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Development of Learning Media to Improve Critical Thinking Skills and Creativity of Vocational Students

ABSTRACT

An important aspect in education is the teacher and the student. Teachers have a duty in teaching and students have obligations in learning. In the learning process, it is necessary to apply the strategies used by the teacher so that students can understand the material presented. One of the strategies used is learning media. Besides, helping in increasing the understanding of students, learning media also helps in improving the critical thinking skills and creativity of vocational students. The purpose of this study is to analyze the development of learning media to improve the critical thinking skills and creativity of vocational students. The research method is qualitative. The data collection technique is carried out by literature study, namely data collection by reviewing books, literature, notes, and various related reports. Then, the data analysis is done by Miles and Huberman analysis, namely data collection, data reduction, data presentation, and conclusions. The results obtained show that the development of learning media is important to improve the critical thinking skills and creativity of vocational students. Simulations, games, and projects are effective solutions for practicing these skills, with simulations providing real experiences, games increasing student interest, and projects allowing students to collaborate on solving complex tasks. Learning media must also be by the interests and needs of vocational students and use relevant technology. Thus, the development of learning media is a critical step in preparing vocational students to face complex future challenges.

Keywords: *Critical Thinking, Creativity, Learning Media.*

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I. Introduction

Education cannot be separated from the learning process. In learning activities, teachers have the task of teaching, and students learn. Learning is doing activities, so students need to participate a lot in the learning process. Student participation can be done by listening, seeing, writing, feeling, and thinking (Kusumawati, 2022; Magdalena et al., 2021). In a teaching and learning process, it is inseparable from a learning media where the media acts as a tool in the teaching and learning process to facilitate the learning process and as a tool for an educator to convey knowledge and material (Sapriyah, 2019).

Suitable learning media is beneficial for students in the teaching and learning process. Teachers can use learning media to deliver material to students so that students more easily understand the material taught, making students more enthusiastic to follow lessons and gain new experiences in teaching and learning activities (Setyarini et al., 2022). The role of learning media in the learning and teaching process is vital to be carried out by educators today because role learning media can be used to channel the sender's message to the recipient, and learning media can also help students to explain something conveyed by educators (Batlawi & Hamid, 2022). There are several criteria in the selection of learning media that must be considered by teachers, including looking at the purpose of use, the target of media users (for whom), considering the advantages and disadvantages of

the media to be used, considering the appropriate time, considering the available costs, and finally looking at the availability of learning media (Rahayu et al., 2023; Wulandari et al., 2023).

Learning media can also foster students' abilities in teaching and learning, such as critical thinking skills and creativity (Umam, 2018). Thinking critically can be obtained through an exercise or situation deliberately created to stimulate someone to think critically (Shafrillia et al., 2022). The ability to think critically is everyone's ability to solve a problem by focusing on the process and steps taken carefully, which can be accounted for (Hendi et al., 2020).

Research conducted by Wahyuni et al. (2022) explained that students' critical thinking skills after using media increased and included the moderate category, and students' responses showed positive responses. Landina & Agustiana's (2022) research explains that various learning media can be used as solutions to overcome student learning problems by helping students to be able to think critically and understand student learning. Novyanti et al. (2022) explained that cognitive creativity in children could be significantly improved by using interactive learning media.

The novelty of this study is to analyze and clarify more deeply about the development of learning media to improve the critical thinking skills of creativity of vocational students. The vital role of learning media used in the learning process is to increase students' understanding by capturing the material provided by the teacher. In addition to increasing understanding, learning media can also improve student thinking. Thus, this study aims to analyze the development of learning media to improve critical thinking skills.

II. Methods

This research employed a qualitative approach, explicitly utilizing qualitative research methods. Qualitative research involves using narratives or words to elucidate and describe the meaning of various phenomena, symptoms, and specific social situations (Dwikurnaningsih & Waruwu, 2023). The data for this study were gathered through a literature review, a technique involving examining books, literature, notes, and relevant reports (Purwanto et al., 2020).

