Development of a Media Website Using a Self-organized Learning Environment (SOLE) Model to Improve Learning and Innovation Skills in PKK Subject at SMKN 7 Semarang

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ABSTRACT

This study aims to: (1) find out the procedure for developing a media website with the SOLE learning model to improve learning and innovation skills in the PKK subject at SMKN 7 Semarang, (2) find out whether there is a significant influence from the application of the media website with the SOLE learning model on indicators of increasing learning and innovation skills in PKK subjects at SMKN 7 Semarang. This research uses the development research method with the 4-D model from Thiagarajan which includes the define, design, develop and disseminate stages. The research instrument used was a questionnaire to assess the feasibility of website media by material experts and media experts, an observation sheet to assess students' competence in the aspects of learning and innovation skills and an assessment sheet for the final product test done by students. The final student scores obtained through quasi-experiments were then tested for normality and homogeneity prerequisites and tested for hypotheses using non-parametric statistical tests. The results of the research carried out were website media produced through the 4-D models development procedure (define, design, develop and disseminate) which were declared "Appropriate" by material experts with an average percentage of eligibility of 83% and "Very Feasible" by media experts with the average percentage of eligibility is 92%. From the experimental results, it is proven that there is a significant effect of implementing website media with the SOLE learning model on increasing learning and innovation skills in the PKK subject at SMKN 7 Semarang with the average final score of students in the experimental class being 96.4 and in the control class being 86.7 and the acquisition of a significance value of 0.00 <0.05.

Keywords: Website Media, SOLE Learning Model, Learning, Innovation Skills.

1. INTRODUCTION

The availability of human resources (HR) with 21st century skills, employment and competitiveness is the main capital in building a nation. Vocational High School (SMK) is an educational institution aimed at producing work-ready graduates, producing human resources who can master knowledge and have high skills. Minister of National Education Regulation No. 23 of 2006 states that SMK graduates are required to master competency skills and entrepreneurship programs both in order to meet the needs of the industry/world of work and to continue higher education in accordance with their vocational skills.

However, this is in contrast to data from the Central Statistics Agency (BPS) in February 2022 which stated that the highest percentage of the open unemployment rate (TPT) was 10.38% of a total of 8.40 million Indonesians coming from the workforce who graduated from high school. Vocational (SMK). Research found that one of the factors causing the high TPT rate of SMK graduates is the occurrence of a mismatch of the competency skills applied in schools with the criteria needed by DU/DI [1].

In the 21st century, the quality of human resources needed to compete in DU/DI is not only oriented towards skills that can be learned in terms of hard skills but non-technical abilities in the form of soft skills such

as learning and innovation skills including communication, collaboration, critical thinking in solving problems as well as creative and innovative with the aim of being able to work and develop effectively, productively and have competitiveness in quality. The Conference Board of Canada states that soft skills are skills that are primarily needed to drive the company's progress, therefore DU/DI really considers aspects of soft skills in finding new workers [2]. Most of them or around 88.9% stated that soft skills were needed more than hard skills in the job registration process.

Therefore, the developed curriculum must be able to identify and analyze the needs of the expected output, namely that students are able to implement hard skill and soft skill competencies in a balanced manner in each class between subjects to produce graduates who are competent in their fields. The increase in the soft skills of students in SMK is strongly influenced by several factors which are summarized in the SMK revitalization flow in six systemic fields (input, process, output, and outcome), namely curriculum, learning innovation, teacher and student professionalism, standardization and optimization of facilities and infrastructure, institutional governance, as well as SMK partnerships with DU/DI and stakeholders [3]. Given the importance of soft skills in an effort to prepare students to face the world of work, teachers as educators need to prepare learning strategies and innovations to improve students' mastery of soft skills, one of which is by developing learning media and models, so that the performance of SMK graduates can increase because one of the indicators is the level of suitability of high student competence.

This requires the transformation of learning media in schools from conventional systems to digital technology media by applying flexible learning models and following the needs of the global era [4]. 21st century students are digital native generations or generations who grow and develop in the digital world, spending 79% of their time accessing the internet every day [5]. By taking advantage of this number opportunity, media that can be an alternative to support digital learning is in the form of a website. The website is used as an optimization in this type of learning media because it has various advantages, namely the main thing is that flexible learning can be accessed anywhere and anytime and updating material can be done easily [6]. The content on the website is integrated with applications that contain digital learning support features such as Google For Education, Mentimeter, Quizziz and Wordwall, aimed at making students able to master tech-savvy or digital literacy, providing personal experiences in exploring knowledge that makes students work harder step forward, choose the equipment used for the delivery of teaching and learning, and collect materials according to needs.

