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Technology Integration in Economic Learning:

Is it effective?

Agie Hanggara*, Iskandar Iskandar

Universitas Kuningan
Kuningan, Indonesia
*she_n2@yahoo.com

Abstract—The fast development of technology and information has a significant impact on all activities of human life. The industrial era 4.0 that is now happening, has fundamentally changed the way of thinking and activities and has a great influence on the world of education. The development of this era is characterized by the use of information and communication technology in all aspects of life, including in the learning process. Classrooms as a place to change, improve, and prepare students skills to compete in the community of industrial revolution 4.0 era. Therefore creative thinking, critical thinking and communication skills and the ability to use interactive and innovative media are important competencies in entering human life in this century. To achieve learning success and be able to compete in a global community, students must become experts and possess skills as communicators, creators, critical thinkers, and collaborators. One solution to overcome this problem is to use online learning media in online business learning at Vocational Schools. The purpose of this study is to find out the effectiveness of online learning media in online business learning in vocational schools, especially in improving the creativity of students. The method used in this study is the Experiment method using Factorial 2x2 design. The subjects in this study were students in class XI at Kuningan State Vocational High School. The results of the study show the enthusiasm of the students, this means that online learning media have a good influence on the learning process and enhance the creativity of students. Thus it can be concluded that online learning media are effective in improving students creative thinking skills. In addition, the results of the study also conclude that there are interactions between online learning media and online business interests towards students creative thinking abilities.

Keywords—online media; interest in doing business; creative thinking ability

I. INTRODUCTION

The rapid development of technology and information now has a significant impact on all activities of human life. The industrial era 4.0 that is now happening, has fundamentally changed the way of thinking and activity and has a great influence on the world of education. The development of this era is characterized by the use of information and communication technology in all aspects of life, including in the learning process. Classroom as a place to change, improve, and prepare students' skills to compete in the community of industrial revolution 4.0 Era. Therefore, creative thinking skills, critical thinking and communication skills and the ability

to use interactive and innovative media are important competencies in entering human life in this century. To achieve successful learning and be able to compete in a global community, students must become experts and have skills as communicators, creators, critical thinkers, and collaborators. [1-6].

Based on the results of the pre-study conducted with regard to creative thinking skills students in one of the Vocational Schools in Kuningan Regency showed a low level of creative thinking ability. For more details, the following is a table of results of the test of creative thinking ability in one of the Vocational Schools in Kuningan Regency:

TABLE I. PRE-RESEARCH RESULTS OF STUDENTS' CREATIVE THINKING SKILLS ON ONLINE BUSINESS SUBJECTS

Category	Creative Thinking	
	Frequency (F)	Percentage (%)
High	37	34,25
Medium	36	33,34
Low	35	32,41
Total	108	100

(Source: SMKN Cendikia Kuningan)

From the data above, it shows that the level of creative thinking ability of class XI students at Cendikia Vocational School in Kuningan Regency shows that creative thinking skills are still low. Of the 108 students who were given a creative thinking ability test, only 34.25% of students were categorized as having high creative thinking skills (above the score of Minimum Criteria of Mastery Learning). These results show that the level of students' creative thinking needs to be improved.

In addition to Creative thinking, what is needed in facing the challenges of the millennium is the ability of students who are ready to work in the field. So students need to be trained for entrepreneurship early on, which can be developed in one of the online and marketing business subjects. To foster interest in business by way of doing business online with vocational students it is also not an easy matter, because the interest in vocational students is still relatively low, it can be seen from the results of initial observations made by researchers as follows:

TABLE II. PRE-RESEARCH DATA ON STUDENTS' ONLINE BUSINESS INTERESTS

Qualifications	Very Interested	Interested	Less Interested	Very Less Interested	Total
Total	5	4	13	12	34
Percentage (%)	14,71	11,76	38,24	35,29	100

(Source: SMKN Cendekia Kuningan).

From the data above, it is clear that students' interest in doing online business is still low. One of the causes of the low interest in doing online business is the classroom learning system, especially in learning entrepreneurship and online business that has been happening so far is still theoretical, sometimes even conventional in that it does not use technology (multimedia) in the learning process.

Therefore, one solution that can be done to overcome this problem is to use online learning media in online business learning at Vocational Schools. In the learning process in class, teachers are required to be able to master and be able to use technology so that students' creativity and interests can be developed. This is in line with the results of a study conducted by Crittenden & Crittenden who reported that in current learning, students not only master the theory, but also must be able to apply it [7]. Correspondingly, the results of a study conducted by Lee, Kozma, & Gümü , report the results of their study that learning using social media-based online media is able to develop students' high-level thinking skills [8-10].

A. Research Questions

- Are there differences in students' creative thinking skills between a class that uses online learning media with a class that uses conventional media?
- Are there differences in creative thinking skills between students with high business interests and students who have a low interest in doing business?
- Are there interactions between online learning media and business interests in influencing creative thinking skills?

B. Research Framework

The rapid use of the internet has a widespread influence not only in the field of technology, but also in social, political, economic-cultural aspects, including aspects of education. In the aspect of education, especially in teaching and learning activities in schools, the internet through the network (web) or social media functions as a representative media in delivering various kinds of information and knowledge to students in the form of teaching materials, learning resources, or other information related to learning needs [11,12].

At Vocational High School level, students have been able to apply various things that have been learned before, although this still needs guidance from teachers, as well as the use of smartphones to fulfill learning needs and other needs including social activities through social media. Social media has now become a reflection of modern human life [13,14]. Among adolescents the same age as vocational students, the advancement of information and communication technology

makes it easy to carry out various activities including learning entrepreneurship easily through social media, such as promoting or selling various kinds of products that do not require large costs.

