

**ANALYSIS OF THE USE OF GOOGLE CLASSROOM  
APPLICATIONS FOR SIMPLE LINEAR REGRESSION MATERIALS  
FOR ACTUARIAL STUDY PROGRAM STUDENTS**

**ANALISIS PEMANFAATAN APLIKASI *GOOGLE CLASSROOM*  
UNTUK MATERI REGRESI LINIER SEDERHANA PADA  
MAHASISWA PRODI AKTUARIA**

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**ABSTRAK**

Penelitian ini bertujuan untuk meningkatkan hasil belajar mahasiswa program studi aktuaria Universitas Tamansiswa Padang yang mengambil mata kuliah analisis regresi yang berjumlah 14 mahasiswa, terdiri dari 2 mahasiswa laki-laki dan 12 mahasiswa perempuan dengan memanfaatkan aplikasi *google classroom* sebagai salah satu strategi pembelajaran selama pandemi Covid-19 pada materi regresi linier sederhana. Aplikasi *google classroom* ini memberikan kemudahan bagi dosen untuk mengelola pembelajaran dan menyampaikan informasi yang tepat dan akurat kepada mahasiswa. Jenis penelitian yang dilakukan adalah penelitian tindakan kelas yang dilaksanakan selama dua siklus. Setiap siklus terdiri dari tahapan perencanaan (*planning*), tindakan (*action*), pengamatan (*observation*), dan refleksi (*reflection*). Observasi dan tes adalah teknik pengumpulan data yang digunakan dalam penelitian ini. Reduksi data, penyajian data, dan penarikan kesimpulan merupakan teknik analisis data yang digunakan dalam penelitian ini. Hasil dari penelitian yang telah dilakukan adalah diperolehnya manfaat dari aplikasi *google classroom* selama pandemi Covid-19 yaitu meningkatnya hasil belajar mahasiswa Program Studi Aktuaria Universitas Tamansiswa Padang pada materi regresi linier sederhana yang dibuktikan dengan jumlah mahasiswa yang mencapai nilai  $\geq 65$  pada siklus II sebanyak 13 mahasiswa (92,9%) dan 1 mahasiswa (7,1%) mendapatkan nilai  $\leq 65$ , dibandingkan dengan siklus I sebanyak 0 mahasiswa (0%) yang mencapai nilai  $\geq 65$  dan 14 mahasiswa (100%) mendapat nilai  $\leq 65$ . Presentase ketercapaian nilai  $\geq 65$  dari mahasiswa mengalami peningkatan (siklus I sebesar 0%, siklus II sebesar 92,9%).

**Kata kunci:** *Google Classroom*, Hasil Belajar, Regresi Linier Sederhana

**ABSTRACT**

This study aims to improve student learning outcomes of the actuarial study program at Tamansiswa Padang University who took regression analysis courses totaling 14 students, consisting of 2 male students and 12 female students by utilizing the Google Classroom application as a learning strategy during the Covid-19 pandemic. The material of simple linear regression. This google classroom application makes it easy for lecturers to manage learning and convey precise and accurate information to students. This type of research is classroom action research which is carried out for two cycles. Each cycle consists of stages of planning (*planning*), action (*action*), observation (*observation*), and reflection (*reflection*). Observation and testing are data collection techniques used in this study. Data reduction, data presentation, and conclusion drawing are data analysis techniques used in this study. The results of the research that has been carried out are the benefits of the google classroom application during the Covid-19 pandemic, namely the increase in student learning outcomes of the Actuarial Study Program at Tamansiswa Padang University on simple linear regression material as evidenced by the number of students who

achieved a score of  $\geq 65$  in cycle II as many as 13 students. (92.9%) and 1 student (7.1%) got a score of  $\leq 65$ , compared to the first cycle as many as 0 students (0%) who achieved a score of  $\geq 65$  and 14 students (100%) got a score of  $\leq 65$ . Percentage of achievement the value of  $\geq 65$  of the students increased (cycle I was 0%, cycle II was 92.9%).

