Conference Paper

Teachers' Difficulties in Developing Learning Resources

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Abstract

This study aimed to identify the main problems faced by teachers in developing learning resources, and to provide recommendations for these problems. A qualitative descriptive approach was used. This study's paticipants were recruited randomly, and included 55 teachers of SMP, SMA, and SLB. Data were collected through an online survey with a digital questionnaire instrument. Data analysis was carried out through three steps: data reduction, data presentation, and concluding. The results showed that there are three main problems that teachers face in developing learning resources: 1) the technical ability to use tools and devices to create digital learning resources; 2) the strategy of organizing learning materials to be applied to learning resources; and 3) the lack of skills in managing learning materials to be applied to digital learning resources. Based on these findings, it is recommended that teachers collaborate with educational technologists who are masters of learning resource development.

Keywords: teachers' difficulties, learning resources, instructional strategy

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1. Introduction

The Covid-19 Pandemic that is currently facing the world community is currently bringing significant changes in all aspects of life. Everyone is encouraged to always implement new normal procedures to minimize transmission of the virus and break the chain of its spread. The new normality procedure also applies in education by implementing learning from home using an online learning mechanism. Seven months have passed This pandemic is running in Indonesia. This encourages all academicians from all levels to quickly change their learning paradigm from face-to-face to online. The Covid-19 Pandemic disaster provides a great opportunity for learning transformation to occur by implementing online learning. The opportunity to implement this large-scale online learning can change previous learning patterns. This has triggered the acceleration of the digital transformation of education in Indonesia, spearheaded by

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educational institutions in implementing ICT-based learning [1]. Another opportunity is to apply a flexible curriculum [2], where the application is adjusted to the situation and conditions of learning citizens in various areas with uncertain conditions.

However, like the two sides of the coin, online learning during this pandemic also has various obstacles. Research results show obstacles to the application of online learning during a pandemic, including the large number of tasks from various materials that must be done at home, limited internet quota with unstable networks in various regions, and limited IT capabilities [3]. The educator's barier is lack of understanding online learning, so the implementation becomes inappropriate for students, while the obstacle from the students' side is that it is difficult to condition themselves to be ready to learn like in school because the environment is different [4]. These obstacles can actually be a challenge to improve online learning implementation in terms of policies, infrastructure, and processes. However, if left unchecked, it will become a problem that is becoming more and more widespread.

The key to online learning success in schools during this pandemic is determined by the collaboration of various parties, namely teachers, schools, parents / guardians of students, and the students themselves. As the manager of learning, the teacher's role has a large portion in determining the success of online learning. Teachers are part of professional educators who have the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students' formal education pathway from early to secondary education levels [5]. According to the initial survey results, 87% of the sample of teachers studied had an understanding of the conditions of learning carried out during the pandemic, where implementing online learning was the best choice. However, the biggest obstacle faced by more than 50% of teachers in implementing online learning is technical problems.

Two teacher competencies need to be possessed in online learning, namely managing the online learning environment and developing digital learning resources. In online learning, learning resources that can be presented or experienced directly by students must be converted into digital form. According to AECT (Association of Education Communication and Technology), learning resources are defined as all sources of messages, people, materials, tools, techniques, and the environment that can be used to facilitate the learning process in humans [6]. In educational technology, learning resources that must be developed before being used are known as learning resources by design. In developing these learning resources, special abilities are

needed to understand the characteristics of the field of study, student characteristics, and the type of media used.

Teachers are attached to pedagogic and professional competencies that must always be practiced in carrying out their main duties and functions. Pedagogic competence is related to understanding students and managing educational and dialogical learning. Professional competence is related to the mastery of learning material in its broad and deep field of study. This includes mastering the content of the curriculum materials in schools and the scientific substances that cover the curriculum materials [5]. However, according to the initial survey, in practice developing digital learning resources is a separate obstacle for teachers. This can be seen from the teacher's method of implementing online learning where they provide more independent assignments to students and provide less choice of sources. Teachers also prefer to use learning resources that are readily available on the internet rather than making their own that is more suitable for their needs. Although there is nothing wrong with using learning resources that are by utilization or just using them, sometimes students' learning needs are not fulfilled and there are constraints related to copyright if the teacher does not use these learning resources wisely.