The analysis of the collected data followed the Miles and Huberman analysis framework. This approach comprises several vital steps, including data collection, reduction, presentation, and conclusion (Purnami et al., 2022). In the data collection phase, relevant information was systematically gathered. Subsequently, data reduction involved condensing and organizing the information. Following this, the data were presented coherently, and finally, conclusions were drawn based on the synthesized findings. This comprehensive process allowed for thoroughly exploring and understanding the research subject.

III. Results

Students of the future are faced with increasingly complex challenges and require different skills than are required today. These challenges include technological change, global competition, and social problems. The 5.0 era marks public literacy towards Information and Communication Technology (ICT), changing various aspects of life and sectors such as science, economics, industry, and government (Setyowati & Ahmad, 2021). Technological advancements, primarily through the Internet, have also created a massive transformation in the work environment, characterized by increasingly fierce competition (Hannan et al., 2023), so that future students will face an increasingly competitive job market.

In addition to technological challenges and global competition, social issues such as climate change, poverty, and social inequality will also be complex issues in the future. Food security, instability, and conflict are development and humanitarian issues that present significant national security challenges (Badewa & Dinbabo, 2022). Therefore, the importance of vocational students' ability to answer these challenges is increasing. The abilities of SMK (Vocational high school) students include the ability to think critically and creativity of students because by thinking critically and creatively, students can follow the development of these technologies and generate new ideas and innovations to increase their competitiveness so that they can compete with other SMK graduates and find solutions to social problems such as developing new products or services that can help overcome these social problems.

The concept of education is fundamental to develop because when viewed from the challenges of students in the future, it is certainly not enough if students are only equipped with cognitive abilities. Knowing this, many schools have begun to improve their education systems so that the graduates produced can meet developmental challenges (Ariyanto et al., 2020). According to Facione (2013) in (Syafitri et al., 2021) state that critical thinking is self-regulation in deciding (judging) something that produces interpretation, analysis, evaluation, and inference, as well as exposure using evidence, concepts, methodologies, criteria, or contextual considerations that are the basis for making decisions. In other words, critical thinking involves an individual's ability to independently make decisions by detailing and structuring arguments supported by relevant logic, evidence, and considerations. According to Suwarma (2009) in (Ariyanto et al., 2020) explained that there are four reasons why critical thinking skills need to be developed, including:

Familiarize students in seeking information independently according to the needs or demands of the times.

Provide provisions for students in facing a problem.

Get students used to seeing a problem from various points of view.

Through critical thinking skills, students can compete and work together to solve problems.

In addition to practising critical thinking skills, it is also important for students to develop their creativity in preparation for future challenges. According to Fakhriyani (2016), creativity is a person's ability which in everyday life is associated with special achievements in creating new things or something that already exists into new concepts, finding ways to solve problems that cannot be found by most people, making new ideas that have never existed and seeing various possibilities that will occur. Furthermore, Fakhriyani explained that the higher a person's creativity, the higher the academic achievement.

Having the ability to think creatively, students involve all their thinking abilities to find solutions to a problem. Although sometimes there are too many ways that will make it difficult for students to get to the result, the many choices will allow students to get to the destination compared to students who do not have a way to get to the solution to the problem (Saputri et al., 2022; Utami et al., 2020).

Many benefits are obtained from students who can develop the potential for creativity in real life. The creativity that arises in students today is important because it positively impacts everyday life, especially in the classroom. Creative students may have mastered the material before the material is given. They can already learn skills of learning concepts that are more advanced outside the classroom than the teacher's explanation in class. The provision of education carried out by teachers to creative students is useful for the present life and as a provision of knowledge to prepare for the future. The goal is for students to anticipate and respond to future challenges or times that are always developing and changing, and this will encourage student creativity in facing these challenges (Widyaningrum & Rahmanumeta, 2016).