**Keywords:** *Google Classroom, Learning Outcomes, Simple Linear Regression*

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## PRELIMINARY

Learning is a process of changing individual behavior as a result of his experience in interacting with the environment. Learning is not just memorizing, but a mental process that occurs within a person (Rusman, 2011). Education has a positive impact in changing one's behavior and increasing one's skills for more useful things in life. The role of education is very important in one's life because education is a means for a person to innovate and improve in aspects of his life to a higher quality.

At every level of education, mathematics is a field of science that is always studied. College students are also still studying mathematics. Learning in the field of mathematics in higher education aims to prepare students to have the ability to face changing conditions in the world of life, prepare students to use mathematical and numerical calculation designs in everyday life and to concentrate on different fields of science, so mathematics is important to learn in every field of science and level of education.

Simple linear regression is one of the materials studied in the field of mathematics and is also the main subject in regression analysis courses that must be studied by actuarial study program students. Regression analysis has two types of variables, namely: 1) the response variable (dependent variable), namely the variable whose existence is influenced by other variables and is denoted by the Y variable, 2) the predictor variable (independent variable), namely the independent variable (not influenced by other variables) and denoted with X. Simple linear regression or often abbreviated as SLR (Simple Linear Regression) is a statistical method used to determine the effect of one independent variable on one dependent variable.

Since the outbreak of the Covid-19 virus, the teaching and learning process at the Tamansiswa Padang college has changed, such as the implementation of the learning process which is usually done face-to-face, now it is done by means of online learning,

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strategies and learning methods that are usually done conventionally have also experienced changes in strategy and method. Learning activities during the Covid-19 pandemic must still be carried out by lecturers and students. Learning activities that were usually located on campus are now located at home. This is done to stop the spread of the Covid-19 virus in accordance with SE Menpan RB Number 24 of 2021 regarding Work From Home (WFH) and Work From Office (WFO).

Learning activities carried out at home are an effect of the Covid-19 pandemic. The effect of the Covid-19 pandemic has resulted in lecturers having to provide online learning using technology. The online learning method using technology is carried out so that students are helped in receiving lessons, especially lessons on simple linear regression material in an effective, efficient, inspiring, interactive, contextual, creative, productive and fun way. Utilization of technology that can be used is e-learning by using the web to access it. . E-Learning is a learning system that utilizes electronic media as a tool to assist learning activities (Daryanto, 2010). The development of the internet is now increasingly widespread and internet access has now been made easier. The internet can be used as a means to facilitate the online learning process during the Covid-19 pandemic.

There are various kinds of learning media that can be used in the teaching and learning process but the lecturers have not used them optimally. Applications are one of the media in online learning. The application comes from the English language, namely Application which means the use or application of information. Applications are programs created to carry out certain tasks required by computer users (Sugiar, 2014). While the application according to (Maiyana, 2018) is software created by a computer company to perform certain tasks, for example Ms.Word, Ms.Excel.

The Google Classroom application is one of the applications in online learning that is used by lecturers at the Tamansiswa Padang College during the Covid-19 pandemic. Google Classroom is an internet-based service provided by Google as an e-learning application. This application is designed to help educators create and distribute assignments to students paperless. Users of this application must first have a Google account in order to access the Google Classroom Application (Barir Hakim, 2016). The google classroom application media in online learning can be used as a learning medium so that students are helped to improve their learning outcomes. The design of Google Classroom is familiar to students because they are used to using several products from Google via their Google Apps account (Izenstark & Leahy, 2015).

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Learning media that can be used by lecturers at Tamansiswa Padang College during the Covid-19 virus pandemic to assist in the teaching and learning process at home is using e-learning with the application that is used, namely the Google Classroom application. Utilizing the Google Classroom application in the learning process, lecturers input more complete material in the Google Classroom application. Students download materials and study them independently. After that, the lecturer gives assignments and questions as a reaction to the learning that has been carried out at home. Students send their report results to the Google Classroom application.

