The role of education, values, culture and character in online learning for learning mathematical outcomes of prospective teachers

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Abstract. The purpose of this research is to know the relationship between education, value, culture and the character of learning outcomes after online learning. The research methods used are correlational. The population taken is the entire student of the Mathematics Education Study Program IKIP Siliwangi 2018 which takes courses of Linear Program. Sample research was taken with the Purposive Sampling technique as many as 39 students. The instrument used is the test instrument of the study results of linear courses and non-test instruments to view the education response value, culture and character (EVCC) with a scale Likert as many as 30 statements. Stages of data analysis through test normality, correlation analysis, simple regression analysis and coefficient of determination. The results showed that education, value, culture and character significantly influenced the student mathematics achievement of the Linear Program, with its contribution of 13.6%, while the remaining student learning outcomes were influenced by other factors during online.

1. Introduction

The development of Science and Technology provides a large role in the progress in the field of Education. Learning carried out in primary and tertiary educational institutions must be able to adjust to the development of knowledge and technology, so that if there are obstacles in face-to-face learning, solutions can be given using Online Learning. Online Learning is the organization of classes in a network to reach a broad and broad group of students [1]. Furthermore, Online Learning aims to provide quality learning services in a network (online) that is massive and open to reach a wider and wider audience. Syarifudin [2], defines online learning is learning done through virtual applications. Online learning during the epidemic covid-19 was also carried out in the Linear Mathematics Education Study Program IKIP Siliwangi.

Each meeting, the lecturer already has a Semester Learning Plan (SLP) to guide the learning process. Likewise, when learning is done online, lecturers and students must be able to quickly adjust to the situation. Lecturers must be able to see the development of student learning outcomes even though they are not face to face. According to Dimyati and Mudjiono [3], revealed that learning outcomes are things that can be viewed from two sides, namely the student's side, learning outcomes are a better level of mental development before learning, whereas from the instructor's side as a measure of whether students have mastered the material learned. The learning outcomes can also be influenced by intrinsic and extrinsic factors. Online learning is one of the extrinsic factors. One of the intrinsic factors of student learning outcomes is the values, character and culture that exists in students.
Basically, learning activities in addition to making students master the competencies (material) that have been formulated in the learning objectives, are also designed to make students aware of and internalize values, soft skill and make behavior. Likewise, Online Learning should still promote the development of values and characters and mathematical soft skills actively and continuously. The implementation of character education and mathematics for prospective teacher students is a must, bearing in mind the prospective teacher will later be expected to become a character teacher and successfully educate his students to be someone of character. The Ministry of National Education [4] states that character education integrated in a learning process is the introduction of values, the facility recognizes the importance of values and the internalization of values into the behavior of everyday students.

The results of several studies related to the analysis of student learning outcomes in linear program subjects are: 1) Student errors exist in understanding the problems contained in the questions and the pre-concept solutions provided are lecturers giving exercises or drill exercises continuously and changing the learning method at each meeting [5], 2) The model of cooperative learning in linear program subjects in lesson study activities can improve the process and quality of learning [6]. 3) Student learning activities make a significant contribution after learning is applied with genius learning [7]. In this study, it will be seen the relationship between student learning outcomes in linear program subjects with Education, Values, Culture and Character. So the purpose of this study is to determine the relationship between Education, Values, Culture and character to learning outcomes after online learning.

Indicators used to see the response of Education, Values, Character and Culture are as follows: 1) Religious and Honest 2) Tolerance, respect for achievement, friendly and communicative, 3) Discipline, hard work and responsibility, 4) Creative and Independent, 5) Democratic, 6) Curiosity, fond of reading, 7) Nationalism, love of the motherland and love of peace, 8) Caring for the environment and caring socially [8].

2. Method
The research method used is correlational description. According to Arikunto[9], correlational research is a study conducted to determine the relationship and the level of relationship between two variables. The population taken was all students of the Mathematics Education IKIP Siliwangi class of 2018 who took Linear Program courses. The research sample was taken by using Purposive Sampling as many as 39 students. The instrument used was a test instrument for learning outcomes of linear program subjects and non-test instruments to see the response of values, culture and character education (EVCC) with a Likert scale of 30 statements, so that the data obtained were learning outcome data and questionnaire data. Data analysis through hypothesis testing is done in stages: normality test, correlation analysis, simple regression analysis and coefficient of determination.

