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Optimizing vocational students' skills through adaptive online courses

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ABSTRACT

Vocational schools aim to provide teaching and training to students to prepare them for the job market. This article examines the effectiveness of adaptive online courses in assisting vocational schools to improve the skills of Vocational High School (SMK) students. Using a qualitative approach, this research analyzes various relevant literatures to understand how adaptive online courses can be implemented. This research intends to maximize students' personal skills with adaptive online courses. The results obtained from this study indicate that adaptive online courses have great potential to improve the skills of SMK students, especially in the context of personalized and industry-relevant learning.

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INTRODUCTION

Education in vocational schools aims to educate students and prepare students with skills that are in accordance with the needs of the world of work (Pambudi & Harjanto, 2020; Putriatama et al., 2016; Sunyoto & Setiyawan, 2021). Vocational education in Indonesia, which focuses on developing practical skills for the world of work, has a very important role in preparing students to work. (Indrawati & Kuncoro, 2021; Nurtanto et al., 2022; Wagiran et al., 2017). Currently in the digital era, the challenges being faced by vocational schools are increasingly diverse and complex. Rapid technological developments are changing employment patterns and labor market needs. Therefore, vocational schools must be able to adapt in the digital era to prepare students to have skills that are in accordance with industry needs and ready to enter the labor market. Recent studies have highlighted the need to integrate digital literacy and technology-based learning into vocational education to keep pace with rapid technological advances (Alakrash & Abdul Razak, 2021; Jannah et al., 2020; Koller et al., 2006).

Based on data from BPS, the open unemployment rate in August 2022 was 5.86 percent. From this data, SMK graduates are the largest contributor to open unemployment in Indonesia. BPS data shows that the unemployment rate for SMK graduates is 9.42 percent, higher than the unemployment rate for high school graduates. It is further known that the unemployment rate among SMK graduates has shown a decrease compared to the previous year, which was 11.13

percent. It can be seen that the unemployment rate for SMK graduates has fallen below 10 percent, after being above 10 percent for the previous five years.

The government itself is very serious in making various programs to encourage smk students to have the skills needed by the job market. The government even involves various parties, especially industry, encouraging collaboration programs between SMK schools and industry. However, in practice this requires careful consideration of culturally appropriate training models and sustainable approaches to vocational education. Various studies show that these efforts have not yielded maximum results. According to Lintuman, Aryadi (2020) although there has been a collaboration program between SMK schools and industry, there is still a gap between the competence of SMK graduates and the demand of the world of work. Furthermore, Sulistyo, Adhe Rachman (2019) emphasized the need for a comprehensive and sustainable approach to ensure that SMK graduates can compete in the labor market. Thus, the government needs to review the strategies implemented so that they can more effectively overcome the problem of unemployment of SMK graduates.

The large unemployment rate in Indonesia from SMK graduates is a serious problem that needs attention. The gap between the competence of SMK graduates and industry needs is still high, the mismatch between the skills of SMK graduates and industry needs is a major factor in the large number of unemployed, even employers often have to provide additional training for SMK graduates to be able to work according to the needs of the industry (Béduwé & Giret, 2011; Oviawe et al., 2017; Rahayu & Wibowo, 2021). Vocational high schools should be able to produce graduates who are ready to work.

Conventional teaching methods are often unable to meet the individual needs of students (Sokpheng & Meng, 2022; Weil, 1986). Online courses is an online learning model that adapts content and methods to the individual needs and abilities of students. to students' individual needs and abilities. Through adaptive online courses, vocational students can get a more personalized learning experience that suits their interests and learning styles. according to their interests and learning styles. Learning content can be dynamically designed based on students' profiles and achievements, so that they can develop specific skills needed to enter the world, can develop specific skills needed to enter the workforce work (Altimari et al., 2012).

Online courses adaptive online courses are flexible and personalized, allowing students to take the courses at their own pace and time, fitting in with their various daily commitments, while educators, management, and human resources departments can track progress. human resources departments can track progress. In addition, since the system can be easily easily updated and modified, this system can more easily provide more relevant information than what is currently available by using conventional teaching tools (Bawa, 2016; DeBoer et al., 2014).

Courses Adaptive online courses are emerging as a potential solution that can tailor the to the needs and abilities of individual students. This study aims to review the existing literature related to the effectiveness of adaptive online courses in improving the skills of in improving the skills of vocational students (Kem, 2022; Mason, 1998).

RESEARCH METHODOLOGY

This research uses a qualitative library research method approach, each data obtained is the result of a literature review from various academic sources, obtained from journals, books, and other scientific literature (Given, 2007; Lincoln, 2002; Montgomery, 2011). The data collection process is carried out by reviewing research articles, and literature on the topic. Then the research was conducted by analyzing previous research on the use of technology in producing positive learning. With the various literature reviews, the researcher attempted to collect a large amount of primary data that became the theoretical basis for this study. The data obtained from various literatures and other sources will be used to describe and analyze the highlights of this study. It is hoped that the

literature analysis method in this study will provide a better understanding of how technology integration in the curriculum is positive.

RESULTS AND DISCUSSIONS

Vocational schools aim to educate students and prepare students to become individuals who have practical skills so that they are able to work independently, and have to create new jobs and become middle-level workers according to their expertise. In order to achieve this, vocational schools must ensure that the subject matter provided to students is in line with the needs of the industry. One key aspect is the active involvement of industry practitioners in the curriculum development process (Widiaty & Ana, 2015). With industry involvement in curriculum development, schools can better prepare students to face the challenges of the job market.