From the problems described above, this article will discuss teachers' difficulties in developing digital learning resources. This research is crucial because the teacher is the spearhead of learning that directly faces students in learning. If the teacher's management of learning at the classroom level is good, then it is likely that the learning outcomes obtained by students are also good. If the learning outcomes are good, the quality of education will be good. Even though the Covid-19 pandemic has not shown a decline in Indonesia, the learning objectives must still be achieved effectively and the learning process must be carried out efficiently and attractively.

The problem of teacher difficulties in developing digital learning resources needs to be known about the causes, so that it can be seen how the efforts that can be made by various parties such as the government, schools, and even parents in solving these problems. This research was conducted in Yogyakarta with teacher respondents from the secondary school level (SMP and SMA). This study focuses more on teachers' difficulties in developing online learning resources in terms of choosing the type of content of learning materials/fields of study. Therefore, the purpose of this study is to provide recommendations for problems regarding teacher difficulties in developing digital learning resources in terms of selecting the type of content of the learning material.

2. Related Works/Literature Review

2.1. Digital Learning Resource

Learning resources play an important role in overcoming learning problems faced by humans. According to AECT 1977, learning resources are anything or resources that educators can use either separately or in combination for the purpose of teaching and learning to increase the effectiveness and efficiency of learning objectives [7]. Learning resources are everything that is in the environment of learning activities that can functionally be used to optimize learning [8]. Advances in technology have given birth to new learning sources. One of the things that distinguishes this new learning resource is its digital character. Digital refers to the combination of hardware (operating system and application programs) and software (processing, memory, input and communication) elements. Thus digital learning resources can be understood as a combination of hardware and software elements that can solve learning problems and facilitate learning activities [9].

Munir (2016) mentions several types of digital learning resources developed by educators, namely computer software, interactive media and online resources (e-books, websites, youtube channels, interactive videos) [10]. The wide availability of these types of technology-based learning resources in various formats offers the possibility to make a profound difference in education [11]. Digital learning resources are not only used to transmit and access information but are seen as materials that provide wide opportunities for anyone, including educators and students, to be able to create and express themselves. Besides that, digital learning resources also have main benefits, namely (1) Having the ability to customize experiences for students through interactivity, feedback and constructive engagement; (2) Has a variety of presentations to meet the needs of students through a choice of alternative materials; (3) Digital resources can also combine various media into one scope through a combination of text, video, sound and graphics [12].

Furthermore, with interactivity skills, visualization and feedback from digital learning sources have a positive impact on improving the quality of learning related to motivation, retention, learning styles, and students' creativity [13] In order for learning resources to function properly, users' ability to maximize the characteristics of these learning resources is required. Educators' ability to use or develop a digital learning resource needs to be owned in the current era, especially in the pandemic era where learning is carried out with an online system.

There are many applications or software that teachers can use to create their own learning resources. Some of the benefits that can be obtained by developing their own learning resources are the results of learning resources that are made according to the needs of the material being discussed and teachers can adjust what types of learning resources are most suitable for their students. In addition, it is more economical if the teacher is able to make it himself and is able to increase his role as a professional teacher.

2.2. Types of Learning Content

Reigeluth and Merril analyzed the content of learning into four types that he called the constructs of content in the field of study in facts, concepts, principles, and procedures [14]. Facts are one-to-one associations between objects, events or symbols that exist or may exist in the real or imagined environment. Facts are knowledge related to specific data that has been or is happening that can be tested or observed. According to Prawiladilga, facts are related to symbols and the relationship between information [15]. In this context, the facts are grouped into two, namely facts about terms such as; words, numbers, signs, symbols or pictures and details facts or elements such as; specific events, locations, people and dates. Anderson and Karthwol revealed that fact knowledge is the basis for a person to master other kinds of knowledge because knowledge is needed to know and know anything [16].

