Effectiveness of ARCS Based Economic E-Book to Improve Learning Motivation and Learning Outcomes

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Abstract: This study aims to test the effectiveness of ARCS-based economic e-book media to improve learning motivation and learner outcomes. This is back grounded by the lack of motivation of students’ learning in following the economic learning process so that the results of learning students in economic learning become not maximal. With good learning motivation, it will boil down to achieving good learning outcomes as well. The data collected in this study is motivational learning data collected through questionnaires and data on learning results collected through tests. Data analysis techniques are independent until \(t\)-test. The results of this study show that the test results for the average difference in learning motivation are significant (sig. = .000 < \(\alpha\) = .05) and the study results are significant (sig. = .000 < \(\alpha\) = .05). In the classes that received the treatment, the motivation of the students’ learning was high and the learning outcomes of the students were high. Thus, it can be concluded that ARCS-based economic e-book media is effective for improving learning motivation and learning outcomes of students.

Keywords: media e-book, ARCS, learning motivation, learning outcomes

1. Introduction

Along with the times, education is a basic need for every human being. Education is an important thing to produce quality human resources to build a nation. The educational process certainly requires several components in the ongoing learning activities in order to achieve the defined educational goals.

Learning activities are the main activities in the whole educational process. Some of the components that support the implementation of learning activities are clarity of objectives, suitability of material, appropriate methods and media, learning resources, and assessment of learning outcomes [9]. Delivering appropriate material and selecting appropriate media and learning resources, as well as using good methods will facilitate learning activities, especially economic learning.

Learning is something that is deliberately designed to support the internal learning process in a person. In line with this opinion, [22] defines learning as an activity that emphasizes the learning process, so planned efforts in manipulating various learning sources so that learning occurs in students.

Economics is a subject that has one of the characteristics of having real objects that can be found in the surrounding environment [19]. The purpose of studying economics is to help students understand concepts related to how to manage limited resources by the community [13]. Economic objects vary widely so that not all material can be presented directly. The use of media in the form of images, sounds, and videos can be used to help students understand the economic material being studied.
The results of interviews with economics teachers show that not all economic learning outcomes for students have reached the minimum completeness criteria (KKM) set, namely 75. One of the materials that have not reached the KKM is international trade material. Students consider international trade material to be quite difficult because it is related to trade between countries. This makes it difficult for students to understand the material so that learning objectives are not achieved and student learning outcomes are not maximized.

International trade material is the last material for class XI economics subjects in the even semester which is taught near the end of the even semester learning time. The results of interviews with economics teachers showed that the motivation of students at the end of the semester decreased. This is because the attention of students is divided with the preparation of the year-end assessment.

Students who have high motivation will increase activity and maintain persistence in learning so that learning outcomes are better [3]. Motivation for students plays a role in the learning process. Motivation to learn will appear when students have the willingness and desire to carry out an activity that aims to be achieved well (Hauck, 2017). Therefore, a solution is needed to overcome problems through sorting out innovative and fun learning media for students in learning. There are other findings, learning media do not motivate students to learn. Student learning motivation affects student learning outcomes.

Selection of appropriate and attractive learning media can help foster learning motivation and increase students' understanding in the learning process. E-books are a learning medium that has become a new innovation from conventional books [6]. As technology develops, e-books are becoming a study option for a prospective future. The use of e-books in the learning process has several benefits, namely that it can last a long time because the storage is in the form of files, is portable or easy to use at any time and place, and the content is more creative [12]. E-books aim to increase students' motivation in the learning process and make it easier to use digital books. The use of digital technology in the learning process can provide a lot of learning and a variety of experiences, increase learning motivation, and develop IT skills [8]. E-books are learning media that display images, audio, video, and animation and are equipped with tests to obtain input from students as quickly as possible [16]. So, the use of e-books in the learning process can increase the knowledge of students [7].

E-books can be integrated with a learning model so that its benefits can be felt for its users. One learning model that is able to foster learning motivation is the ARCS model. ARCS is a learning model of Attention, Relevance, Confidence, and Satisfaction designed by Keller to help students be more enthusiastic in the learning process [2]. ARCS contain motivational elements that provide a positive response to students in the learning process to build learning concepts and improve learning outcomes [10].