Seeing the benefits of critical and creative thinking skills for students, especially at the vocational level, is very important, considering that SMK focuses on producing graduates ready to compete in the world of work. Vocational High Schools have a special objective of providing training that leads to professional readiness and active involvement in the corporate world. The relevance of SMK graduates to the world of work can be seen from their speed and suitability in adjusting to the field of work by their expertise (Alimudin et al., 2019). Therefore, it becomes very important for vocational teachers to develop their students' critical thinking skills and creativity actively. The development of learning media can be one of the effective strategies to improve the critical and creative thinking skills of vocational students. The selection of the right learning media can help students understand the material more deeply while stimulating them to think critically and creatively in the context of learning.

Learning media can be defined as a tool teachers use to convey messages to learners so that the message reaches learners well (Moto, 2019). Learning media is also called learning aids, and it helps students with learning activities. Learning media can be an important component because learning is a form of communication that occurs in a learning system (Ekayani, 2017). Thus, learning media becomes an important component in the learning process because it is an intermediary

connecting educators and students. Learning media serves as a tool that helps convey information and concepts more effectively, creating an efficient communication bridge between teachers and students during the teaching and learning process.

The use of media in the learning process aims to overcome various obstacles that may arise during teaching and learning activities, including psychological, physical, cultural, and environmental barriers. Learning media, in general, has the first function of clarifying the delivery of messages, second overcoming space limitations, and third, overcoming the passive attitude of students. According to the National Education Law, a learning approach that only relies on the lecture method is insufficient because it can cause boredom in students. Hence, their understanding of learning material becomes hampered. Therefore, using media as a teaching aid is needed to improve learning effectiveness (Qusyairi, 2020). In achieving this goal, there are efforts to develop learning media to improve critical thinking skills and creativity in vocational schools, such as simulation-based learning media, game-based learning media, and project-based learning media.

Simulation-based learning media is a learning media that presents a situation or process in real or close to reality. So, animation-based and simulation-based learning media are learning media in the form of images and static text that are driven to provide a more concrete learning experience through an imitation of a form that is close to the real atmosphere so that it can take place in an atmosphere without risk (Zainiah Rijanto, 2016). Simulation is a game technique in learning that is lifted from the reality of life. Simulations are designed in mock situations to represent the real situation of the material being studied. This means that simulation methods are used for certain materials that do require imitation to help students understand their true nature. The goal is to provide students with an understanding of a concept or principle, or it can also be to practice the ability to solve social problems derived from the reality of life.

Simulation-based learning media can improve students' critical thinking skills and creativity in several ways. First, by providing students with real experience, simulations allow them to understand concepts or processes more deeply. Second, students can practice critical thinking skills through exercises to solve the problems presented. For example, machine simulations can help students critically understand how machines work. Third, simulation can stimulate students' creative thinking, as in the case of simulated handicraft products, which can involve students in designing products creatively. Thus, simulation media provides real experience and trains students' critical thinking skills and creativity.

Examples of simulation-based learning media that can be applied in SMK to improve students' critical thinking skills and creativity involve:

Machine Simulation: Machine simulation learning media allows students to understand in depth how different types of machines work, including automobile engines, industrial engines, and aircraft engines.

Computer Simulation: Computer simulation learning media can be used to understand how software works, such as operating systems, word processing applications, and number processing applications.

Laboratory Simulation: Laboratory simulation learning media can help students learn science experiments, including physics, chemistry, and biology, without being in a physical laboratory.

The next learning media, game-based, uses games to deliver learning material. This medium can be a computer, board, card, or traditional game. Some literature reveals that learning, a game approach involving student participation in digital technology, shows a greater desire to continue the next learning process than conventional learning (Andari, 2020). This can be interpreted that using digital technology in the context of game-based learning tends to increase students' interest and motivation to engage more actively in learning, compared to traditional learning methods.

Game-based learning media can improve students' critical thinking skills and creativity in several ways. First, using games makes learning more exciting and fun, increases student motivation, and strengthens the memory of learning material. Second, games can play a role in training students' critical thinking skills in solving problems, such as puzzle games that require students to think critically to arrange pieces into whole images. In addition, games can also develop students' creative thinking skills; such as in business simulation games that involve students in developing business

strategies creatively. Thus, using game-based learning media increases students' interest and hone their critical thinking skills and creativity.