A concept is a group of objects, events or symbols that share the same general characteristics and are identified by the same name. The concept according to Prawiradilga has two characteristics, namely concrete and abstract [15]. Concrete concepts contain tangible and visible aspects of matter, while abstract concepts contain aspects of proposals, ideas, views or opinions on something. According to Merril, a concept is a category or variety that shows the similarity or similarity of ideas, object events or things [17]. Anderson and Karthwol stated that concept of knowledge includes categorization or classification knowledge and its relation between these categorizations or classifications [16]. Understanding data and facts must precede knowledge of a concept because a concept has parts called attributes. The attributes themselves are some facts contained in the object [18].

According to Merrill, the principle is an explanation or prediction of events in this world and concerns the law of cause and effect with the nature of the correlation relationship to interpret specific events [17]. Meanwhile, Kemp argues that principle

is an explanation of the relationship between two concepts. The type of conceptual material includes propositions, formulas, postulate adages, paradigms, theorems, and causal implications [19]. According to Anderson and Karthwol, principle knowledge is related to conceptual knowledge and generalization, a number of concepts that have characteristic meanings and relationships [16].

A procedure is a sequence of steps to achieve a goal, solve a particular problem or create something. According to Prawiradilga, the content type of learning procedure contains the implementation of a work or task in a sequence [15], while Kemp and Merril explain procedures are a series of tasks that students must carry out in stages to achieve certain goals or solve a problem or product.

Teachers must be able to determine the type of material content related to the field of study they are working on, so that it will be easier to choose the type of learning resources to be made and used in learning. The ability to choose this type of material is also included in the professional competence of a teacher, where the teacher must master learning strategies including classifying material content.

2.3. Teacher Competency

Nowadays, there are more and more learning resources and variations, both in terms of material, type and shape. Sources and teaching materials are currently scattered in various media, such as Google, Facebook, YouTube, email, chat, video calls, etc. The development of such learning resources has changed the learning paradigm from being manual or face to face to being digital. In learning in this digital era, educators are required to have supportive skills and competencies. The scope of educator competencies related to digital learning is pedagogical competence and professional competence. According to Cyrst, these two competencies are related to planning and organizing learning, presentation skills, verbal and non-verbal, teamwork, question strategy skills, expertise in mastery of learning materials, and involving learners in learning and coordinating learning activities, knowledge of theory [10]. learning, knowledge about digital learning, knowledge about lesson planning, and mastery of learning media.

Educator competencies in conducting teaching materials classified in professional competencies, where educators are required to master broad and in-depth learning material which includes mastery of curriculum material, subjects in school and scientific substances that cover the material, as well as mastery of scientific structure and

methodology. Each of these sub competencies has essential indicators, namely (1) mastering scientific substances related to the study field. This means that educators must understand the teaching materials in the school curriculum. Understand the structure, type of material content, scientific methods which are comprehensive and coherent with the teaching material and apply scientific concepts in the teaching and learning process; (2) mastering scientific structures and methods has the implication that educators master research steps and critical studies to deepen knowledge / material in the field of study [20].

Teaching materials or instructional materials are the materials needed for the formation of knowledge. skills and attitudes that students must master in order to meet the set competency standards [21]. The material chosen for learning activities should be material that supports the achievement of competency standards and basic competencies. Teaching materials contain relevant facts, concepts, principles and procedures, and are written in the form of points in accordance with the formulation of competency achievement indicators. Learning materials are developed based on Graduate Competency Standards (SKL), Competency Standards (SK), and Basic Competencies (KD) on content standards that students must study in order to achieve predetermined competencies. How deep and how broad this learning material can be obtained and how to package this learning material, of course, requires a deeper understanding of the development of learning material.

In the perspective of mastery of instructional media, educators cannot only use learning media but also act as a developer, which is always creative and innovative in producing various innovative works in the form of learning media, both traditional and digital. Learning media is one component of learning that has an important role in teaching and learning activities. The use of media is a part that must receive the attention of educators in every learning activity [22]. Educators need to make appropriate learning media so that they can effectively achieve learning objectives. Arsyad states that learning media is an inseparable part of the teaching and learning process, in order to achieve educational goals in general and learning objectives in schools in particular [23].

The benefits of learning media are to clarify and broaden the horizons of the presentation of learning materials, increase the activity of students, provide concrete learning experiences and increase the efficiency of the learning process. One of the learning media that educators can develop is digital learning media. Digital learning media can be used by educators as learning media, in accordance with the competencies that

must be achieved and can be used by students to learn independently when there is no assistance from educators and during certain conditions such as the current condition of the COVID 19 pandemic.