ARCS-based e-books can be a solution to solving problems that occur in students in high school. The problem is the lack of learning motivation of students because the learning media used are less attractive so that students do not understand the material which leads to the achievement of less than optimal learning outcomes. So, the use of ARCS-based economic e-book media is expected to be a suggestion for teachers to foster learning motivation and improve student learning outcomes.

2. Research Question

Researchers also conducted several studies on the results of previous studies conducted by other researchers. This research was conducted at "X" Senior High School in Surakarta. This school is one of the favorite high schools in Surakarta which offers Mathematics and Social Sciences majors. This school
was chosen because it has used e-books and implemented the ARCS learning model which emphasizes
the element of learning motivation. This school also has qualified facilities and infrastructure such as
computer laboratories so that students can use e-books freely.

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3. Methodology

This research is a quasi experimental research. This research was conducted at "X" Senior High
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The population in this study were students of Senior High School "X". The sample of this
research is students of class XI SOCIAL. This research was conducted in two classes, namely XI
SOCIAL 1 and XI SOCIAL 6. In conducting research, 30 students in class XI SOCIAL 1 use power
point media and do not use ARCS-based economic e-books in the learning process. This class is called
the control class. On the other hand, 30 students in class XI SOCIAL 6 used economic e-book media
based on ARCS in the learning process. This class is called the experimental class.

Data collection was carried out by means of questionnaires and tests. The questionnaire is used
to measure the learning motivation of students in the learning process. The type of questionnaire used
in this study was a closed questionnaire with 21 questions. The formulation of a questionnaire was based
on indicators of attendance, discipline, persistence, achievement, responsibility, and learning
participation [18]. The scoring is based on the Guttman scale which requires a firm answer from the
respondent, namely 'ya' has a value of 1 and "no" has a value of 0.

Meanwhile, the test is used to measure the knowledge of the material in the e-book. The test file
format is multiple choice of 10 items and essay with 5 items. The steps taken for the pretest and posttest
data in determining the effectiveness of the ARCS-based economic e-book media in improving learning
outcomes, namely the normality test was carried out by finding out whether the data used in the study
was distributed normally or not using the Kolmogrov-Smirnov test. with $\alpha = 0.05$. The homogeneity test
was carried out to determine whether the data obtained had a homogeneous variant or not through the
Levene test with $\alpha = 0.05$. The t-test was carried out to determine the significant difference between the
two classes with the significance level used was $\alpha = 0.05$ and was assisted by the SPSS 22 program.
Data analysis techniques to test the effectiveness of ARCS-based economic e-books were carried out by
comparing learning motivation and learning outcomes between the control class and the experimental
class before and after the learning process.
4. Results and Discussion

4.1 Results

Research data were collected before and after the learning process. Data are collected before the learning process aims to map learning and determine the control class and experimental class. However, the data collected after the learning process aims to investigate changes and differences in learning motivation and learning outcomes in the control class and the experimental class. The following are the results of the research findings before and after the learning process (Table 1). Generally, the level of student motivation in learning economics in both classes, both the control class and the experimental class, tends to be low. Meanwhile, student learning outcomes (pre-test scores) in economic learning are generally still low.

Table 1. Descriptive Statistic of Students’ Motivation and Students’ Learning Outcomes

| Variables          | Class     | N  | Actual Range  | Mean | Std. Division |
|--------------------|-----------|----|---------------|------|---------------|
|                    |           |    | Before        | After| Before        | After|               |
| Students’ motivation | Control   | 30 | 8-17          | 10-19| 13.67         | 13.70| 2.155          | 2.087|               |
|                    | Experimental | 30 | 9-18          | 12-20| 13.43         | 15.97| 2.192          | 2.125|               |
| Students’ learning outcomes | Control   | 30 | 43-78         | 37-75| 62.13         | 60.13| 8.989          | 8.893|               |
|                    | Experimental | 30 | 34-76         | 50-85| 59.57         | 69.07| 8.811          | 8.874|               |

The results of previous research indicate that the two classes have the same characteristics. One of the two classes was chosen as the experimental class, while the other class was the control class. After ensuring that the experimental class and the control class have the same level, the research can be continued by giving different treatments for the experimental class and the control class. The ARCS-based economic e-book media was applied in the experimental class, while the control class still used the usual learning media, namely power point media. The learning process in both the experimental class and the control class lasted three meetings. At the third meeting, students were given learning motivation questionnaires and learning outcomes tests.

