Maximizing the Adoption of Educational Technology for Learning in OTKP Competencies in the Post-Covid-19 Digital Era

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ABSTRACT

The Covid-19 pandemic has indirectly accelerated the adoption of technology into the learning process. In Indonesia, it must be admitted that the implementation of the adoption is still a bit stuttering and rushed, so that it is not maximal in measuring the achievement of the expected output by the face-to-face learning that was previously carried out. Especially for the case of Vocational High School (VHS) learning, where the activity is predominantly practice rather than theory. After the Covid-19 pandemic, the adoption of educational technology will continue to increase. It is necessary to have an adoption selection strategy that can support vocational students' skills, including affective aspects. This research focuses on analyzing literature that includes scientific articles published in reputable journals, government and NGO reports in education. A literature review was carried out to find strategies to maximize the practice of adopting educational technology, especially for learning in VHS Automation and Office Management (OTKP) major in Indonesia in the post-Covid-19 digital era. The results of the analysis and discussion conclude that it is necessary to adopt technology-based learning media, especially those that can facilitate tracking the student performance, immersive experience, work culture practices, and self-regulated learning of OTKP vocational students so that in carrying out online learning activities in the digital era both synchronously. As well as asynchronously, they can get skills and knowledge following the needs of the industry. The technology must be adopt are: 1) Augmented Reality; 2) Virtual Reality; 3) Video-based assessment; 4) Mobile learning application; and 5) Social media-based learning.

Keywords: Immersive Experience, Post-Covid-19 Digital Era, Self-Regulated Learning, VHS   Automation and Office Management.

1. INTRODUCTION

The digitalization of education in Indonesia is being carried out to create a technology-literate quality of education and provide human resource output that is in line with the needs of the 21st Century Skill concept. Efforts to digitize education are due to the rapid development of technology and the conditions that have recently encouraged education to be carried out on a digital basis, namely remote learning [1], [2]. The condition in question is the Covid-19 pandemic, where this situation inevitably requires learning in schools to be carried out from each student's home. For Z generation and Alfa generation, the implementation of remote learning at the literacy level towards digital literacy is not a problem. This is because they are digital native, whose their daily lives are very familiar with digital devices [3], [4]. When teachers or teachers offer digital technology-based learning media, it is no longer a big problem to implement it well. Of course, this must also be supported by the existence of qualified digital technology-based learning media.

The purpose of implementing remote learning is not only on cognitive aspects but also on other aspects, namely affective aspects and psychomotor aspects [5]. Learning objectives in the psychomotor aspect, which tend to be done to improve students' skills, must be done maximally through the existence of devices that support the achievement of students' skills [6]. This is the challenge of implementing remote learning in Indonesia, including students in the OTKP Skills Competencies.

VHS graduates who must be printed with competencies according to their fields of expertise cannot be separated from practical activities in office laboratories or other relevant fields. On the other hand, it is also crucial to highlight the attainment of the affective aspect output in Indonesia, which aligns with the work culture program for vocational students. This is due to the characteristics of vocational students who are prospective workers right when they graduate. So in this global era, with all the openness of information available, character building to form a positive work culture must be formed when learning in school [7].

However, the facts in the field show that there are still Vocational School OTKP teachers confused in determining the selection of digital-based learning media [8]. This is due to various factors, ranging from limited devices, limited technological skills to confusion due to a large number of digital-based learning media developer platforms, so that it is quite challenging to determine which one is right to be implemented in the learning process for their VHS OTKP students. On the other hand, the limitation of the internet network in some rural areas is still being encountered. Whereas in the era of digital learning, especially in the post-Covid-19 situation, technology adoption for education is very urgent [9], [10]. This is important solely to catch up with Indonesian education in carrying out the digitization process and forming technology-based skills for teachers and students. On the other hand, it is also to prepare a digital learning environment that can facilitate cognitive, psychomotor, and affective learning outputs.

Based on the explanation above, researchers from both teachers and teachers in tertiary institutions must make an effort to analyze the selection of technologies that VHS OTKP teachers can adopt in preparing their learning media. One of the things that must be done is to study the literature on the development of learning technology today and align it with the education policy of the OTKP vocational schools in Indonesia today. It will not be easy to get data on what technology is relevant for adoption if these two things are not done. Therefore, this research aims to examine the literature both from scientific articles published in reputable journals and essential documents from governments, national and global NGOs engaged in education to find what technological formulations can be adopted. Right for the learning process of VHS OTKP in the post-covid-19 digital era.

Through the results of this research, it will later contribute to scientific references regarding the practice of adopting educational technology for learning OTKP vocational schools in Indonesia. In addition, it is also to assist the government in formulating policies related to the learning process in the post-Covid-19 digital era for VHS OTKP.

2. METHOD

The method used in this research is a qualitative descriptive research method, namely a literature review in the form of a narrative overview. Sources of data obtained are from articles on the development and evaluation of digital learning media for OTKP vocational schools that have been published in academic journals. The author searches for articles on research publication pages such as Science Direct and Google Scholar. The keywords used to find the focus of the research area include: learning in vocational education, digital learning after the covid-19 pandemic, competency skills of VHS OTKP students, digital learning media for VHS OTKP, and VHS OTKP learning in the era of the covid-19 pandemic. The articles that authors choose are prioritized for those published in the last decade to keep the research results up-to-date with the relevance of current learning needs.

