INSANIA : Jurnal Pemikiran Alternatif Kependidikan
Vol. 28 No. 2, July-December 2023, 191-206
e-ISSN: 2598-3091; p-ISSN: 1410-0053
DOI: 10.24090/insania.v28i2.7055

The role of learning technology developers as facilitators during the Covid-19 pandemic

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Received 28 May 2023; Accepted 7 November 2023; Published 28 December 2023

Abstract: Innovation in the learning technology field to facilitate the activities of students and educators in the learning process is the task and responsibility of the Learning Technology Developer (*Pengembang Teknologi Pembelajaran*/PTP). This research aims to (1) describe and analyze the role of PTP as a facilitator in online learning during the Covid-19 pandemic and (2) describe PTP products in online learning during the Covid-19 pandemic. The research method used is descriptive qualitative. The research results show that PTPs, as facilitators, must be creative and innovative in developing learning models, media, and applications, collaborating with other professions, and increasing existing competencies related to cutting-edge technology and media. PTP must prove its performance through real work that can be realized through appropriate learning models, media, and applications. PTP has two main areas of study: soft technology and hard technology. The products produced by PTP can take the form of ICT-based learning models, learning media, and e-learning applications.

Keywords: Covid-19; pandemy; learning; PTP; technology.

A. Introduction

The 2019 Corona Virus Disease (Covid-19) pandemic had a major impact on the health, social, economic, religious, and educational sectors (Aji, 2020; Stein, 2020). The Indonesian government has carried out various preventive and curative efforts to prevent the spread of the Covid-19 virus so that it does not spread further. The government has adopted a policy, namely large-scale social restrictions (Pembatasan Sosial Berskala Besar/PSBB), followed by the implementation of restrictions on community activities (*Pemberlakuan Pembatasan Kegiatan Masyarakat*/PPKM) at the beginning of 2021.

Published by Faculty of Tarbiya and Teacher Training, State Islamic University of Prof. K.H. Saifuddin Zuhri Purwokerto

The government has also made efforts in the education sector through the Ministry of Education and Culture (Kemendikbud), namely by issuing Surat Edaran Nomor 15 Tahun 2020 tentang Pedoman Pelaksanaan Belajar dari Rumah Selama Darurat Bencana COVID-19 di Indonesia. Furthermore, the Ministry of Education and Culture also published a guidebook for implementing Belajar dari Rumah (BdR) or Study From Home (SFH) or all school levels. The Ministry of Education and Culture calls for teaching and learning activities to be carried out online (Dewi, 2020). It means that learning is carried out remotely or without direct face-to-face contact via the internet with supporting tools like laptops or smartphones.

The existence of online learning policies creates new challenges for students, educators, institutions, and even the wider community. The challenge of implementing online learning is that students find it difficult to receive and understand the learning material taught by educators. Educators must find ways to make the material presented easily accepted and understood by students. One way that can be done to support the implementation of online learning is through optimizing the role of technology.

Technology was created to make it easier for humans to fulfill all types of needs, including needs in education. According to the Association for Educational Communication and Technology (AECT), educational technology is the study and ethical practice of facilitating and improving performance by appropriately creating, using, and managing technological processes and resources (Januszewski & Molenda, 2018). Educational technology can be used to support the learning process or learning technology, which assists in assignments and access information to learning resources (Arzayeva et al., 2015).

The scientific object of learning technology consists of two aspects: learning and learning. Learning technology is interpreted as a field that systematically combines various components of learning resources such as people, teaching materials, environment, techniques, media, tools, and learning materials utilized in teaching and learning activities at all levels and types of education. Learning technology is a field related to efforts to facilitate the learning process with characteristics including (1) technological resources, (2) technological processes, and (3) improving the quality or capacity of

educators carried out through education, training, and development programs (Saputro, 2015).

Learning technology continues to develop in line with the rapid development of science and technology. Learning technology in this era has developed into a scientific discipline, study program (prodi), and profession that plays a role in solving learning problems. The definition of learning technology has undergone several changes: the variety of learning media is increasing, new learning models continue to be developed, and instructional designers or fields of work are increasingly complex. Learning technology was developed by considering four main characteristics, including: (1) has the aim of improving the quality of learning; (2) has an orientation towards individual instructional activities; (3) utilizes unlimited learning resources; and (4) using a systems approach (Salsabila et al., 2020).