The learning motivation questionnaire contains 21 questions arranged based on learning motivation indicators, while the learning outcome test consists of 10 multiple choice questions and 5 essay questions. After the learning activity is complete, the learning motivation and learning outcomes of students can be seen in table 1. Generally, learning motivation and economic learning outcomes of the two classes are different. The average learning motivation of students and the average increase in learning motivation in the experimental class is higher than in the control class. The average learning motivation in the experimental class was 15.97, higher than the average in the control class, namely 13.70. The average learning outcomes and the increase in the average learning outcomes of students in the experimental class were higher than in the control class. The average learning outcomes in the experimental class were 69.07 higher than the average learning outcomes in the control class, namely 60.13.

The two classes, both the experimental class and the control class, had no significant differences in the learning motivation and learning outcomes of students in the initial conditions of the learning process (table 2).
Table 2. Independent Samples Test of Students’ Motivation and Students’ Learning Outcomes (Initial Condition)

| Variables          | Levene’s Test for Equality of Variances | t-test for Equality of Means |
|--------------------|----------------------------------------|-----------------------------|
|                    | F          | Sig. | t       | Df | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| Students’ motivation | .021      | .885 | .416   | 58 | .679           | .233           | .561                     |
| Students’ learning outcomes | .047     | .830 | 1.117  | 58 | .269           | 2.567          | 2.298                    |

Based on table 2 shows that there is no significant difference between the initial conditions of learning motivation in the control class and the initial conditions of learning motivation in the experimental class because the significance value of the paired t test is 0.679 or greater than 0.05. Likewise, there is no significant difference in student learning outcomes between the initial conditions of the control class and the experimental class because the significance value of the paired t test is 0.269 or greater than 0.05.

The results of the variance homogeneity test regarding the motivation of learning outcomes and learning outcomes of students in the control class and experimental class are the same or homogeneous. Sig. (2-tailed) for students’ learning motivation is .000; Sig. (2-tailed) for learning outcomes is .000.

Table 3 shows the differences in learning motivation and learning outcomes of students. The final condition in the study shows that there are differences in the learning motivation of students in the experimental class with students in the control class (Sig. (2-tailed) = .000). There are also differences regarding the learning outcomes of students in the final conditions in the experimental class with students in the control class (Sig. (2-tailed) = .000). The learning motivation and learning outcomes of students in the experimental class were higher than in the control class. Therefore, it can be concluded that the ARCS-based economic e-book media is effective for increasing learning motivation and student learning outcomes, especially in learning economics in class XI SMA majoring in social studies on international trade material.

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| Variables          | Levene’s Test for Equality of Variances | t-test for Equality of Means |
|--------------------|----------------------------------------|-----------------------------|
|                    | F          | Sig. | t       | Df | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
| Students’ motivation | .002      | .968 | -4.168  | 58 | .000           | -2.267          | .544                     |
| Students’ learning outcomes | .140     | .710 | -3.895  | 58 | .000           | -8.933          | 2.294                    |

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5. Discussion

Experimental test to determine the effectiveness of using ARCS-based economic e-book media, then action is carried out by giving different treatments for the two classes, namely the experimental class and the control class. Students in the experimental class were given treatment, namely conducting a learning process using ARCS-based economic e-book media. On the other hand, in the control class students still use learning media as usual, namely power point media without using ARCS-based economic e-book media. It turns out that there is a significant difference in learning motivation and learning outcomes of students during the economic learning process between the experimental class and the control class. The learning motivation and learning outcomes of students in the experimental class were higher than those in the control class, this was linear with the results of the effectiveness test which showed that there were differences in the two classes. The linearity results indicate that the use of ARCS-based economic e-books is effective in increasing learning motivation and learning outcomes. The results of this study are in line with previous studies by [11], [20], and [23].