Sources of data also obtained from various documents from the government, national and global NGOs engaged in education. The documents in question include laws and regulations from the Indonesian government regarding the Center of Excellent Vocational School program and the implementation of learning in the era of the covid-19 pandemic, the World Economic Forum report (The Future of Jobs Report 2020), and other relevant reports and documents. Research with a method like this can be used to formulate what technology can be adopted by a particular learning process, for example, as has been done by Donnelly, Linn, and Ludvigsen [11]. A reasonably old theory regarding the narrative overview method in research in education was started by Casey [12], then at this time, there are quite a few who use it to discuss phenomena that require urgent insights from researchers in the field of education [13], [14].

Each finding from the literature source that the author got was then read for identification and defined. After that, an analysis process is carried out in order to achieve reliable findings.

3. RESULTS AND DISCUSSION

The purpose of this study is to examine the literature both from scientific articles published in reputable journals and essential documents from governments, national and global NGOs engaged in education to find which technological formulas can be adapted appropriately for the learning process VHS OTKP in the post-covid-19 digital era. The digitization of the Indonesian education system must be started by changing the mindset of teachers [15]. This is because teachers are the primary instructors in learning, and they will always motivate students. However, it must be admitted that the main challenge facing the education sector today is the level teachers' skill, especially in the field of Information and Communication Technology [16]. The existence of

the fourth industrial revolution is directly occurring and has changed and influenced all aspects, including education. Teachers also need to update their pedagogy and knowledge to stay relevant and apply the right technology in the learning process.

Learning tools or learning media based on low-tech or high-tech are also essential things that must be held in efforts to digitize education [17], [18]. The characteristics of students at present and in the future as digital native must be accommodated by learning media that are following their characteristics. In the field of vocational education, including in this case the OTKP Skills Competency. In 2020, the Indonesian government, through the Directorate General of Vocational Education, Ministry of Education and Culture, issued a policy related to the VHS Center of Excellence which is expected to initiate VHS schools as centers of excellence that other schools can emulate in making efforts to develop human resources so that VHS graduates have the skills needed by the industry. Through this policy, one of the most supportive aspects is creating a learning process using technology-based media that can facilitate the achievement of vocational learning outcomes. Including, in this case, VHS OTP where most graduates will be absorbed as administrative employees, is still needed by the industry. Based on the literature review analysis (narrative overview), the following are the latest technologies that OTKP vocational school teachers can adopt into the learning process.

3.1 Adoption of Augmented Reality (AR) Technology

Augmented Reality (AR) is a technology that allows users to place digital content (images, sound, text) on top of real-life scenes [19]. AR is not a completely immersive experience like Virtual Reality (VR) technology. VR requires users to wear a special headset and draw them to a completely digital world, while AR still allows users to continue interacting with the physical world around them [20]. Through AR, teachers can improve student learning outcomes through increased engagement and interactivity. AR in education displays aspects that enhance learning abilities such as problem-solving, collaboration, and creation to better prepare future learners [21].

The use of AR in teaching and learning activities has been shown to have a positive impact on the learning process and outcomes of students, especially for vocational students [22]–[24]. Practical examples of the benefits of using AR for teaching and learning activities for Vocational School OTKP students, both inside and outside the classroom that teachers can do include: 1) Increasing students' learning motivation; 2) Increase the creativity, collaboration, and digital literacy of students; 3) allow students to experiment in a safer environment in real life up close than in real life that is far away (certain

office environments); 4) Save budget while still not limiting the ability of students to carry out observations or analyzes in the laboratory; and 5) Increase understanding of abstract concepts through manipulation and multi-angle observation of virtual 3D objects (machines and office equipment).

3.2 Adoption of Virtual Reality (VR) Technology

Virtual Reality (VR) provides opportunities for students to get a real immersive experience. They will feel the environment and experiences that are difficult to reach into an easily felt reality. Through VR, various limitations in the world of education to provide meaningful learning experiences can be overcome.

Based on empirical studies that have been conducted, it shows that the adoption of VR in education has a positive influence on the involvement, understanding, processes, and learning outcomes of students [25], [26]. VR-based learning can be accessed by every student and easily monitored by the teacher. VR has the power to engage and inspire students in unique and powerful ways. Incredibly, through VR, all of these things can be obtained and done only in the classroom.

The practice of adopting VR in the learning process of VHS OTKP can be done to cover the shortcomings of laboratories in schools, on the other hand, as an effort to provide a picture of the future office that students in all regions of Indonesia have not been able to reach at this time. The era of change that is very dynamic and fast encourages, the adoption of VR for VHS OTKP learning it provides an overview of the office world in the future digital era. So that right when they graduate, they will be able to understand the rapid development of office technology that is not yet available in the school environment and places.