3. Material & Methodology

This research is a descriptive qualitative study that aims to reveal teachers' difficulties in developing digital teaching materials and provide recommendations regarding the results of the research findings. This study's results can help policy makers make strategic decisions regarding solutions to overcome the difficulties of teachers in developing digital teaching materials, especially during the Covid-19 pandemic and provide a scientific picture for schools and teachers so that they can anticipate problems that occur.

The subjects of this study were a sample of a population of teachers from the junior high school (SMP), senior high school / vocational high school (SMA / SMK), and special schools (SLB) in the Yogyakarta region. The number of samples in this study were 55 teachers who were taken randomly, with the following details:

TABLE 1: Research Subjects

No.	Type / level of school	Amounts
1.	SMP	11
2.	SMA	30
3.	SMK	9
4.	SLB	5
		55

The research data were collected using a survey method with a questionnaire instrument. There are two types of questionnaires used, namely closed and open questionnaires. Open questionnaires are used to explore data regarding general information that does not require elaboration, while open questionnaires are used to explore data on personal reasons related to problems faced by teachers in implementing online learning during a pandemic, especially in terms of developing digital learning resources. The research data was collected for 2 months when the Covid-19 pandemic was still taking place in Indonesia, especially in the Yogyakarta area and learning in schools was still being carried out online, from July to August 2020. The data collected in the study were analyzed using Milles and Huberman's version of the qualitative descriptive technique, namely data reduction, data presentation, and

concluding. Apart from qualitative data, there is also numerical data in percentages to support the research findings.

4. Results and Discussion

4.1. Results

The target of this research is teachers who carry out full online learning during the Covid-19 Pandemic. Details of the data on the age distribution of teachers who are research respondents can be seen in the following table:

TABLE 2: Research respondents in terms of age

No.	Age	Amounts
1.	21 – 30 years old	13
2.	31 – 40 years old	21
3.	41 – 50 years old	12
4.	51 – 60 years old	9
		55

All research respondents are included in the category of humans in their productive age and are still actively teaching. The largest number of age groups is the age group 31 - 40 years with a percentage of 38%, then in the age group 21 - 30 years and 41 - 50 years the percentage is almost equal, namely around 23% of the total respondents, while the age group is the least amount of the sample. is the age group 51 - 60 years which is about 16% only.

The results showed that respondents' difficulties in developing online learning resources during the pandemic were divided into four categories of problems that can be sorted as follows, the first problem that most teachers chose as the biggest obstacle in compiling learning resources was technical problems. This problem is related to the use of applications for online learning or LMS (Learning Management System) or other related tools, not using applications or software to create digital learning media, using devices in the form of devices or laptops, to problems related to internet networks. Problems related to technical matters were experienced by 60% of teachers or as many as 33 teachers of the existing respondents.

The next difficulty faced by the teacher is analyzing student learning needs. It is undeniable that when the learning mode turns into a network, some people who are not used to feeling that something is missing from the essence of direct learning

are related to the interaction between teachers and students. In direct learning, a teacher, especially teachers who have had long enough teaching experience, can easily recognize their students' characteristics from the way they behave, speak, even with just one look. However, this is quite difficult to do in online learning, because student behavior can be manipulated, especially when the meeting in learning that occurs is the moment of the first meeting. In this case the teacher has difficulty determining the learning needs that students really need. There are 20% of teachers or 11 teachers who experience difficulties in this regard.

The third problem is the difficulty in choosing the right content to give to students. This does not happen because the teacher does not master the field of knowledge, but rather the difficulty in sorting out which sub-material to be conveyed using what media and in what way. In the teacher's mind developing digital learning resources for exact learning materials that contain formulas or vocational is more difficult. Some teachers also have difficulty in determining material facts, concepts, principles, or procedures that are appropriate learning resources. This is closely related to the ability to choose message delivery strategies and learning organization strategies, especially those based on digital. There were 7 teachers who experienced this obstacle or 13% of the total respondents.