Learning technology innovation to make it easier for education practitioners to carry out various teaching and learning activities is one of the responsibilities of Learning Technology Developers (PTP). PTP is a functional position tasked with carrying out analysis and study, design, production, implementation, control, and evaluation for the development of learning technology (PermenPAN&RB RI Nomor 28 Tahun 2017). PTP is responsible for using learning technology in the learning process at all pathways, levels, and types of education (Purwanto et al., 2020). The role of PTP in creating learning technology innovation products is not yet clear. It is shown by the results of Saputro (2015) regarding evaluating the implementation of PTP functional positions in schools for educational technology students in terms of planning, process, and implementation results, which has an average of 73.08% and is the quite good category.

Online learning provides opportunities for PTP to innovate to create appropriate learning facilities to meet the needs of students and educators through the development of learning technology, Information and Communication Technology (ICT) based learning media, and learning support application models. Online learning focuses more on students' accuracy in receiving and understanding information or knowledge conveyed online (Riyana, 2019). Online learning has several advantages, including flexibility in place and time and not depending on distance. Implementation of online learning requires supporting devices, such as smartphones, tablets, laptops, or computers. Online learning

can utilize several platforms, such as Rumah Belajar, Moodle, Edmodo, Google Classroom, and even video conferencing, such as Webex by Cisco, Zoom, and Google Meet.

The results of research on PTP conducted by Warsita (2017) show that PTP must have the ability to develop various new products, which include innovative ICT-based learning models, learning media, and e-learning applications. PTPs must be creative and innovative in developing learning models that suit the learning demands of the 21st century, collaborating with other professions, and improving their competencies. Furthermore, research results from Krismanto (2016) state that PTPs are required to be able to position themselves as agents of change who have the following roles: 1) achieve a terminal relationship; 2) translate intent into action; 3) create an intent to change in the client; 4) establishes an information exchange-relationship; and 5) develop the need for change. The existence of the PTP profession as a change agent is expected to support and accelerate the diffusion of various innovations in education, especially in learning.

Another research conducted by Adisel & Prananosa (2020) explained that PTP plays an important role in the continuity of the online learning process. PTP acts as a creator of learning media for students and educators. PTP also plays a role in facilitating educators in choosing appropriate learning methods so that learning can take place optimally, even though it is carried out without direct face-to-face contact. The authors in this study aim to (1) describe and analyze the role of PTP as a facilitator in online learning during the Covid-19 pandemic and (2) describe PTP products in online learning during the Covid-19 pandemic.

B. Method

The research method used is a qualitative descriptive research method. Descriptive research aims to describe or photograph the state of the variables you want to research (Subali, 2017). Furthermore, qualitative research aims to explore detailed information about limited research subjects, understand individual views, and search, discover, and explain a process (Sugiyono, 2016). The research subjects were 34 PTP people who were taken using non-probability sampling using a purposive sampling technique. The implementation of non-probability sampling is carried out with the principle that each member of the population does not get the same opportunity. Furthermore, purposive

sampling is a sample determination technique that is carried out with specific considerations according to the criteria desired by the researcher (Sugiyono, 2016).

Based on the source, this research's data includes primary and secondary data. Primary data is obtained directly by providing data to researchers, while secondary data is the opposite. Primary data is obtained, for example, through distributing questionnaires, while secondary data is obtained through documents or other people (Sugiyono, 2016). Writers in research collect data and information by analyzing articles, books, and journals, as well as searching for information from the internet, theses, and theses.

Data collection techniques use semi-structured interviews, questionnaires, and documentation. The research procedure was divided into pre-field, fieldwork, and data analysis. Data analysis was carried out using the Miles and Huberman technique through stages in data reduction, data presentation, and drawing conclusions..

