The role of electronic learning media in creativity learning

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Abstract. Information technology at this time is the latest dimension that cannot be separated from human life. The field of education is the thing that gets the influence of information technology. Currently, the teaching and learning process not only rely on physical books and whiteboards, but with the help of electronic-based learning media. Electronic learning media is the latest breakthrough from the influence of information technology progress. The new facilities help actors in the world of education to improve the quality and quality of education to be more advanced and developed in the digital era of today. Improving the quality of education through intermediaries of electronic learning media can trigger the pattern of creativity in the actors of the world of education.

1. Introduction
In the current technological era, which cannot be separated from the role of information and communication technology, teaching and learning activities carried out by educators and students cannot be limited by time and place. This is because the development of science and technology is increasingly fast. It also occurs in the field of education that utilizes these conditions.

Technology provides a variety of benefits that can be used to make decisions for users more interestingly [1]. The use of this technology is applied in the presence of media. This provides an innovation for the process of learning activities.

Media can be interpreted as a variety of technologies, symbol systems, and processes that can be used and have benefits [2]. One media that has an important role in education is learning media. Various kinds of learning media have been used, from conventional learning media such as simple media to modern learning media such as electronic learning media. Learning media used has the same function to support learning activities.

Electronic learning media is a concept that includes various applications, learning methods and processes [3]. These media usually have selective content, learning activities, exercises, and tests and allow students to revise them anytime [4]. The existence of electronic learning media allows students to carry out individual learning processes with the ability to choose the desired place, time, and direction of their learning [5].

The use of information technology currently has a variety of innovations, one of which is electronic learning media, also known as e-learning. E-learning is a learning media that utilizes internet technology. E-learning refers to the use of internet technology that can carry out a process of sending a series of solutions to improve knowledge and skills [6]. There are various types of online electronic learning media implementing e-learning systems, one of which is Edmodo.
Edmodo is an online learning management system that provides virtual learning and teaching services between teachers and students. They can conduct discussions and share writings, pictures, sounds and videos [7].

![Edmodo](image)

**Figure 1.** Edmodo social media [8].

The online learning management system is developed based on group-based and social media-based class management. In terms of interface, Edmodo makes it easy for teachers and students to carry out the teaching and learning process online because it looks like a social media interface that is popularly used by the general public.

There is a fact from the low use of electronic learning media found in Productive subject in the Department of Office Administration in a private vocational high school in Cimahi City. This was obtained from the results of interviews with Productive subject teachers. The low use of electronic learning media was proven by empirical data obtained from the attendance data of class X students. The data was from the productive subjects observed during the odd semester. The low use of electronic learning media has an influence on the level of creativity of students in the school. The graph of student attendance recapitulation is shown in the following figure:

![Attendance Recapitulation](image)

**Figure 2.** Student attendance recapitulation.

The graph shown above illustrated the attendance during the odd semester period in productive subjects. The attendance shown in the graph above illustrated the low level of student attendance divided into the number of students who were sick, asking for permission, and absence without permission. The results of the data obtained indicated that students' interest in learning was still low.
There have been previous studies related to the influence of using e-learning on students' creativity carried out by Mahmoodi arguing that teaching and learning processes that use e-learning enhance student learning and enhance creativity that can be seen from fluency, originality, flexibility, and elaboration [9]. Therefore, the author has conducted research to show that there is a role for electronic learning media in creativity in the school.

2. Literature review

2.1. Electronic learning media
Media is defined as an inseparable part of a process of learning and teaching, and media is a plural form of medium which means as a middle, intermediary, or agent [10]. Medium is a means to influence or convey something that generally compares various tools, instruments, meanings, and others [11]. Learning media are tools to help learners in teaching activities (teaching aids), and the tools used are visual aids such as pictures, models, graphics or other real objects [12]. Those tools are used to achieve specific learning that includes other learning experiences [13].

Information technology-based electronic learning media or can be called e-learning can be used generally in the current technological era. E-learning is a utilization of internet technology to support innovative learning for its users and provides a new user-centered and interactive experience that can create an open learning environment [14].

Indicators found in electronic learning media are student education background, level of computational skills, type of learners, learning styles and multiple intelligences, barriers faced in e-learning, attention, content (suitability, format preferences), instructional design, organizational specificity, e-learning logistics preferences, e-learning design preferences, technical capabilities available to respondents, collaboration, accessibility available to respondents, motivation, attitudes and interests, self-efficacy performance (students feel their effectiveness in the e-learning environment) and learning outcomes [15].