3.3 Adoption of Video-Based Assessment Technology

So far, the use of video in learning has only been used to show material and tutorials for a particular lesson. Often teachers still separate the elements of assessment in the learning videos that are developed. Through the video-based assessment technology, it allows teachers to prepare learning materials and assessments in one video that becomes an integral part. This is important to do as an effort to facilitate VHS OTKP students in gaining new and enjoyable learning experiences. Screening videos accompanied by an element of assessment also supports students to have memories related to the material presented on the other hand and the opportunity to measure their understanding while watching the learning videos developed by their teachers.

Video-based assessment, or it can be called video-based evaluation, is currently widely adopted by vocational learning in general. For example, what Zhang and Li did in surgical training material [27], Feldman et al. also developed it to achieve a life-long learning vision [28]. Including Mastumasari et al. who also developed it for the Office Automation subject in vocational education [29]. Some of these studies prove that the use of video-based assessment can positively impact the learning process and outcomes of vocational students.

3.4 Adoption of Mobile Learning Application Technology

Mobile learning is a tool for remote learning in today's digital era, which uses cellular devices (cell phones, tablets, and laptops) for learning purposes [30]. The use of mobile learning applications in the learning process can facilitate students to learn in their way [31], which directly facilitates students to improve self-regulated learning because this allows students to access learning materials anywhere and anytime, even without an internet connection [32].

The practice of adopting a mobile learning application for the VHS OTKP learning process is considered appropriate, because in addition to the reasons described above, it is also found that in their daily lives, they always spend most of their time using smartphones. Such as playing games and accessing social media that are not related to learning activities. So it is the right strategy to offer students to use smartphones as a form of digital technology that integrates the learning process to achieve educational goals [6], [33].

Teachers can develop their mobile learning applications or adopt applications that are currently sold on online application stores for free. Through this, teachers have the opportunity to adjust the structure of the learning material that will be presented in the mobile learning application. All subjects can be developed in this media because this is only a tool whose use can be truly tailored to the needs of teachers and students. Teachers can also raise various interesting features as a way to increase the interest of students to continue to use learning applications rather than entertainment applications which cannot be denied that currently, it is too distracting students' learning time [34].

3.5 Adoption of Social Media-Based Learning

Social media is a platform that is currently very popular with students. Almost all of them have it for different purposes, for seeking entertainment, seeking information, making friends to sharing information and personal moments. In today's digital era, many teachers have initiated social media as their learning tool. It is not uncommon for teachers to use it to create creativity and collaborative learning among students with another one. Research by Ansari and Khan highlighting the role of social media in cohesive work and the concept of collaborative learning suggests that its use can enhance student learning, collaboration, and information sharing [35]. On the other hand, through the creation of positive interactions, learning media can reduce cyberstalking and cyberbullying sentiments [35].

Whereas research by Guler concluded that implementing a social media-based sustainable interaction platform can create ease of communication, unlimited exposure to peer advancement, archiving, and backtracking abilities achieved through the use of social media have a positive effect on student success [36]. The practice of adopting social media-based learning can facilitate students as digital natives in achieving easy learning, on the other hand, this is a way to create collaborative learning, increase tolerance for differences of opinion in the public space and support them in preparing themselves to become professional workers in the social media environment, right when they graduate later. Because it cannot be denied that not all VHS OTKP graduates will become administrators, but they can still work in other fields relevant to the learning material they have received during their school days.

These are the five technologies described in this paper to be adopted by VHS OTKP teachers to present learning in the post-Covid-19 digital era that follows the characteristics of students as digital natives. On the other hand, the five technologies in their adoption practice must consider students' cognitive and affective aspects. Because so far, there have been many studies that evaluate and criticize the development of learning media that only accommodate the cognitive aspects of students [37], [38]. Giving more attention to the accommodation of the psychomotor and affective aspects of VHS OTKP students in a digital environment will help the government achieve the success of the VHS program as a Center of Excellence. In the long term, this will assist the country in preparing human resources, especially VHS OTKP graduates in possession of competent skills in the future and which are needed by the industry. So that the unemployment rate can be reduced and the quality of life in society can increase.

4. CONCLUSIONS AND SUGGESTIONS

Adopting appropriate educational technology and following the characteristics of students for VHS OTKP learning is very important to find the results of a digital learning environment that can facilitate tracking student performance, immersive experience, work culture practices, and self-regulated learning of students. To achieve this, the process of selecting educational technology to be adopted must be carried out carefully by analyzing whether the technology used can support the achievement of three essential aspects of educational

output, namely in the cognitive, psychomotor, and affective domains.

Based on the results of the analysis through the implementation of the narrative overview method, it was found that five forms of technology were suggested to be adopted by teachers in conducting learning at VHS OTKP in the post-Covid-19 digital era: 1) Augmented Reality; 2) Virtual Reality; 3) Video-based assessment; 4) Mobile learning application; and 5) Social media-based learning. The use of these five technologies, either one of them or their combination in a particular subject, is considered capable of supporting the Indonesian government's program, namely the creation of VHS as a Center of Excellence to produce graduates with competency ownership line with industry needs. This study has limitations in terms of methods that still carry out narrative literature reviews so that in the future, it is hoped that similar or relevant research can be carried out to strengthen the results of this study by selecting a systematic literature review research method.

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