science learning makes students more active, exercise responsibility, and improve the quality of learning and research [9]. Besides that, it can also be interpreted as a person's skills in using thoughts, logic, reasoning, and actions effectively and efficiently to achieve a certain result. These skills can help students to develop responsibility in learning, and improve research methods in the learning process. Science process skills aim to make students more active in understanding and mastering the series they

do such as observing/observing, classifying/classifying, interpreting/interpreting, predicting/predicting, hypothesizing, planning experiments/research, and communicating [10-11].

Digital learning includes certain strategies and learning methods that use digital technology or a mixture of these strategies and methods. So that digital learning can facilitate science process skills, physics teachers must design digital learning with stages that can train science process skills. The learning process can adapt to one of the types of digital learning, namely blended learning, e-learning, the use of technology in the classroom, or adaptive learning. Although digitally, in the learning stage there are activities to learn to use scientific methods or practice science process skills.

Physics teachers may choose problem-based blended learning to facilitate students practicing science process skills. Blended learning is learning that integrates face-to-face learning with online learning that utilizes information and communication technology. Basically there are three basic stages in the blended learning model which refers to information and communication technology-based learning, namely: (1) seeking of information, (2) acquisition of information, and (3) synthesizing of knowledge. Face-to-face and online learning in blended learning vary, the composition of blended learning can use the principles of 50/50, 60/40, 75/25, or 25/75. The following is an example of the distribution of the proportions: 1) in face-to-face learning students are asked to observe/observe, experiment/research; 2) in online learning students are asked to classify/classify, interpret/interpret, predict/predict, hypothesize, communicate; or other proportions that in principle help students practice science process skills. The role of the physics teacher is to facilitate and guide students in learning.

The role of physics teachers in digital learning is to build effective relationships with students, use technology/computer/ internet to support the improvement of teaching quality, and reflect and improve learning continuously. Although learning is done online or using technology, the basic principles of learning must remain. Teachers build effective communication and relationships with students, provide learning feedback, and continue to reflect on learning.

4. Conclussion

From the research data and discussion, it can be concluded that physics teachers must be able/have digital teaching skills, but still, facilitate science process skills. The role of physics teachers in digital learning, namely teaching and managing classroom activities effectively, practicing science process skills, building effective relationships

with students, using technology to support improving the quality of teaching, and reflecting and improving learning continuously.

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