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Development of Industrial Culture Learning Module to Improve Student's Soft Skill at SMK Muhammadiyah 2 Kuningan

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Abstract

Learning activities are a system that is deliberately planned with the modification of various conditions that are directed so that the objectives contained in the curriculum can be achieved, in the implementation of the learning process in Vocational High Schools (SMK) there are many problems that arise from various factors supporting the learning process starting from students as students, teachers as educators, methods as a means of delivering the subject matter, learning support facilities and school policies that can affect the smoothness of the learning process. Selection of the right learning media can improve learning outcomes as well as the elaboration of new habits by developing soft skills of students themselves by using e-modules for class XII TKRO 4 and those who do not use e-module XII TBSM 2 at SMK Muhammadiyah 2 Kuningan for the academic year 2020/ 2021. The purpose of this research is to develop an E-Module on Industrial Culture Materials with a Problem Base Learning learning model to improve students' soft skills. This study uses research and development or R and D methods. The design chosen is ADDIE, which includes five stages, namely Analysis, Design, Development, Implementation, and Evaluation. The research uses various instruments, namely (1) a feasibility assessment sheet for e-modules; (2) e-module practicality questionnaire; and (3) a questionnaire on the effectiveness of the e-module to measure the soft skills of class XII TKRO 4 and XII TBSM 2 students at SMK Muhammadiyah 2 Kuningan. The data analysis used is (1) categorical to determine the feasibility level of the e-module; (2) Guttman's categorization to determine the level of practicality of e-modules, using the coefficients Kr and Ks; and (3) N-Gain and different N-Gain tests using t-test, to determine the effectiveness of the e-module on student learning outcomes. Based on the feasibility test, practicality test, and the effectiveness test of the e-module, the industrial culture material developed, according to the responses of media experts and material experts, obtained the criteria for a very feasible e-module response. Responses from teachers and students as user responses to the practicality test of the e-module obtained very practical assessment criteria. And from the effectiveness test in the experimental class, the e-module obtained effective and significant criteria for improving the soft skills of class XII TKRO 4 and XII TBSM 2 students at SMK Muhammadiyah 2 Kuningan.

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INTRODUCTION

Learning activities are a system that is deliberately planned with the modification of various conditions directed so that the objectives contained in the curriculum can be achieved, so that learning can be said to be a core activity in the teaching and learning process in schools. Education held at the vocational secondary level is a continuation of junior secondary level education, it can be said that education at the vocational secondary level is a period of transition and adaptation process for students both in the way of thinking and in the way of accepting subjects, not a few students who have just entered vocational high school feel confused and do not understand what they are supposed to do.

In general, the school as a forum for education providers is one component in the learning system that functions to improve students' abilities, has an important role in learning. The abilities developed in the learning process are not only in the cognitive and psychomotor domains but also in the affective domains of students. In general, the school as a forum for education providers is one component in the learning system that functions to improve students' abilities, has an important role in determining the right direction and goals of a learning process. The abilities developed in the learning process are not only in the cognitive and psychomotor domains, which are marked by mastery of subject matter and skills, but also in the realm of the student's personality or the affective domain of students.

Minister of Education and Culture (Mendikbud) Muhadjir Effendy explained that the unemployment rate for graduates of Vocational High Schools (SMK) was recorded as the highest among graduates from other education levels. The cause is from the industry's absorption capacity that is not balanced with the number of SMK graduates, so that teachers do not master their teaching fields. Minister of Education and Culture (Mendikbud) Muhadjir Effendy explained that the unemployment rate for graduates of Vocational High Schools (SMK) was recorded as the highest among graduates from other education levels. The cause is from the industry's absorption capacity that is not balanced with the number of SMK graduates, so that teachers do not master their teaching fields.

In the application of this industrial work culture, it aims to apply work standards that are not only clearly understood but also to understand certain purposes including; safety and security, quality, quantity, cost and people. The targets of industrial work culture in Vocational High Schools (SMK) are students, educators, education staff, work environment and learning environment, so that it will affect all aspects of school management, especially from the side of the learning implementation process to marketing graduates who are capable and competent in terms of implementing hard work. skills and soft skills of students.

Planting soft skills is an important aspect in terms of producing graduates who are competent and professional in their work. Currently, soft skills are often considered for recruitment purposes and in increasing productivity and performance when entering the business and industrial world (Sudana, 2014:458) stating that "Vocational graduates must master aspects of hard skills and soft skills. In the 2013 curriculum, hard skills are found in the cognitive (knowledge) and psychomotor (skills) domains contained in KI-3 and KI-4. If SMK graduates only master one aspect, they still cannot meet the standards set by the world of work. Sudana (2014: 459) states that "vocational graduates can become skilled and quality workers if they really master the hard skills and soft skills aspects".