Economic learning steps using economic e-book media based on ARCS begins with an explanation of the material presented by the teacher and giving several questions to students. This activity aims to see the extent to which students understand the material being studied. In addition, this activity also arouses students' curiosity about the material being studied in the learning process. The next step taken by the teacher was to invite students to use the ARCS-based economic e-book media. Students learn international trade material using ARCS-based economic e-books. Students make a summary of international trade material contained in the ARCS-based economic e-book media, which is then collected to the teacher. The use of e-book media in the learning process will create a learner-centered learning atmosphere [2]. In addition, e-book media can also make the learning process more interesting, active, and fun because it displays video explanations of the material being studied, illustrated pictures, and examples of problems that make it easier for students to understand the material [14]. This is in accordance with research conducted by [15] and Jin (2014) which found that digital book media (e-books) are more satisfying and can enrich the learning experience of students when compared to printed books. In addition, e-books are very effective in improving students' understanding of material [21]. The results of this study indicate that there is a positive response and a significant effect of the results of the pretest and posttest in the learning process using ARCS-based economic e-book media.

The learning process in the control class went on as usual. Teachers and students learn economic material about international trade using power point media. When the teacher explains the material, students pay attention to the explanation given by the teacher with focus. When learning has been going on for some time, there are some who begin to not focus on paying attention to the explanations given by the teacher during the learning process. There are some students who start to feel sleepy and do activities that tend not to pay attention to learning. In the control class, students have not participated actively in seeking information and building conceptual understanding of a learning material. Therefore, the learning motivation and understanding of students' material in following the learning process in the control class are not as good as in the experimental class which uses ARCS-based economic e-books.

The ARCS-based economic e-book media explicitly raises aspects of motivation in learning for students. Motivation to learn plays an important role in the learning process. With students' high learning motivation in the economic learning process, it will lead to the achievement of better student learning outcomes. Meanwhile, if the learning motivation of students is low, the achievement of student learning outcomes will also decrease and become not optimal.

Learning activities using economic e-book media based on ARCS facilitate students to increase motivation in learning economics. In the ARCS-based economic e-book media, there are learning videos that can arouse the attention of students in the learning process. In addition, examples of economic
problems regarding international trade are presented that are relevant to the material so that they can build students' self-confidence and learning satisfaction. In the learning process, teachers can familiarize students with finding information in order to foster attention, self-confidence, and learning satisfaction for students in the economic learning process. Activities such as watching videos, answering examples of problems, and seeking information can help students increase motivation to learn economics.

At the end of the meeting, students were also given a learning motivation questionnaire to determine the level of students' learning motivation as the effect of learning using ARCS-based economic e-books. The results of the learning motivation questionnaire showed that the experimental class students had higher motivation than the control class. This means that students in the experimental class have shown high learning motivation in the economic learning process. [1] states that good student motivation will achieve an effective and efficient learning process. Content standards, process standards, and assessment standards must be met so that they can achieve the expected learning objectives. ARCS-based economic e-book media used in the learning process are appropriate and meet standards so that learning can achieve predetermined goals. It is evident from the increased learning outcomes of students in the economic learning process with international trade material. In the control class, students' learning motivation was not optimal. In the learning process, students in the control class have not used the ARCS-based economic e-book media. The learning media in the control class are still ordinary, namely power points, so they have not been able to increase learning motivation and learning outcomes of students.

6. Future Trends and Conclusions

Based on the results of the research and discussion above, it can be taken as follows:

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ARCS-based economic e-book media is effective for increasing learning motivation and learning outcomes of students. The results showed that the significance value on the effectiveness test was significant (sig. = .000 <α = .05) and the learning outcomes were significant (sig. = .000 <α = .05). The researcher suggests that ARCS-based economic e-book media can be used in other economic learning themes.
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