The problem chosen by the fewest respondents was time management or not having time to make their own learning resources, so that the teachers chose to use those that were freely available on the internet, although not 100% according to their needs. Teachers see this as an obstacle because they have other additional tasks, such as concurrently as a student activity coach or the like. There are only 4 teachers or 7% who experience this difficulty.

There is a uniqueness of the findings from the data generated, namely around 87% of respondents who chose technical problems as obstacles in developing learning resources, it turns out that after being explored more deeply the problem leads to a way of presenting learning material in digital form. Many teachers do not have the ability or skills related to the development of digital learning resources, including the software. Therefore, it can be said that the main problem that becomes the obstacle is related to the technical use of devices and tools to develop digital learning resources, and the implementation of message delivery strategies and learning organizing strategies.

4.2. Discussion

From the data, it is found that the main problem faced by the teacher is related to the implementation of learning strategies. Learning strategies can be interpreted as the means chosen to deliver learning content in a certain environment including the scope, nature, and sequence of activities in order to provide learning experiences for students [24]. The learning strategy in question is more directed at the strategy of delivering messages and strategies for organizing learning. The message delivery strategy has more to do with the selection of appropriate learning resources to convey messages, so that the discussion is more on how effective a media is in conveying messages and what types of media are suitable for conveying certain materials. Meanwhile, the learning organizing strategy is more about how to sort and synthesize learning content.

In the context of the current pandemic where learning is carried out online, it requires teachers to have additional skills, making digital teaching materials. However, these skills cannot easily be mastered by teachers who are not in their field and have never received training on media development before. So that in the field teachers experience obstacles, even though in the end they always have alternative steps to choose from, such as using available learning resources and media, either free or paid. This ability is deemed difficult to master in the near future for teachers who have other activities besides teaching and are elderly.

In fact, the skill of making digital learning media is included in 21st century literacy which is not only limited to reading or writing skills. In terms of skills in making digital media, at least two types of literacy need to be mastered by 21st-century teachers, namely technological literacy and visual literacy [25]. Technological literacy is related to knowing what technology is, how it works, and using it wisely. Visual literacy is related to using, interpreting, and producing images and videos using conventional and modern media.

The next difficulty that becomes the teacher's obstacle is related to the strategy of organizing learning. Based on research data, the difficulties of teachers are more towards micro-organizing strategies for online learning. Micro strategy is related to managing learning materials based on the type of content, namely facts, concepts, principles, and procedures [26]. In organizing learning content, it is important to master information literacy, which is related to the ability to obtain, use, and evaluate information appropriately from various sources [25].

The teacher should have mastery of the strategy of delivering messages and organizing learning before entering the field. However, life is very dynamic, and the world is experiencing rapid development, especially in media and technology. This ultimately requires teachers to always learn, but teachers' learning opportunities are very limited because teachers also have other main tasks and functions in school. Therefore, teachers need assistance regarding the development of learning resources, especially by learning resource developers.

Learning resource developers are competencies that must be mastered by graduates of the Education Technology Study Program. These competencies are included in the field of development work in the definition of educational technology in 1994 according to AECT [27] and the competence of creating or creating on the definition to facilitate learning and improve performance in the 2004 definition [28]. Scientifically, academics who graduate from the Education Technology Study Program have skills related to the ability to design and evaluate learning resources, but do not have competencies related to the field of study at the school level. Therefore, if teachers who have expertise and mastery related to the field of study can collaborate with educational technologists, it is possible that they will be able to create learning resources that are effective and efficient to use. In this case, the teacher does not have to take the time to create digital learning media but focus more on learning activities which are the main tasks and functions.

5. Conclusion

This study concludes that the majority of teachers represented by the sample have difficulties in developing learning resources due to several things, namely:

1. lack of technical skills in using tools and devices to create digital learning resources.

2. lack of skills in managing learning materials to be applied to digital learning resources.

3. there is confusion in choosing the right material to be delivered through digital learning sources.

From the findings in the form of these problems, the recommendation is to invite educational technologists to collaborate with teachers to design and develop digital learning resources, even various learning sources. These recommendations are

aimed more at the school as an institution where teachers work. Schools can employ graduates / alumni from the Education Technology Study Program who are specifically tasked with developing learning resources in each school.

Acknowledgement

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