3. Result and Discussion
Description of the results of measurement of learning outcomes in linear program subjects and measurement results using the Education, Values, Culture and Character (EVCC) questionnaire for 39 students.

| Table 1. Description of statistics |
|-----------------------------------|
| EVCC                | Learning outcomes |
|---------------------|-------------------|
| N                   | 39                | 39                |
| Maximums Score      | 88.11             | 39.88             |
| Minimum Score       | 132.78            | 86.46             |
| Mean                | 108.55            | 46.58             |
| Std. Deviasi        | 10.18             | 67.26             |

Based on the Table 1, it can be seen that the maximum value is 86.46, the minimum value is 39.88, the mean is 67.26 and the standard deviation is 11.23, the student learning outcomes in the linear program are good. EVCC response data in table 2 has been through changing the ordinal data to the
form of interval data so that it can be analyzed using statistical data, changing the form using the Successive Interval Method (SIM).

The normality test of student mathematics learning outcomes data and the EVCC response questionnaire data were performed as a prerequisite test, through the SPSS Program using the Kolmogorov Smirnov One Sample test. From the results of the normality test, the results obtained in Table 2.

| Table 2. Test normality |
|-------------------------|
|                         | Learning outcomes | EVCC       |
| N                       | 39                | 39         |
| Normal Parameters\(^{a,b}\) | Mean       | 67.2621    | 108.5525  |
|                         | Std.        | 11.23033   | 10.18047  |
| Deviation               | Absolute    | 0.082      | 0.086     |
|                         | Positive    | 0.068      | 0.086     |
|                         | Negative    | -0.082     | -0.062    |
| Test Statistic          |            | 0.082      | 0.086     |
| Asymp. Sig. (2-tailed)  | 0.200\(^{c,d}\) | 0.200\(^{c,d}\) |

\(^a\) Test distribution is Normal.  
\(^b\) Calculated from data.  
\(^c\) Lilliefors Significance Correction.  
\(^d\) This is a lower bound of the true significance.

Based on Table 2, the results of normality test results of student mathematics learning outcomes obtained a significance value of 0.200. Because the sig value of 0.200 > 0.05, the students' mathematics learning outcomes data are normally distributed. The results of testing the EVCC response data obtained a significance value of 0.200. Because the sig value of 0.200 > 0.05, EVCC response data is normally distributed. These results indicate that all the data studied were normally distributed. After testing the normality of the data, continued analysis of correlation data and simple regression to see the effect of EVCC on student mathematics learning outcomes.

The second prerequisite test is a linearity test, which is a test that aims to see the linearity of data of the independent variable (EVCC) and the dependent variable (learning outcomes). The linearity test was carried out with the help of SPSS with the results in Table 3.

| Table 3. Test linearity |
|-------------------------|
|                         | df | Mean Square | F   | Sig. |
| Learning outcomes       |    |             |     |      |
| Between Groups (Combined)| 37 | 67.7609     | 1.796 | 0.540 |
| Linearity                | 1  | 652.428     | 9.184 | 0.203 |
| Deviation from Linearity | 36 | 113.030     | 1.591 | 0.567 |
| Total                   | 38 | 71.043      |     |      |

Based on Table 3, the significance value is 0.567 was obtained. The significance level used is 0.05. Then the value of sig > 0.05. This means that there is a significant linear relationship between EVCC and learning outcomes.

The normality test and the linearity test were fulfilled, then continued with the correlation test which aims to find out the value 2 (correlation) between the EVCC variables on learning outcomes. Correlation analysis using SPSS, obtained the results in table 3. Before conducting the correlation test, a hypothesis is first formulated.