It is the responsibility of the world of education to improve the ability and skills of the younger generation of prospective workers. Education is an integral part that cannot be separated from the process of preparing qualified, tough, and skilled human resources. Through education, candidates will be obtained who are qualified, productive, and able to compete. For this reason, students as educational products are required to have eight main competencies, namely: (1) communication skills; (2) critical and creative thinking; (3) inquiry/reasoning skills; (4) interpersonal skills; (5) multicultural/multilingual literacy; (6) problem solving; (7) information/digital literacy; and (8) technological skills. If observed from the eight graduate competencies, competencies 1-6 are soft

skills, while competencies 7 and 8 are hard skills. (Widarto, 2012).

This study aims to: (1) analyze the implementation of PBL-based industrial culture learning that is currently being applied in order to improve the soft skills of students at SMK Muhammadiyah 2 Kuningan, especially in the Automotive Light Vehicle Engineering (TKRO) and Motorcycle Business Engineering (TBSM) study programs. (2) Analyzing the feasibility of digital book media learning media that is applied in order to improve the soft skills of SMK Muhammadiyah 2 Kuningan students, especially in the Automotive Light Vehicle Engineering Study Program (TKRO) and Motorcycle Business Engineering (TBSM). (3) Analyzing the effectiveness of electronic publication digital book learning media which is applied to improve the soft skills of SMK Muhammadiyah 2 Kuningan students, especially in the Automotive Light Vehicle Engineering (TKRO) and Motorcycle Business Engineering (TBSM) study programs.

METHODS

This research procedure uses the ADDIE development model from Dick and Carry (1996) in Endang Mulyatiningsih (2014: 200–202). The research and development chosen according to the purpose of this research is to develop learning media in the form of e-modules based on epub files on industrial culture subjects. The research development model consists of 5 stages which include analysis, design, development, implementation, and evaluation. The stages of Research and Development research that are applied include:

a. Analysis of e-module requirements

At this stage, the main activity is to analyze the need to develop new learning models/methods and analyze the feasibility and requirements for developing new learning models/methods. The development of new learning methods begins with a problem in the learning model/method that has been applied. Problems can occur because the existing learning models/methods are no longer relevant to the needs of the target, the learning environment, technology, and characteristics of students, especially in learning industrial culture in schools.

b. e-module design (Design)

In the design of the e-module, there are several steps, including the preparation of the e-module framework, the selection and collection of references, the design of the e-module, and the preparation of the e-module response instrument. In the e-module learning activities are designed to contain learning objectives, GPA, material descriptions, video tutorials, independent assignments, and evaluations in the form of practice questions. In designing this e-module, students are expected to be able to practice soft skills in learning.

c. E-module development (Development)

Development is the stage of realizing what has been made in the design stage so that it becomes a product, namely PBL-based industrial culture learning at SMK Muhammadiyah 2 Kuningan. The final result of this stage is a product that will be tested. At this stage, e-module development is carried out, then suggestions are asked to the supervisor and revision is carried out. Furthermore, validation is carried out by experts to determine the feasibility of the developed e-module. The results of the validation are used to measure the feasibility of the product, as well as suggestions from the validator. The e-module is then revised based on suggestions and input from the validator.

d. Application of e-module (Implementation)

This stage can be done if the results of the expert test have met the good criteria. The implementation stage is a trial stage for users, namely students, which is carried out in this stage in the form of applying the industrial culture learning module. Respondents are class XI students of TKRO and TBSM study programs at SMK Muhammadiyah 2 Kuningan, where TKRO study program is the experimental class, while TBSM study program is the control class. The steps taken are to give a pre-test to the two respondents.

e. E-module evaluation (Evaluation)

After going through the implementation stage, the results of the assessment from the users and the results of the absorption of the material by students were obtained. At this stage an evaluation is carried out related to product development which aims to revise the product according to the evaluation results and unmet

needs. Formative evaluation is carried out in the development stage which aims to develop e-modules, validation and revision. Formative evaluation aims to ensure the objectives are achieved and to revise the e-module. Summative evaluation was conducted to determine the effectiveness of the e-module.

RESULTS AND DISCUSSION

1. Development of e-module

a. Analysis

The analysis phase is a data collection session and the resulting product is an electronic module of industrial culture learning based on Problem Base Learning (PBL) in the form of the following stages: (1) media needs analysis. the media to be developed, determining the topics used in the media content, and analyzing the Basic Competencies (KD) and the expected achievement indicators. (2) analysis of student module needs in understanding the technical competence of industrial work culture is caused by several factors, including: a) learning media that do not attract students' attention, b) learning media that cannot help students to be active in teaching and learning activities (KBM), (c) impractical learning media using smartphones and laptops. (3) Analysis of students' soft skills, researchers can conclude several characteristics of students in mastering industrial cultural competencies, including: a) Students are less enthusiastic in mastering competencies. b) The involvement of students in the process of industrial cultural practice is still very low. c) The learning method used is still dominated by the lecture method, and the text module.

b. Design

The preparation of the module framework is based on the Practical Guide to E-module Preparation compiled by the Directorate of High School Development, Directorate General of Primary and Secondary Education in 2017. The following is a table of structured e-module frameworks:

Table 1. E-module framework.