The Google Classroom application has advantages over other applications, namely that this application can be used to create and supervise classes, enter materials, assignments, grades and provide criticism and suggestions directly. Students can share materials and connect in class or via email, filter class materials and assignments, submit assignments and get ongoing feedback. The use of Google Classroom can make it easier for teachers to manage learning and convey information precisely and accurately to students (Barir Hakim, 2016). The google classroom application which is used in the online learning process is expected to give students new experiences when participating in learning activities, increase knowledge in assessing expertise in technology, foster a sense of enthusiasm for learning, and give students confidence to study independently so that they can improve results learn it. The advantages of the Google Classroom application make students feel helped, because this application can show the results of the scores of assignments or tests carried out by students and can be checked by lecturers directly so as to provide encouragement for students to study harder. This enthusiasm for learning can affect student learning outcomes.

The result or achievement is the realization or expansion of the results of the potential skills or capacities of a person. Mastery of learning outcomes by a person can be seen from his behavior, both behavior in the form of mastery of knowledge, thinking skills and motor skills (Sukmadinata, 2016). Meanwhile, according to (Hamalik, 2006) learning outcomes are the occurrence of changes in behavior in a person who can be observed and measured in the form of knowledge, attitudes and skills.

Based on the explanation above, the author is interested in researching the use of the google classroom application on simple linear regression material for actuarial study students to improve student learning outcomes during the Covid-19 pandemic. The purpose of this study was to determine the increase in student learning outcomes of the Actuarial

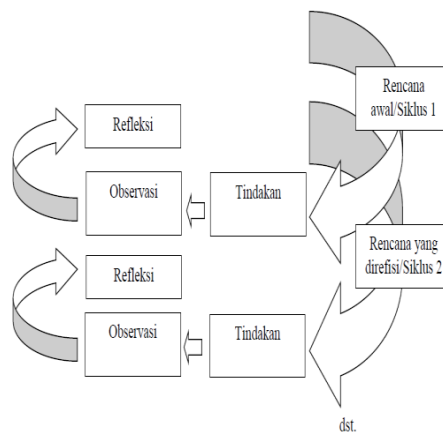
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Study Program at Tamansiswa Padang University by utilizing the Google Classroom application.

### METHOD

The type of research used is Classroom Action Research (CAR). The main focus of the research is to improve student learning outcomes of the Actuarial Study Program at Tamansiswa Padang University on simple linear regression material using the google classroom application. This research was conducted from March-April 2021 during the Covid-19 pandemic at Tamansiswa Padang University which is located at Jalan Tamansiswa No. 9 Padang, by adjusting the regression analysis lecture hours in the Actuarial study program. The subjects of this study were students of the Actuarial study program at Tamansiswa Padang University for the 2020/2021 academic year who took the regression analysis course with a total of 14 students. The object of the research is simple linear regression material which is distributed through the Google Classroom application.

Classroom Action Research in this study was carried out in two cycles. Each cycle in this research will include planning activities, taking actions, observing and reflecting on the results of these actions (Suharsimi, 2009). The plot in this study is shaped like a spiral which can be seen in Figure 1.



**Figure 1.** Research Flow

In this study the steps of the activities carried out in the first cycle were 1) the lecturer made a class on the google classroom application, 2) the lecturer invited students to join the class 3) the lecturer uploaded simple linear regression material on the google classroom application, then 4) students were asked to to download materials and do self-study. Lecturers use the google classroom application as a medium or reference for students in conducting independent learning on simple linear regression material. Next, the

lecturer gives tests to students through the Google Classroom application. This test is done by students independently, then students upload answers from the test on the Google Classroom application. The student's test answers will be checked by the lecturer on the Google Classroom application and the lecturer will directly upload the student's test scores on the application. The results of the test are the results of student responses in cycle I.

Online learning activities in cycle II are lecturers using google classroom as a discussion room in learning. Students can ask questions and ask for an explanation from the lecturer about the material they don't understand. After the discussion activities are deemed sufficient, the lecturer makes test questions on the Google Classroom application and students complete the test questions and upload the answers to the Google Classroom application. Test answers from students will be checked by the lecturer on the Google Classroom application and the lecturer can directly upload student test scores on the application. The results of this test are the results of student responses in cycle II.