The following is the framework of the present research:

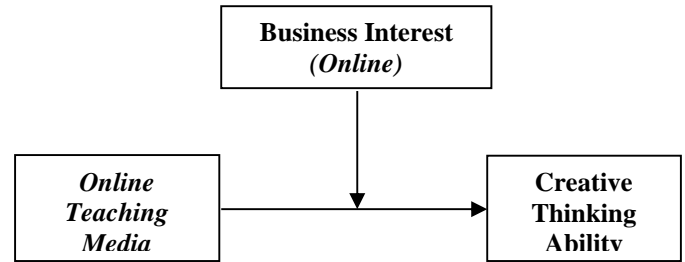


Fig. 1. Research framework.

C. Hypothesis

- There are differences in students' creative thinking skills between class that uses online learning media with class that uses conventional media.
- There are differences in creative thinking skills between students with high business interests and students who have a low interest in doing business.
- There is interaction between online learning media and interest in doing business in influencing students' creative thinking abilities.

II. RESEARCH METHODOLOGY

In this study the Experiment method was used using Factorial 2x2 design. The subjects of the study were students of Online and Marketing Business majors in class XI A and XI B, Vocational High School Cendikia Kuningan with 33 students in each class.

III. RESULTS OF RESEARCH

A. The Test Results of Students' Creative Thinking Skills

After conducting research and analysis, the results are as follows:

TABLE III. SCORE OF STUDENTS' CREATIVE THINKING SKILLS

Description	Experimental			Control		
	Pretest	Posttest	Gain	Pretest	Posttest	Gain
Average Score	38,78	83,78	24,22	40,45	74,84	19,54

Based on the table above it is known that the average value of the experimental class pretest is 38.78 and the average value of the control class pretest is 40.45 while the average posttest of the experimental class is 83.78. While the posttest value of the control class is 74.84. In addition, the results of the study also showed that there was an increase in students' creative thinking abilities after treatment, where the average increase in students' creative thinking skills in the experimental class was

higher than the average increase in students' creative thinking skills in the control class.

B. The Test Results of Students' Interest in Doing Business

After conducting research and analysis, the results are as follows:

TABLE IV. SCORE OF STUDENTS' INTEREST IN DOING BUSINESS

Description	Experimental		Control	
	Frequency	Percentage %	Frequency	Percentage %
High (B1)	23	69,70	20	60,60
Low (B2)	10	30,30	13	39,40
Total	33	100	33	100

Based on the table above it is known the frequency of students who have high business interests (B1) in the experimental class as many as 23 people or 69.70% and the frequency of students who have a low interest in doing business (B2) is 10 people or 30.30%. While the frequency of students who have high business interests (B1) in the control class is 20 people or 60.60% and students who have low level motivation are 13 people or 39.40%.

C. Hypothesis Testing

Based on the test results it is known that the results are as follows:

TABLE V. TESTS OF BETWEEN-SUBJECTS EFFECTS

Dependent Variable: Students Creative Thinking Ability

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Media	1484,851 ^a	3	494,950	3,628	,018
Intercept	394046,971	1	394046,971	2887,997	,000
Media	1041,459	1	1041,459	7,633	,008
Interest	22,817	1	22,817	8,167	,044
Media * Interest	149,730	1	149,730	11,097	,029
Error	8459,467	62	136,443		
Total	42517,000	66			
Corrected Total	9944,318	65			

a. R Squared = ,149 (Adjusted R Squared = ,108)

1) **Hypothesis I:** Based on the test results, the F value is 7,633 and the significance value is 0,008. Significance value of 0.008 is smaller than $\alpha = 0.05$ or 0.008 < 0.05 . It means that there is a significant difference between students' creative thinking abilities using online learning media and students' creative thinking skills using conventional media on online business and marketing subjects. Thus, it can be concluded that learning by using online media is more effective than learning by using conventional media.

2) **Hypothesis II:** To find out the differences in creative thinking skills of students who use online learning media and those who use conventional media on students who have high and low business interests. Based on the tests performed, the

results of statistical tests obtained F value of 8.167 and a significance value of 0.044. When compared with $\alpha = 0.05$ a significance value of 0.044 is smaller than $\alpha = 0.05$ or 0.044 < 0.05 . This means that H_0 is rejected and H_1 is accepted. This means that there are differences in creative thinking skills between students with high business interests and students who have a low interest in doing business both in the experimental class and in the control class.

3) **Hypothesis III:** To find out whether there is an interaction between learning media, business interests, and students' creative thinking abilities based on the tests conducted it is known that the F value is 11.097, a significance value of 0.029 and R Squared = 0.149 (Adjusted R Squared = 0.108). Significance value of 0.029. Smaller than $\alpha = 0.05$ or 0.029 < 0.05 . This means that H_0 is rejected and H_1 is accepted. This means that there are interactions between learning media, students' interests and creative thinking abilities, with a large interaction of 10.8%.

IV. CONCLUSION

Based on the results of the research conducted it can be concluded:

- There is a significant difference between students' creative thinking abilities in the class using online learning media and students' creative thinking skills using conventional media on online business and marketing subjects. Where students' creative thinking abilities in the class that use online learning media are superior to the ability to think creatively in classes that use conventional media.
- There is a difference between creative thinking skills of students who have high business interests and low business interests in the experimental class and in the control class
- There are interactions between online learning media, business interests and students' creative thinking abilities. This means that online learning media and business interests of students influence in improving students' creative thinking skills.

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