This is in line with the implementation of the Self Organized Learning Environment (SOLE) learning model which makes the independent learning process possible for anyone who has the desire to learn supported by the internet and the smart devices they have. Activities in this learning use a cooperative-constructivism approach which includes the stages of questioning, investigation, and review in accordance with 21st century education which is characterized as the era of globalization or in other words human life is experiencing a different evolution from order of life in the previous century. The 21st century uses all alternatives in order to fulfill the needs of life in various knowledge-based contexts. Education is becoming increasingly important for honing students in aspects of learning and innovation skills which consist of four aspects, namely communication, collaboration, critical thinking and problem solving, as well as creativity and innovation. innovations). In addition, it needs to be supported by skills in using information technology and media so that they can work and survive by using life skills [4]. To harmonize this, SMKN 7 Semarang, as one of the Vocational Centers of Excellence in Semarang City, still uses conventional modules in the PKK (Creative Products and Entrepreneurship) learning process. The learning model applied is Project Based Learning but uses the teacher-centered lecture method. In taking value as evaluation material refers to summative assessment at the end of learning such as UTS and UAS, this results in students only being oriented to the value of learning outcomes in the cognitive aspect in the form of hard skills, not including process assessment in the affective and psychomotor aspects in the form of soft skills.

Therefore, based on the description above, the researcher proposes a learning innovation, namely "Development of Website Media with a Self-Organized Learning Environment (SOLE) Learning Model to Improve Learning and Innovation Skills in PKK Subjects at SMKN 7 Semarang" as a solution.

2. METHOD

This study uses research and development methods (Research and Development/R&D). R&D methods are used to produce a product and test the effectiveness of the product. In the process of producing a product, it is necessary to have a needs analysis with various methods such as interviews, observation or qualitative. To test the feasibility of a product so that it can be used widely, it is necessary to have a questionnaire and test method or action research. If the product has been tested for feasibility, then the product can be implemented.

In this case, the website research and development model uses the stages proposed by Sivasailam Thiagarajan et al. namely the 4-D model, namely define,

design, develop, and disseminate with a research design that is quasi-experimental design [7].

The population of this study were class XI students of the Road Irrigation and Bridge Construction (KJIJ) program at SMKN 7 Semarang who took the PKK (Creative Products and Entrepreneurship) subject in class XI with a total of 71 students, with a sample of class XI KJIJ 1 as the control class, namely 35 students. and XI KJIJ 2 as the experimental class, namely 36 students.

Data collection techniques used are questionnaires and tests and non-tests. The questionnaire used is an expert validation questionnaire which includes a media expert validation questionnaire and a material expert validation questionnaire to assess the feasibility of the content of the material on the media website. Test assessment is carried out on the final results of learning in the form of products from practices that have been implemented. While the non-test is carried out through observation and taking the learning innovation skills indicator values   during the Creative Products and Entrepreneurship (PKK) learning process both in the control class and in the experimental class using an observation technique in the form of an attitude assessment rubric.

The data analysis technique used is descriptive data analysis and quantitative analysis. Descriptive analysis was used to collect data (data collection) obtained during the research in the form of notes on field results through observations after interviews with regard to learning models and media. Then data reduction (data reduction) and descriptive data presentation (display data) from the results of observations and questionnaires are presented in a brief description in the form of tables to facilitate understanding, and the last is to conclude the data. Quantitative data analysis was used to process the validation questionnaire data from material experts and media experts as well as test and non-test results data to then test the prerequisites using the homogeneity and normality tests and test the hypothesis using the Mann-Whitney test.

3. RESULT AND DISCUSSION

In the process of its preparation, research that produces the final product in the form of website learning media is a type of Research and Development (R&D) that uses the Four-D Models (4-D) development model from Thiagarajan which includes 4 stages, namely define, design.), develop (development), and disseminate (dissemination).

3.1. Stage Define (Definition)

In this study, the defining stage aims to establish and define the needs in the PKK learning process at SMKN

7 Semarang by analyzing the objectives and material boundaries. The defining stage consists of five steps, namely initial analysis, student analysis, concept analysis, task analysis, and analysis of learning objectives which are described as follows:

1. Preliminary analysis: formulating problems that occur in PKK learning in class XI majoring in KJIJ SMKN 7 Semarang, namely using a project-based learning model with teacher-centered lecture methods with learning media, namely conventional teacher's textbooks.

2. Student Analysis: identifying student abilities in aspects of learning and innovation skills, namely critical thinking and problem solving, communication, collaboration and creativity as well as innovation that have not been maximally honed in the application of models, methods and media used by teachers.

3. Concept Analysis: analyzing relevant teaching concepts based on the learning needs of PKK by determining the material to be taught. The results obtained are teaching materials on learning outcomes 1, namely making product prototypes.

4. Task Analysis: determine general tasks and specific tasks from learning outcomes 1 and learning strategies to be used that refer to the independent curriculum.

5. Specification of Learning Objectives: produce learning objectives from the results of the analysis that has been done before.

Based on the study of the five steps at the define stage, it was concluded that researchers developed website learning media by implementing the SOLE learning model integrated with digital technology.