The research instrument was a test on simple linear regression material through the google classroom application, observations of student learning performance when participating in the learning process through the google classroom application, as well as observing the cognitive process of students in answering test questions given by the lecturer through the google classroom application. The results of student work/tests in completing the test questions given by the lecturer are the data in this study. The test results are used to determine whether there is an increase in student learning outcomes in simple linear simple linear regression material through the google classroom application. In addition, the results of observations of student learning performance when participating in the learning process through the Google Classroom application, as well as the results of observing students' cognitive processes in answering questions given by the lecturer through the Google Classroom application are the data in this study.

Qualitative and quantitative data are the data analyzed in this study. This data was obtained based on the data of cycles I and II. The qualitative data in this study is the student's learning performance when participating in the online learning process in utilizing the google classroom application obtained from observations (observations) and students' cognitive processes in answering test questions given by the lecturer. Quantitative data in this study is an increase in student learning outcomes obtained from formative test results in each cycle. The steps to analyze the data are as follows:

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### 1. Assessment of student learning activities

Student learning activity data is obtained through the results of the assessment of the previous material learning process that has been carried out and observations of learning activities carried out during the learning process through online learning.

Assessment of student activities can be calculated using the DP (Descriptive Percentage) equation, as follows:

$$DP = \frac{n}{N} \times 100\%$$

with:

$n$  = total score obtained

$N$  = maximum score

To determine the category of student learning activities obtained by matching the percentage descriptive value (DP) (Purwanto, 2009) contained in Table 1.

**Table 1.** Percentage of Student Activities

Class	Interval	Description
I	25% - 43,75%	Very Low
II	43,76% - 62,51%	Low
III	62,52% - 81,27%	High
IV	81,28% - 100%	Very High

### 2. Assessment of student learning outcomes

The method of analyzing student learning outcomes data can be calculated with the following steps:

#### a. Calculating a student's average score

The average score is calculated by the way the researcher sums the scores obtained by students, which is then divided by the number of students in the class so that the average formative test is obtained. according to (Suharsimi, 2010) can be formulated as follows:

$$\bar{X} = \frac{\sum X}{n}$$

with:

$\bar{X}$  = average score

$\sum X$  = total score

$n$  = total number of students

b. Calculating student learning completeness

Counting mastery learning classically according to (Sudjana, 2009) can be formulated as follows:

with:

$$DP = \frac{f}{N} \times 100\%$$

$DP$  = percentage value or yield

$f$  = number of completed participants

$N$  = total number of students

c. Success Indicator

Indicators of success are benchmarks of success in a classroom action research. (Mulyasa., 2009) states, the research is said to be successful if it meets the following criteria:

- 1) At least 65% of students from all students in the class get a score of 65, or achieve cognitive learning mastery of 65%.
- 2) At least 65% of students from all students in the class get a score of 65, or achieve affective and psychomotor learning mastery of 65%.

Student learning outcomes data in the form of test results are used to see how well students are able to understand simple linear regression material. The test is given twice, namely once in the first cycle and once in the second cycle. This is done to identify whether there are changes in student learning outcomes that reach student grades  $\geq 65$ .

## RESULT AND DISCUSSION

Classroom action research on actuarial study students, during the Covid-19 pandemic with the learning process carried out using the google classroom application with the aim of knowing the increase in student learning outcomes on simple linear regression material. In student learning activities, the increase in learning outcomes in each cycle can be seen in Table 2.