HEADING 1	HEADING 2	HEADING 3
COVER	Title of e-module Subject Name Topics/Learning Materials Class Writer	-
LIST OF CONTENTS	-	-
GLOSSARY	-	-
I. Introduction	KD and GPA Brief description of the material, rationalization, and relevance (Motivation) Prerequisites (if any) Instructions for Use of e-modules	-
II. LEARNING	Learning Activities 1 Learning Activities 2 and so on, following the designed amount of learning	Purpose Material Description Task Exercise Self-assessment
III. EVALUATION	Answer Key and Scoring Guidelines	-
BIBLIOGRAPHY	-	-

c. Development

The development stage aims to see how far the feasibility of the training module that has been designed, the following development steps are carried out: (1) Development of a PBL-based industrial culture learning module to improve

students' soft skills and provide a broad understanding related to industrial culture learning that can be accessed effectively , efficiently by utilizing technological developments, resulting in the development of this module leading to technological developments so that the application of the module can use smartphones and laptops, so that mastery of the competence of learning industrial culture is very optimal. (2) Validation of Media Experts, Material Experts and User Validation to determine the feasibility and practicality of the developed module. The feasibility test of the Industrial Culture learning module is carried out by media expert lecturers and material expert teachers to get suggestions and criticism from the validator on the product developed in the learning process (3) product revision, after the e-module validation process is then revised based on criticism and suggestions.

d. Implementation

The implementation stage is the stage of applying the Industrial Culture learning module at SMK Muhammadiyah 2 Kuningan, with 32 experimental class students in class XI TKRO I, while the control class XI TKRO II is 32 people in the form of giving industrial culture learning modules. The responses from filling out the questionnaire by these students can be taken into consideration to test the effectiveness of the module

e. Evaluation

at this stage will make improvements for a better system by processing the data that has been obtained from the previous stages, namely: (1) Formative Evaluation to determine the feasibility of the modules made and to find out how far the program designed can take place. (2) Summative evaluation to determine the effectiveness of using the Industrial Culture Learning module. The summative evaluation leads to a decision on the achievement statement of the Industrial Culture Learning module to improve Students' Soft Skills.

2. E-module Feasibility Test.

This stage is carried out to determine the feasibility of the e-module being developed. The feasibility test instrument in this study was adopted from a BSNP questionnaire whose validity has been proven, so there is no need to test the instrument again. The following are the results of due diligence by media experts and material experts.

Table 2. Overall Scoring Data on Each Aspect from Media Experts

No	Aspect	Validator		Average	Category
		Media Expert 1	Media Expert 2		
1	Graphic Eligibility				
	A. Characteristics of E-module	4.33	3.88	4.11	Very Worthy
	B. E-module components	3.88	4.33	4.11	Very Worthy
$\bar{x}$	Overall Expert Average			4.11	Very Worthy

Based on table 2, it can be seen that the overall average value of the feasibility test from the two media experts is 4.11 with a very feasible category, thus the development of industrial culture learning media in the TKRO and TBSM departments of Vocational High Schools (SMK) is declared valid and very feasible from aspects of the feasibility of graphics.

Table 3. Overall Scoring Data on Each Aspect from Material Expert

No	Aspek	Validator		Average	Category
		Media Expert 1	Media Expert 2		
1	Content Eligibility	4.50	4.07	4.28	Very Worthy
2	Serving Eligibility	4.33	4.16	4.25	Very Worthy
3	Language Eligibility	4.1	4.0	4.05	Very Worthy
4	Contextual Assessment	4.11	3.88	4.11	Very Worthy
$\bar{x}$	Overall Expert Average			4,17	Very Worthy

Based on table 3, it can be seen that the overall average value of the feasibility test from the two material experts is 4.17 with a very feasible category, thus the development of industrial culture learning media in the TKRO and TBSM departments of Vocational High Schools (SMK) is declared valid and very feasible from aspects of the feasibility of content, presentation, language, and contextual.

So the results of the feasibility test by media experts and material experts, it can be concluded that the development of the industrial culture learning module with the problem base learning (PBL) method is valid with revisions and does not require a significant overhaul and is suitable for use as teaching materials for industrial culture subjects.