\(H_0\): There is no relationship between EVCC and student mathematics learning outcomes  
\(H_1\): There is a relationship between EVCC and student mathematics learning outcomes.
Test criteria, Ho is accepted if the sig value > 0.05, applies vice versa. The results obtained are as follows Table 4.

| Learning outcomes | EVCC |
|-------------------|------|
| Learning outcomes | Pearson Correlation | 1 | 0.369* |
|                  | Sig. (2-tailed) | 0.021 |
| EVCC             | Pearson Correlation | 0.369* | 1 |
|                  | Sig. (2-tailed) | 0.021 |
|                  | N | 39 | 39 |

* Correlation is significant at the 0.05 level (2-tailed).

Based on the calculation results in Table 4, the sig value is 0.021, smaller than 0.05 so that Ho is rejected. The conclusion obtained is that there is a relationship between EVCC and student mathematics learning outcomes. Pearson correlation value of the correlation obtained is 0.369, the value indicates that the level of relationship between EVCC and learning outcomes is relatively low.

After conducting the correlation test, the linear regression test was continued to find out how much its contribution and how the effect of EVCC on learning outcomes. Linear regression tests were performed using the SPSS program. The following hypothesis is as follows:

H0: There is no significant effect between EVCC on student mathematics learning outcomes
H1: There is a significant influence between EVCC on student mathematics learning outcomes

Test criteria, H0 is accepted if the sig value > 0.05, applies vice versa. The results obtained are as follows.

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|-------|----------------------------|---------------------------|---|------|
|       | B | Std. Error | Beta |       |     |
| 1     | (Constant) | 111.444 | 18.376 | 6.065 | 0.000 |
|       | EVCC | -0.407 | 0.169 | -0.369 | -2.415 | 0.021 |

a. Dependent Variable: Learning outcomes

Based on Table 5, the sig value is 0.021 < 0.05 so that H0 is rejected. The conclusion obtained is that there is a significant influence between EVCC and learning outcomes.

How the percentage of the effect of independent variables on the dependent variable will be done the calculation of the coefficient of determination (CD). Determine the coefficient of determination in this study using the SPSS program with the results in Table 6.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|---|----------|------------------|--------------------------|
| 1     | 0.369* | 0.136 | 0.113 | 10.57807 |

a. Predictors: (Constant), EVCC

Based on table 6 a correlation value of 0.369 is obtained, while a CD value of 13.6%. It can be concluded that the EVCC independent variable has an effect of 13.6% on the student mathematics learning outcome variable and the rest is influenced by other factors outside of EVCC.

The results showed that there was a relationship between EVCC and student mathematics learning outcomes, although it was classified as low. In line with a research result, cognitive aspects cannot be
separated from the affective and psychomotor aspects of students if character education is to be developed in a sustainable manner, so that it becomes a planned and structured system renewal [10]. Online learning with a minimum of face-to-face cannot be seen in detail internally in the character values shown by students. So that a good plan is needed by the lecturer to start online lectures that can evaluate the cognitive, affective and psychomotor aspects of students. This is in line with the results of Siswono's study [11], stating that building the character of students is not easy, especially in a short time. Need a planned, continuous and systematic effort in learning mathematics. The planning in question must be intentional (by design) not just the impact of accompaniment (by chance).

The regression test results also showed that there was a significant influence between EVCC and learning outcomes. The percentage of EVCC effect on learning outcomes is 13.6% so it is classified as low. These results indicate that 87.4% of other factors influence student learning outcomes after online learning. Based on the researcher's observations, several factors that become obstacles are: 1) The availability of inadequate and supporting facilities from students to conduct online learning. 2) The level of student focus during online learning is still lacking. This is in line with the results of the study [12], disturbances experienced by students during online learning are: 1) unstable internet network, 2) limited quota. These conditions ultimately affect the psychic of students in continuing online learning.

4. Conclusion
The results showed that Education, Values, Culture and Character significantly influenced students' mathematics learning achievement in the Linear Program subject, with a contribution of 13.6%. These results are influenced by online learning activities, where students are still hampered by several things: namely the facilities and the level of student focus in participating in learning.

This research is limited to EVCC and mathematics learning outcomes after being given online learning. Researchers can then conduct research activities to see the effectiveness of online learning to improve students' cognitive, affective and psychomotor abilities.

5. Acknowledgments
The authors would like to thank IKIP Siliwangi for providing support and facilities in completing this research.

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