**Table 2.** Improved Learning Outcomes in Each Cycle

No	Description	Cycle I	Cycle II
1	The highest score	55	73
2	Lowest Value	45	63



No	Description	Cycle I	Cycle II
3	Average Value	46	69
4	Students who achieve grades $\geq 65$	0 students out of 14 students (0%)	13 students out of 14 students (92,9%)
5	Students who achieve grades $\leq 65$	14 students out of 14 students (100%)	1 student out of 14 students (7,1%)

The assessment at the end of each cycle can be seen in table 2, where the data explains that the data results are the highest student scores and the data results are the lowest student scores. In the first cycle, the highest score of actuarial study program students was obtained with a total score of 55 and this highest score increased in the second cycle with a score of 73. Meanwhile, the lowest score obtained by actuarial study program students in the first cycle was with a total score of 45 and this value increased in the second cycle with the number obtained by students with a score of 63. This data shows that the scores obtained by students, both the highest and the lowest scores, have increased at the end of each cycle. There is a difference in the average value in each cycle, the average value obtained in the second cycle is 69 compared to the average value in the first cycle, which is only 46, an increase of 23. The number of students who achieved a score of  $\geq 65$  in the second cycle were 13 students (92.9%) and 1 student (7.1%) got a score of  $\leq 65$ , compared to the first cycle of 0 students (0%) who achieved a score of  $\geq 65$  and 14 students (100%) scored  $\leq 65$ . The percentage of student scores who achieved a score of  $\geq 65$  has increased where in the first cycle the percentage of the results is 0% while in the second cycle the percentage of the results is 92.9%. This proves that the success rate of using the Google Classroom application has had a major influence on improving student learning outcomes, especially for actuarial study students who study simple linear regression material during the Covid-19 pandemic.

The implementation of online learning carried out by students in this study uses learning media in the form of the Google Classroom application. The Google Classroom application is one of the most effective and efficient learning media used during the Covid-19 pandemic. The learning method that can be used by using the google classroom application is the DIA (Delivery Interaction Assessment) method. Lecturers can use the Google Classroom application to upload teaching materials or materials as a reference for students to study independently. The material is about simple linear regression in pdf form as a student reference for studying. In the Google Classroom application, students can also

interact with lecturers using the comment column menu that is already available on the application. This comment column menu can be used as a discussion space between lecturers and students so that students can easily ask questions about the material or obstacles they face during the lecture process. In addition to uploading lecturer materials, you can also upload test questions on the Google Classroom application. These test questions will later serve as an assessment given by the lecturer to students to see the achievement of students' understanding of the material for simple linear regression analysis in online learning by using the Google Classroom application.

The process of learning activities as described above is quite effective and efficient during the Covid-19 pandemic because students can get various kinds of supporting references in increasing their knowledge in independent study. This is because the material has been uploaded by the lecturer to the google classroom application, so that students can access and study lecture material easily and students also feel happy and comfortable with the ease of accessing learning materials on the google classroom application.

After the implementation of online learning with the use of the Google Classroom application, student learning outcomes are far more improved than usual. The increase in student scores in each cycle can be seen in table 1 where the value of student learning outcomes with an achievement value of  $\geq 65$ . The use of the Google Classroom application can improve student learning outcomes of the Actuarial Study Program at Tamansiswa Padang University on simple linear regression material. This supports the acceptance of the classroom action research hypothesis, namely Analysis of the Use of Google Classroom Applications for Simple Linear Regression Materials for Actuarial Study Program Students.

## CONCLUSION

Class action research on actuarial study program students was carried out for two cycles. The action in the first cycle the lecturer used the google classroom application as a medium or reference for students in doing independent learning on simple linear regression material while in the second cycle the lecturer used google classroom as a discussion room in learning. Students can ask questions and ask for an explanation from the lecturer about the material they don't understand. In the first cycle the number of students who achieved a score of  $\geq 65$  were 0 students and 14 students got a score of  $\leq 65$ , compared to the second cycle the number of students who achieved a score of  $\geq 65$  were 13 students and 1 student got a score of  $\leq 65$ .

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Based on the results of the research that the author did, it can be concluded that there is a positive influence from online learning that utilizes the google classroom application as a learning medium during the Covid-19 pandemic so that the use of this google classroom application can improve student learning outcomes. This gives the conclusion that the use of the Google Classroom application can improve student learning outcomes of the Actuarial Study Program at Tamansiswa Padang University on simple linear regression material.

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