C. Result and Discussion

1. The role of PTP as a facilitator in online learning during the pandemic

Handling the impact of the Covid-19 pandemic on education requires the involvement of all stakeholders, and this cannot be separated from policies initiated by the government and operational implementation in the field. Pandemic conditions require educators to increase creativity and innovation in changing learning methods or patterns from face-to-face to online learning. The results of interviews with several PTPs at UNS show that the online learning process requires various facilities such as smartphones, laptops, or computers, supporting applications, and adequate internet access.

The rapid development of science and technology, both in the fields of education and ICT, means that learning technology is also developing. Learning technology ultimately developed into a scientific discipline, study program, and profession that has a role in solving learning problems. This opinion is by Astini (2020), who explained that there has been a transformation in the development of learning technology. The definition of learning technology has undergone several changes: the variety of learning media is increasing, new types of learning models continue to be developed, and instructional designers or fields of work are increasingly complex. Salsabila et al. (2020) stated that

learning technology was developed by considering four main characteristics, including: (1) has the aim of improving the quality of learning; (2) has an orientation towards individual instructional activities; (3) utilizes unlimited learning resources; and (4) using a systems approach.

The results of interviews with PTP UNS show that PTP, as a facilitator whose role is deliberate and creative, is expected to be able to contribute to solving online learning problems. The PTP profession is expected to be able to collaborate with other professions, for example, teachers, in developing innovative ICT-based learning models, media, or applications so that they can improve collaboration and communication skills among students, especially during the pandemic. The results of the development of the PTP UNS during the Covid-19 pandemic are shown in Table 1.

Tabel 1. PTP UNS Development Results during the Covid-19 Pandemic

No	Kind of development	Sum
1	ICT-based learning media	8
2	ICT based module	6
3	Learning methods	11
	Sum	**25**

Based on Table 1, it can be seen that during the Covid-19 pandemic, PTP UNS succeeded in developing 25 learning products. The products developed include 8 ICT-based learning media, 6 ICT-based modules, and 11 learning methods. Furthermore, based on Figure 1. it can also be seen that the most developed products are learning methods. The results of interviews with PTP UNS show that the various models, media, or innovative learning applications are development products produced by the PTP profession. It is by the primary duties of the PTP Functional Position (*Jabatan Fungsional* PTP/JF-PTP) or the PTP profession, namely a position that has the scope of duties, rights, authority, and responsibility to carry out the development of learning technology.

Salsabila et al. (2020) state that the PTP profession has two main areas of study, including (1) soft technology, namely studies related to learning theory and human behavior, and (2) hard technology, namely studies related to applied technology implemented to solve learning problems. Learning technology does not focus on psychological processes related to the way or process of students learning but is related to the way or process of hardware and software technology used in communicating

knowledge, attitudes, and skills from educators to students so that changes in behavior occur.

The results of filling out the questionnaire by 34 PTP UNS people show that PTP has carried out development stages, starting from the needs assessment stage, development planning, implementation, and evaluation, as contained in Table 2.

Table 2. PTP UNS Development Stages

No	Development Stage	Number of PTP Implementing
1	Need assessment	34
2	Planning	34
3	Organizing	34
4	Evaluating	34

The data displayed in Table 2 shows that all samples in the research, namely 34 PTP UNS, have carried out the development stages. The development stages include needs assessment, development planning, implementation, and evaluation. It is confirmed by the results of interviews with PTP UNS, which stated that developing learning technology was carried out in preliminary study stages such as need assessment, development planning, development trials, development implementation, and evaluation of development results.

Purwanto (2015) stated that there are six elements of learning during the pandemic that PTP must pay attention to so that they can help students to be successful in the learning process, empower students to be able to implement their knowledge and skills to discover new things and prepare students to be able to make decisions wisely. precise, improving skills, thinking for yourself, and lifelong learning. The elements intended include (1) developing learning skills, (2) utilizing learning tools, (3) emphasizing learning the main subject, (4) teaching learning material during the pandemic; (5) teaching in the context of learning during a pandemic; and (6) utilizing assessments during the pandemic to measure learning skills.

PTP is required to develop learning models that can support the learning process, especially during the pandemic, through integrating skills into the learning system. Various forms of ICT use that contribute to supporting online learning are as follows: (1) use of mobile learning as a learning medium in the five core learning competencies during the pandemic; (2) use of e-learning, for example, learning management systems (LMS); (3) use of video games in learning; and (4) use of Massive Open Online Courses (MOOCs).