2.2. Student learning
Creativity is something that happens when an individual can create something new and influential [16]. Creativity is the key to education that has the full meaning and has a solution [17]. Creative learning creates motivation for students for various activities so they can think of creative solutions to various problems that will be faced [18].

Indicators of student learning creativity [19] are:
- Have a great curiosity
- Frequently asking weighty questions
- Give lots of ideas and suggestions for a problem
- Say opinions spontaneously and not shyly
- Can work alone
- Like to try new things

From the overall description above, a causality model and research hypothesis can be made:

![Figure 3. Variable causality relations model.](image-url)
Description:
X : Electronic Learning Media Variable
Y : Learning Creativity Variable
ε : Another factor that influences Y

Hypotheses
H_0 = means that there was no positive influence of electronic learning media on learning creativity.
H_1 = means that there was a positive influence of electronic learning media on learning creativity.

3. Method
This research employed the explanatory survey method. The respondents were 58 students of class X Office Administration Study Program. This research aims at seeing the picture and the influence of the role of electronic learning media on student learning creativity.

The resulting data were collected using questionnaire methods and data collection techniques through questionnaires with Likert scale. Statistical analysis techniques used for processing data were descriptive analysis techniques and inferential analysis techniques.

4. Results and discussion
4.1. Electronic learning media
Indicators that exist in electronic learning media were adapted to the application conditions that existed in the object of research. The electronic learning media average score was 3.01. This showed that according to respondents' perceptions, electronic learning media was at a moderate level. Table 1 presents the average score of each indicator that was used as a measure of electronic learning media.

| Indicator                                   | Average Score |
|---------------------------------------------|---------------|
| Educational background                      | 2.89          |
| Computing Ability Level                     | 3.01          |
| Availability of access for respondents      | 3.11          |
| Difficulty in access                        | 2.97          |
| Content (Match and Format Preference)       | 3.08          |
| Average                                     | 3.01          |

Source: Processed data.

When viewed from table 1, shows that the average score of respondents' answers to the Electronic Learning Media variable is 3.01.

4.2. Student learning creativity
The description of cognitive learning achievement was obtained by calculating the average value of student learning outcomes from each class in Productive subject. In one of the Private Vocational High Schools in Cimahi City, the minimum completeness criteria average of Productive subjects, one which is Digital Simulation, is 78. The results of the data processing obtained the details as shown in the following table:
Table 2. Respondents' responses recapitulation student learning creativity variable in average score (y).

| Indicator                                      | Average Score |
|------------------------------------------------|---------------|
| Have a great curiosity                         | 3.05          |
| Can work alone                                 | 3.35          |
| Say opinions spontaneously and not shyly       | 3.16          |
| Give lots of ideas and suggestions for a problem| 2.81          |
| Like to try new things                         | 3.04          |
| **Average**                                    | **3.08**      |

Source: Attached processed data.

Seen from Table 2, the average score of the respondents’ answer to the Student Learning Creativity variable was 3.08.

4.3. Hypotheses testing

To see the influence between the variables of electronic learning media on students' learning creativity, the data were analyzed by inferential statistics using simple regression analysis calculations. The regression equation obtained was \( \hat{Y} = 61.6162 + 0.4453X \). The calculation of hypothesis testing obtained \( F_{\text{observe}} \) of 2.5291 and \( F_{\text{table}} \) of 0.4926 with \( \alpha = 0.05 \) and \( \text{df}_{\text{reg}} = 1 \) and \( \text{df}_{\text{res}} = n-2 = 60-2 = 58 \), meaning \( F_{\text{count}} \geq F_{\text{table}} \) or 222.792 ≥ 4.0069. The coefficient of determination of electronic learning media was 79.27%. Thus, electronic learning media influenced student learning creativity simultaneously by 81.44%. The remaining 20.73% was influenced by other factors that influenced learning outcomes. It could be concluded that "there was a positive and significant influence of electronic learning media on student learning creativity".

5. Conclusion

The electronic learning media applied in one of the Vocational High Schools in Cimahi City in this study was in a strong category in influencing students' learning creativity. This was evidenced by the results of the indicators that compiled each variable. The electronic learning media indicator had an average level with the "medium" category. On the other hand, student learning creativity indicator on average was at the level of "medium" category.

In its application, the role of electronic learning media had a strong and significant positive influence on student learning creativity. This showed that students' creativity could be influenced by electronic learning media. Although the influence generated by electronic learning media variable was strong, this variable had a significant role and had a reciprocal role in the role of student creativity.

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