Adaptive online courses can bridge the gap between industry/business needs and student skills. In addition, adaptive online courses can facilitate the involvement of industry professionals in the teaching process. This collaboration can help ensure that the skills and knowledge acquired by students can be directly applied to the needs of the job market. Adaptive online courses consist of various stakeholders, including students, employees, content providers, educators, employers, and course administrators, all of whom are connected to an education management system through a network. The system has servers and databases to store educational software and data, which allows for the synchronization of information between the system and users' computers.

Adaptive online courses are capable of creating parameters for course objectives and associating parameters with associated values. These generated parameters are stored in the educational management system. The students get assessment evaluations, and the evaluation results are tracked and stored in the education management system. The results include the grades associated with each student and are compared with the course objectives to provide comparison data. Based on this comparison, the system can generate a customized curriculum, which consists of course materials that correlate with the course objectives. The course materials are then distributed from the education management system to the user's computer via a network connection.

The system creates a customized course curriculum for users in an online computing environment. The system includes a content provider that has course materials and assessment evaluations for online courses to be accessed by user computers. The system includes an education management system with a server and a database. The education management system is configured to link data with course materials and link course objectives with course materials and assessment evaluations. The course materials have associated grades or weights. The education management system includes predefined parameters for the course objectives, which are associated with these values. The education management system transfers assessment evaluations to users, with evaluations that include data corresponding to various course objectives. The results of student performance on assessments are stored on the server and include values associated with each student. These results are compared to the course objectives to provide comparative data, which is stored on the server and used to generate a personalized curriculum consisting of correlated course materials. The system includes a network connection connected to the education management system and configured to distribute materials from the content provider to the user's computer. The network connection provides a link for transferring information between the education management system and the user's computer. The information transferred between the education management system and the user's computer is also related to specific online courses and users in the database.

To distribute educational content efficiently without overloading the educational management system, adaptive learning systems use mechanisms such as peer-to-peer protocols. This approach ensures that new or modified data is synchronized at regular intervals, thus providing users with up-to-date information even when offline.

The process workflow is described as follows :

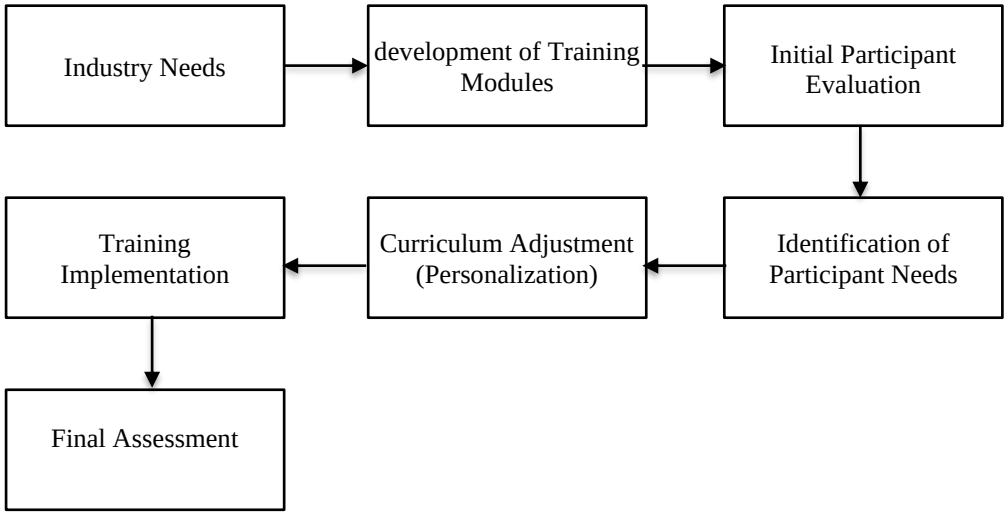

Figure 1. Flowchart of the system work process

The flowchart above is described as follows:

1. Setting Course Objectives based on industry needs:
   Input from vocational schools (SMK), industry partners, and the government is used to determine course objectives, which are then stored in the education management system.
2. Setting Performance Parameters and developing training materials:
   Criteria are established to assess student performance and develop training materials that are aligned with course objectives.
3. Student Assessment:
   Regular evaluations are conducted to measure student progress and to establish the training materials to be followed. Assessment results are stored in the system.
4. Generate Personalized Curriculum:
   Performance data is used to customize the learning path for each student.
5. Distributing Curriculum:
   Personalized content is delivered to students via a network connection.
6. Implementation of training with online mentors from industry and teachers in schools.
7. Continuous Feedback and Updates:
   The learning outcomes will be evaluated on an iterative basis, and the content material will be adjusted regularly according to industry needs.

CONCLUSION

Adaptive online courses are a significant leap forward in the field of education, especially vocational education. Adaptive online courses utilize current technology, providing a personalized learning experience for each student. With continuous feedback and learning, adaptive online courses not only adapt to the needs of each student, but also align with the needs of the job market. This method ensures that each student is well prepared for their future career. This system is also in line with current technological developments, so it will play an important role in education. The advantages

of adaptive online courses include the fact that with the implementation of these online courses, students get a special learning experience, according to the needs and learning styles of each student. In addition, with content material adapted from the industrial world and mentors from the industrial world, students get effective material to optimize their skills as a provision for work later.

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