2. PTP Products in Online Learning during the Pandemic

PTP can hold positions in work units or government agencies, from regional to central government. PTP has ten main functions contained in Permendikbud RI Nomor 13 Tahun 2017 Permendikbud Nomor 13 Tahun 2017, including (1) development of innovation or learning activities; (2) education and training; (3) distance education and learning; (4) technical guidance in the field of learning; (5) learning support services; (6) quality assurance or quality of learning; (7) improving the quality or quality of learning; (8) development of learning models and media; (9) use of learning models and media; and (10) utilization of ICT in learning.

The results of interviews with PTP UNS show that based on their duties and functions, PTP is required to produce products in innovative ICT-based learning models, learning media, and e-learning applications. The existing product results are expected to support the continuity of the learning process. Users of products developed by PTP usually include development units within the Ministry of Education and Culture, for example, the Education Quality Assurance Institute (*Lembaga Penjaminan Mutu Pendidikan*/LPMP), the Center for Development and Empowerment of Educators and Education Personnel (*Pusat Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan*/P4TK), and the Center for Educational Information and Communication Technology (*Pusat Teknologi Informasi dan Komunikasi Pendidikan* /Pustekkom). Apart from that, users of products developed by PTP also include schools, universities, and development units at the regional level, for example, the Educational Communication Technology Center (Balai Tekkom).

Several products that PTP must produce, according to Warsita (2017), are as follows:

1. Learning model

A learning model is a procedure systematically structured to organize learning experiences to achieve learning objectives. Various ICT-based learning models have been successfully developed by PTP, ranging from simple or micro to macro or complex, and educators have used all. The micro-learning model can be implemented at the class level, where the decision to implement it is held entirely by the educator. Next, the macro learning model is implemented, involving more learning system components. The aim of implementing innovative learning models supported by technology is to provide various kinds of learning resources that are easily accessible, open, and

affordable, commonly referred to as Open Educational Resources (OER). The learning model was developed by adhering to modern learning concepts.

ICT-based learning models allow the learning process to be carried out simultaneously and differently. If it takes place simultaneously, there will be a two-way interaction between educators and students in real-time via teleconference and chat. If it takes place differently, students can download learning materials at different times (Anih, 2016). These conditions help students to be able to organize study time according to their wishes and the speed of understanding learning (Hasriadi, 2022).

Research results related to the application of several ICT-based learning models provide evidence that the quality of learning improves with the integration of ICT in the learning process (Koesnandar, 2020). The involvement or use of ICT in learning creates a learning process that supports learning independence so that students can experience a more meaningful process (Sawitri et al., 2019). ICT-based learning models can increase attractiveness and stimulate student activity in the learning process to increase students' attention and motivation (Muhibudin, 2017).

The research results of Suratman et al. (2019) prove that ICT-based learning models significantly influence students' learning outcomes and motivation. It is because the ICT-based learning model creates a more concrete, real and enjoyable learning experience by creating imitation forms that are almost the same as the original and implemented in challenging situations for students. Applying ICT-assisted learning models can also significantly increase students' mastery of concepts (Mustofa, 2019). It is supported by Andriani (2015), who explains that ICT-based learning models that are designed creatively and innovatively can increase opportunities for students to learn more, pay serious attention to the material being studied, and improve the quality of learning.

2. Learning media

The intended learning media includes media in simple form: print, audio, video, multimedia, interactive multimedia, and hypermedia. Apart from that, a new type of learning media is currently being developed, namely digital learning objects or what are usually referred to as Digital Learning Objects (DLO). Learning objects in online learning are usually text, graphics, images, sound, video, or multimedia. Furthermore,

the results of learning media development are disseminated through communication channels and the internet. In general, the product of learning media development is stored on a server in the form of cloud computing and is OER in nature.