Some examples of game-based learning media that can be applied in SMK to improve students' critical thinking skills and creativity involve:

Computer Games: Computer games can be applied to studying various subjects, such as mathematics, science, languages, and history. For example, math games can train students to think critically in solving math problems.

Board Games: Board game-based learning media can cover various learning areas, including science, history, and culture. For example, science board games can help students critically understand scientific concepts.

Card Games: Card games can be applied to language, math, and history learning. For example, language card games can help students think critically and understand vocabulary and grammar.

Traditional Games: Traditional game-based learning media, such as engklek, can engage students in learning culture, history, and skills.

The last learning medium is project-based learning media. Project-based learning media is a form that uses projects to deliver learning material. In this context, as expressed by Patton (2012), project-based learning directs students to design, plan, and implement projects with results in the form of products or services that will be exhibited to the public (Rajabi et al., 2015). This type of learning media can include research, design, development, or social projects.

According to research conducted by Adinugraha (2018), the project-based learning model has several advantages, including first increasing student learning outcomes and motivation, second encouraging students to be creative and independent in producing products, third providing experience to students to build their knowledge, and increasing students' ability to communicate the products produced. Applying a project-based learning model improves students' problem-solving skills and emotional intelligence.

Here are some examples of project-based learning media that can be used to improve the critical thinking skills and creativity of vocational students:

Research projects: Research projects can be utilized to study various subjects, such as science, technology, and society. For example, students may undertake a research project on the impacts of climate change, which will train them in critical thinking when collecting, analyzing data, and inferring the impacts of climate change.

Design projects: Design projects can be applied in technology, art, and design learning. For example, students can develop design projects for handcrafted products, which will stimulate students' creativity in the design process.

Building projects: Building projects can be used to study various fields, such as engineering, construction, and the environment. For example, a simple house-building project can involve students in the planning and execution of the construction, honing their critical thinking skills.

Social projects: Social projects can be applied to learn social, cultural, and humanitarian materials. For example, social projects aimed at helping the poor can train students in critical thinking when understanding poor people's problems and developing creative solutions.

In developing learning media, paying attention to several important aspects, such as the characteristics of vocational students and the use of relevant technology, is necessary. Educators must be able to choose appropriate and suitable learning media to achieve the school's teaching goals (Nurrita, 2018). Vocational students have different characteristics from students at other levels of education, with a high interest in vocational fields and practical abilities that are more dominant than theoretical abilities. While technology is a supporting facility for learning media, it must be developed so that the technology used in learning media is based on the material and characteristics of vocational students.

Effective learning media can positively influence the success of the teaching and learning process and student learning outcomes. The learning media developed will be able to bridge between educators and students. According to Sinambela (2018), learning is effective if it achieves the desired learning objectives and maximum student achievement (Zainiah & Rijanto, 2016). Developing learning media is a critical step to improving vocational students' critical thinking skills and creativity. The development process can include implementing simulation-based learning media, game-based learning media, and project-based learning media. The hope is that applying this learning media can

significantly improve vocational students' critical thinking skills and creativity. This is particularly relevant given that these capabilities are key in facing challenges, including technological change, global competition, and complex social issues in the future.

IV. Conclusion

Learning media development is essential in improving vocational students' critical thinking skills and creativity. Critical thinking allows students to analyze various situations logically and deeply, while creativity allows students to find innovative new solutions. The development of simulation-based learning media, games, and projects is an effective solution to training these skills. Simulations provide real experiences, games increase student interest and motivation, while projects allow students to be creative and collaborate in solving complex tasks. In addition, effective learning media must pay attention to the characteristics of vocational students and relevant technology. Vocational students tend to be more interested in vocational fields and have dominant practical abilities, so the learning media must be by their interests and needs. The technology used in learning media must also be relevant and support the material and characteristics of vocational students. Developing learning media effectively is expected to increase the success of the teaching and learning process and student learning outcomes. Therefore, developing simulation-based learning media, games, and projects is a critical step in preparing vocational students to face complex future challenges, including technological changes, global competition, and social problems that are increasingly urgent to be solved.

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