3. E-module Practicality Test

This stage is carried out to identify the practicality of the e-module being developed. This data collection was preceded by giving the Industrial Culture learning module for 2 weeks, after that data collection was carried out via google forms, with a questionnaire of 20 responses. The practicality test of this study obtained the results of the responses as shown in table 4 below:

Table 4. Data Analysis of Practicality Test by Teachers and Students

No	Validator Average	Response Indicator		Averag	Category
		Teacher	Student		
1	Interest	83.33%	86.76%	85.04%	Very Practical
2	Theory	83.33%	90.19%	86.76%	Very Practical
3	Language	100.00%	86.27%	72.31%	Very Practical
4	Competence	100.00%	83.52%	91.76%	Very Practical
$\bar{x}$	Overall Average of Users			83.97%	Very Practical

Based on table 4, the average overall score of users is 83.97% with very practical criteria because it meets the practical requirements, the practicality value of all users is between 75%-100%. Or it can be stated that the development of industrial culture learning media in the TKRO and TBSM departments of Vocational High Schools (SMK) is stated to be very practical

4. E-module Effectiveness Test

The results of the Normality Test of the Pre Test and Post Test data for the experimental class and the control class are as follows:

a) Normality Tes

Table 5. Normality Test for Module Effectiveness

Class		Sig. Kolmogorov-Smirnova	Sig. Shapiro-Wilk
Pre Test	Experiment	0.200	0.093
	Control	0.200	0.063
Post Test	Experiment	0.200	0.172
	Control	0.200	0.160

Based on Table 5, the results of the normality test on cognitive assessment have a significance score (Sig.) as shown in the table, which shows the Sig score. > 0.05 so it can be concluded that the data is normally distributed.

Test of Homogeneity of Module Effectiveness

Tabel 6. Homogeneity Test of E-module Effectiveness Questionnaire Assessmen

Class		Levene Statistic	Sig.
Pre Test	Based on Mean	3.645	0.061
	Based on Median	2.750	0.103
	Based on Median and with adjusted df	2.750	0.104
	Based on trimmed mean	3.497	0.067
Post Test	Based on Mean	0.001	0.979
	Based on Median	0.000	1.000
	Based on Median and with adjusted df	0.000	1.000
	Based on trimmed mean	0.001	0.976

Based on Table 8, the homogeneity test of cognitive assessment based on the mean Pre Test proved significant showing 0.468 which means data > 0.05, so it can be concluded that the data is homogeneous, while the value based on the mean Post Test shows significant 0.979 which means data <0.05 , so it can be concluded that the data is homogeneous.

The N-Gain test is calculated based on the difference between the Pre Test and Post Test scores. The formula for determining N-Gain with an ideal score of 100 is as follows: N – Gain = The results of the N-Gain test calculation with the help of the SPSS 23.0 program, the value in the form of a percentage (%) is in the attachment Table of the N-Gain Score Test Output summarized into table 9.

Table 7. N-Gain Score Test for Assessment of Module Effectiveness Questionnaire

No	Experiment Class	No	Control Class
	N-Gain Score (%)		N-Gain Score (%)
Average	57.63	Average	49.50
Minimum	37.50	Minimum	20.00
Maximum	79.49	Maximum	79.49

Based on the calculation results of the N-Gain score test, it shows that the average N-Gain score for the experimental class is 57.63 or 57% with a minimum N-gain score of 37% and a maximum N-gain score of 79%. Meanwhile, the control class is 49.50 or 49% with a minimum score of 20% and a maximum N-gain score of 79%.

Based on the interpretation of the type of N-Gain usability score, it can be concluded that the application of PBL-based Industrial Culture Learning Media is quite effective in improving the soft skills of students of Automotive Light Vehicle Engineering (TKRO) and Motorcycle Business Engineering (TBSM) at SMK Muhammadiyah 2 Kuningan Tahun Lesson 2020/2021.

The results of the Independent T Test Pre Test and Post Test for the experimental class and control class are as follows:

Table 8. T-Test Results of Cognitive Assessment of Control and Experiment Class

Data	Levene Statistic	T test	Significance Level
N-Gain_Persen	0,245	17.67	0.243

Based on the output table above, it is known that the significance value (Sig) on Levene's Test for Equality of Variances is 0.245 > 0.05, so it can be concluded that the variance of the N-Gain data (%) for the experimental class and control class is the same or homogeneous. T count N-Gain_Persen = 17.67 with the value of T table at (df = 62 ; a = 5%) is 58.64. Because T count is greater than T table, it can be concluded that before being treated using the media learning module of Industrial Culture class XI of the Automotive Light Vehicle Engineering Study

Program (TKRO) and the Motorcycle Business Engineering Study Program (TBSM) at SMK Muhammadiyah 2 Kuningan, the condition of the two classes there is no difference.

CONCLUSION

According to the results of the analysis above, it can be concluded that the development of industrial culture learning media with the problem base learning (PBL) method to improve students' soft skills is very feasible and very practical to use. E-modules can be used by students as a means of improving soft skills and student learning outcomes. This e-module category is effective and significant.

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