Learning media in teaching and learning activities, according to Yusuf et al. (2020), has six benefits, including (1) A means of clarifying the information and messages presented so that learning outcomes improve; (2) Increase students' interest and motivation to learn; (3) Promote interaction between students and their environment; (4) Helping students learn independently according to their interests and talents; (5) Overcoming limited space and time; and (6) Providing students with experiences so that there are similarities in experiences in events that occur around them. It is in line with research by Utami (2017), which shows that implementing ICT-based learning media influences student learning outcomes. ICT as a learning medium in teaching and learning activities can make it easier for educators and students to interact and communicate (Tekege, 2017).

The existence of learning media can have a positive impact on the quality of student learning outcomes. ICT-based learning media makes it very easy for educators in teaching and learning activities because educators no longer need to re-explain the material discussed. The scope of ICT-based learning media is also vast, making it easy for students to reach. Furthermore, implementing ICT-based learning media makes it easier for students to carry out tasks like writing manuscripts, compiling reports, and searching for news or reviews from various pages. Students can also explore various online sources such as digital libraries, carry out online discussions, listen to presentations, observe simulations, edit, and so on (Zahwa & Syafi'i, 2022).

3. E-learning Application

E-learning applications are computer software that is used in the learning process. E-learning is an electronic-based learning service that combines audio, video, and multimedia features distributed via radio, television, computers, intranet, or internet. E-learning applications are developed to suit user needs and are designed in various forms to manage learning materials. E-learning applications were developed because of the need due to the increasingly diverse development of technological devices such as smartphones and others.

The use of e-learning applications in online learning during the pandemic is considered appropriate because it is more flexible regarding time. E-learning applications have no access restrictions, thus opening up opportunities for the learning process to be carried out at any time with more time available. E-learning applications train students to be more independent in learning and more responsible for themselves. The following are several advantages of e-learning applications compared to conventional learning, including (1) Helping students be more independent in learning; (2) Increasing the use of ICT; (3) Flexibility regarding teaching and learning places; (4) Allowing the educator's explanation to be repeated with the same quality; (5) Supporting the learning process without direct face-to-face contact; and (6) Facilitate material updates (Sukanto, 2020; Sajiatmojo, 2021). The research result of Saifuddin (2017) revealed that 97% of respondents stated that e-learning applications provided significant benefits to the learning process, starting from helping with readiness for lectures, making it easier to study material, increasing motivation, and accommodating independent learning.

It is supported by the results of research by Fadhilah (2021), which explains that there is efficiency in the student learning process using e-learning applications because the lecture process is carried out by mutual agreements so that it becomes more flexible. The e-learning application makes it easier for students to take attendance. The e-learning application allows students to download material and study it independently to increase student independence in the learning process. Students can also explore a wider network of information from the material presented in the e-learning application. E-learning applications allow students to know the assignments from lecturers that must be completed in each lecture meeting. Students are responsible for submitting assignments on time because the e-learning application has a deadline for submitting assignments. Furthermore, e-learning applications can speed up access to assignment collection by uploading assignments that have been completed. Apart from that, students can also find the results of the grades from the assignments they uploaded accurately and quickly because the lecturer can immediately provide an assessment.

JF-PTP is an expert position divided into several levels, namely first expert, young expert, middle expert, and main expert which includes elements of education, learning technology development, and professional development. Furthermore, each position level must perform tasks according to the detailed activity items in Attachment I Permen PAN & RB RI Nomor 28 Tahun 2017. It is intended so that the products developed by PTP align with the position held. PTP is here to offer solutions to various obstacles or problems related to learning, both in formal, informal, and non-formal education.

D. Conclusion

PTP, as a facilitator in learning during the Covid-19 pandemic, is required to be creative and innovative in developing learning models, media, and applications that can support the continuity of online learning. PTP is also required to collaborate with other professions. Apart from that, PTPs must improve their learning and technology competencies related to cutting-edge technology and media.

PTP must prove its performance through real work by offering various solutions to learning problems during the pandemic. The intended solution is to create products such as models, media, and learning applications that are appropriate for use. PTP has two main areas of study: soft technology, namely studies related to learning theory and human behavior, and hard technology, namely studies related to applied technology implemented to solve learning problems.

PTP produces various products, for example, ICT-based learning models, learning media, and e-learning applications. The various products produced have an essential role in supporting the continuity of the learning process during the pandemic at various types, levels, and educational pathways according to the curriculum implemented.

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