3.2. Design Stage (Design)

The next stage is design which consists of four steps, namely the first is the preparation of a test, in this case the test consists of two aspects, namely affective assessment which includes student competence in the form of observation and cognitive psychomotor assessment using student performance. Second, the selection of media which is described in the form of a flow chart to describe the flow of learning objectives that are aligned with teaching and learning activities. Third, choosing a format that refers to the Learning Implementation Plan (RPP) prepared by the researcher based on the independent curriculum guide. Then the fourth is the initial design/preliminary design which is visualized in the form of a story board as an initial description to then be realized into the website media design as draft I before being validated by material experts and media experts. The website media design

and the content contained in it are made using the Canva application.

3.3. Stage Develop (Development)

The develop stage is carried out to produce draft II, namely the media website which has been tested for its feasibility by experts, both media experts and material experts, and revised according to the input and suggestions that have been given. The validator's assessment of the feasibility of material in website learning media is based on 3 aspects, which include learning design, material content and language and communication using a questionnaire that contains a rating scale or rating scale from one to four with the following results:

Table 1. Results of Material Expert Assessment

No.	Validator	Rating Percentage	Category
1.	Material Expert 1	81%	Very Eligible
2.	Material Expert 2	85%	Very Eligible
	Average	83%	Very Eligible

Then, the feasibility of website learning media as assessed by two media experts refers to 3 aspects which include usability, functionally and visual communication with the following results:

Table 2. Results of Media Expert Assessment

No.	Validator	Rating Percentage	Category
1.	Media Expert 1	91%	Very Eligible
2.	Media Expert 2	93%	Very Eligible
	Average	92%	Very Eligible

After the website learning media has been assessed and evaluated by media experts and material experts, it will then be tested in the form of a quasi-experimental against the control group and the experimental group. The trial aims to determine the effect of implementing website media with the SOLE learning model in improving student learning and innovation skills in class XI KJIJ SMKN 7 Semarang. The trial was carried out in the experimental class, namely XI KJIJ 2, which was held on January 6, 2023, with a total of 36 students, while for the control class, namely XI KJIJ 1, on January 12, 2023 with 35 students. An increase in student learning outcomes was obtained from a comparison of the final grades of the experimental class and the control class. The test assessment was obtained from three aspects, namely the product prototype design, practical activity reports and student final products which were collected in one link on the website. While non-test assessments in the form of observations are carried out during the learning process using observation sheets that assess communication, collaboration, creativity and innovation competencies as well as problem solving and critical thinking. During the learning process, the assessment was carried out by a team of observers consisting of three research partners and one accompanying teacher with the final grades obtained as follows:

Table 3. Test and non-test assessment results

Value	Experiment Class Value			Category
	Non Test	Test	Final Value	
Average	95.5	97.3	96.4	Very good
Value	Value Class Control			Category
	Non Test	Test	Final Value	
Average	80.7	92.7	86.7	Very good

From the table above, the experimental class obtained an average score for non-test of 95.5 which is in the very good category while the control class obtained a score of 80.7 in the good category. This shows an increase in the results of the application of treatment, namely learning using website media with the SOLE learning model compared to conventional learning carried out. After the results of the test and non-test assessments were obtained, the data was accumulated and then processed using analysis prerequisite tests and hypothesis testing using non-parametric statistical tests because based on the results of the homogeneity test and the normality test, the final student value data in ordinal form was stated to be homogeneous but not normal. The non-parametric hypothesis test that was carried out was Mann Whitney. From the test results obtained a significance value of 0.00 <0.05, which means that Ha is accepted and Ho is rejected. Thus it can be concluded that there is a significant influence from the development of website media with the SOLE learning model on increasing learning and innovation skills in PKK subjects at SMKN 7 Semarang.

3.4. Stage of Dissemination (Dissemination)

The disseminate stage is the dissemination stage and is the final stage of this research and development stage. At this stage the researcher publishes a media website with a link that can be accessed by students in the KJIJ department at SMKN7 Semarang. In addition, this website media is disseminated to PKK subject teachers to be used as a support for learning at the next meeting. The results of this research were also documented in video form and published online on a privately managed YouTube channel.

4. CONCLUSION

The results of this study are website learning media products with the SOLE learning model to improve students' learning and innovation skills in the subject of Creative Products and Entrepreneurship (PKK) class XI, the Irrigation Road and Bridge Construction (KJIJ) expertise program at SMKN 7 Semarang with development procedures using the 4-D model from Thiagarajan which includes the define, design, develop and disseminate stages which were declared "Appropriate" by material experts with an average percentage of eligibility of 83% and "Very Eligible" by media experts with an average percentage of eligibility of 92 % .

There is a significant effect of the application of the media website with the SOLE learning model on increasing learning and innovation skills in the PKK subject at SMKN 7 Semarang in terms of the average final score of students in the experimental class compared to the application of conventional learning in the control class, namely obtaining a value of 96.4 for the experimental class and 86.7 for the control class with a significance value of 0.00 <0.05.

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