

E-LEARNING SYSTEM TRAINING FOR SMA BIOLOGY TEACHERS KULONPROGO DISTRICT, DIY

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ABSTRACT

21st century life requires every individual to master at least three skill domains, namely 1) learning and innovation, 2) information, media, and technology (digital literacy), and 3) life and career (Trilling & Fadel, 2009). In the first domain, learning and innovation, each individual. In the first domain, learning and innovation, focuses on critical thinking and problem solving skills, communication and collaboration skills, and creativity and innovation. In the second domain, information, media, and technology include information literacy, media literacy, and information and communication technology (ICT) literacy. In the third domain, life and career includes flexibility and adaptability, initiative and self-direction, social and cultural interactions, productivity and accountability, and leadership and responsibility. The demand for competencies that must be mastered in the 21st century has an impact on the demands of teachers to prepare their students for this. Teachers are required to carry out 21st century learning. 21st century learning has special characteristics. The existence of technology applications in learning has changed the learning process. The characteristics of learning in the 21st century emphasize a learning environment that can support the development of the potential of students. Learning emphasizes collaboration between students and integration of various fields of science. Learning can be carried out using approaches such as inquiry-based learning (IBL), project-based learning (PjBL), PjBL inquiry, problem-based learning, and constructionism (Kai, Chu, Reynolds, Tavares, & Notari, 2017). Not only in the learning process, the assessment aspect also has special characteristics. Technological Pedagogical Content Knowledge (TPACK) is. There are three main aspects of TPCK, namely the content aspect, the pedagogical aspect, and the technology aspect (Koehler, 2006). TPACK is knowledge that must be possessed by teachers in order to carry out learning ideally so as to be able to achieve learning objectives. The use of the TPACK framework to measure teacher knowledge can contribute to the development of teacher professionalism programs for both prospective teachers and teachers who are currently teaching (Schmidt, Thompson, Koehler, & Shin, 2009). Apart from being required to understand the novelty of 21st century learning, biology teachers are also required to be able to understand technology. Biology teachers are required to be able to implement the use of technology in biology learning, for example the use of computers as a learning medium has not been used. Increasing the competence of educators at all levels of education in order to use several distance learning applications must be done. This learning can be done by online learning. Online learning is not a method for transforming face-to-face learning using only existing digital applications. Online learning should be able to encourage students to be creative in accessing as many sources of knowledge as possible, hone insights whose purpose is to form students into lifelong independent learners. Several things that must be considered in improving the current education system, especially related to online learning, include; 1) all educators must be able to teach with a remote system by utilizing existing technology; 2) the use of technology should not be arbitrary, educators' knowledge is needed in order to be able to realize the learning objectives in utilizing the educational technology; 3) online learning patterns must be a part of the teaching and learning process even if they are only complementary; 4) the imbalance of digital infrastructure between big cities and regions must be bridged with affirmative technology policies for regions with shortages. Online learning is very helpful for teachers, but teachers still find it difficult to master the latest information technology that must be a concern along with the achievements of educators being able to make teaching materials or use video conferencing in the online learning process. In terms of the use of technology in education, it does not necessarily mean that the face-to-face process is usually carried out in the classroom using digital applications and is accompanied by assignments to students. Educators should design the system in a way that makes online learning more effective taking into account specific educational goals. The principles of utilizing technology must also be considered by presenting several activities such as providing space for students to explore, providing illustrations of natural and scientific phenomena, facilitating interaction and collaboration between teachers and students or students and students without stopping. In fact, there are still many teachers who do not fully understand these principles. Teachers has never received training in the use of technology, especially e-learning held by MGMP Kulonprogo Regency before, so teachers are not familiar with using elearning for biology learning

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