LEARNING PROCESS ANALYSIS MIS GUPPI PADANG HILIR

(Using a Multivariate Analysis Approach)

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Abstract. This study aims to look at student learning outcomes through National Exam scores conducted in the last ten years. This research also looks at the correlation between the subjects tested in the national exam. This research examines the suitability of lesson objectives with the learning outcomes obtained by students. The data in this control process used data on student UN scores in 2012 - 2023 in three subjects, namely: B Indonesia, Science, and Mathematics. This process analysis uses data analyzed in 2017 - 2018 with the results showing the highest correlation value is 59.8121, namely between science and Indonesian subjects. While the lowest correlation is 33.13578, namely between math and science subjects. Process data is seen in 2019 -2020 with the results of the highest correlation value is 8.265306, namely in Indonesian and mathematics subjects. While the lowest correlation value is 7.281746, namely in math and science subjects.

Keywords: *Control, Process, Learning, UN, MIS, Tebing Tinggi*

A. Introduction

The function of education according to Law No. 20 of 2003 is to develop knowledge and form a dignified character in order to educate the nation's life (*Law No. 20 of 2003.Pdf*, n.d.). based on the function of education listed in Law no. 20, we can see that education is a place to build human character in order to build an understanding of critical thinking, independent and structured. The implementation of education should have control over the implementation process. control activities on the implementation of learning can be seen by analyzing student test scores for severalyears. Control activitieson the results of this learning aim to see the suitability of learning implementationstandards and learning outcomes.

Educational facilities are an important aspect in learning activities (Antoro, 2023). Education management is a stimulus to advance education in Indonesia. Activities in education implementation management are the beginning of learning activities that are appropriate and in accordance with learning objectives. one of the learning management activities is evaluation in the learning process. according to (Darodjat & Wahyudhiana, 2015) evaluation has three terms, namely measurement, *assessment*, *evaluation*. Evaluation activity is a process to collect, analyze and interpret information with the aim of knowing the level of achievement of learning objectives (Ratnawulan & Rusdiana, 2014). Research conducted with the aim of obtaining information on the learning process and as material for evaluating the learning process has also been conducted by (Antoro, 2023). The research conducted by Antoro found that a larger portion of student learning was experienced by students who were in *fullday class* learning, students who studied with a larger portion had a high average score.

According to (Hasratuddin, n.d.) multivariate statistical methods are data analysis techniques to see the correlation between variables as a system by taking into account the correlation between these variables. The purpose of multivariate analysis is to find the structure of the data characteristics.

This paper is to analyze a learning process that takes place at MIS Teladan GUPPI Tebing Tinggi. the purpose of this study is to see the correlation between students' national exam results and the learning process. whether the students' national exam results are in accordance with the assessment standards enforced in Indonesia.

B. Discussion

This research was conducted at MIS Teladan GUPPI Tebing Tinggi which is located at Jl. Bhakti Gg. Karya Satria Village, Padang Hilir Subdistrict, District / City Tebing Tinggi, North Sumatra Province. The sample in this study were all students' National Exam scores in 2014 - 2023 in the subjects of Mathematics, Science, and Indonesian. The amount of data for all students for 10 years is 258 students. Each year 2012 - 2013 is 17
students, 2013 - 2014 as many as 14 s t u d e n t s , 2014 - 2015 as many as 12 students, 2015 - 2016 17 students, 2016 - 2017 as many as 29 students, 2017 - 2018 as many as 39 students, 2018 -2019

as many as 28 students, 2019 - 2020 as many as 42 students, 2022 - 2021 as many as 18 students, 2021 - 2022 with 39 students, 2022 - 2023 with 19 students.

The focus of data analysis in this study is; 1) the relationship between math, science, and Indonesian subjects. The data used is data from the national exam results (UN) of students in 2012 - 2023, namely the data used is data for the last 11 years. The use of this data aims to see the correlation between subjects. It is used data in 2017 - 2018. The latest data to be seen is in 2019-2020 as many as 42 students. With the subjects of math, science, and Indonesian language. see the control of the learning process for eleven years of UN data using the control model.

$$Uper\,Control\,Limit\,(UCL), T^2 = m\,(x_y \quad -\bar{X}\bar{S}^{-1}(\bar{x}_y - \bar{X})t$$

C. Data Analysis 2017 - 2018

Data analysis in this study used national exam data (UN) in 2003 - 2004 at MIS Teladan GUPPI Tebing Tinggi, namely three subjects of Indonesian Language (X1) Science (X2), and Mathematics (X3). The amount of data for that year is 39 data. The results of the average calculation can be seen in the following table:

Table 1. Average comparison of 3 subjects

SUBJECT	B. INDONESIA	IPA	MATHEMATICS
AMOUNT	2347.47	2341.89	2603.6
MEAN	60.19	60.05	66.76
VAR	194.1513	107.4918	48.40722

Based on the data above, it can be seen that the lowest average student score in the subjects is in science subjects, namely 60.05, while the highest average subject is in math subjects, namely 66.76. This shows that students' mathematics skills are better than science and Indonesian subjects. This shows that students' mathematics skills are better than science and Indonesian subjects.

To see the correlation between the subjects, it can be seen in table 2, as follows:

Table 2. Covariance Correlation Matrix

B. INDONESIA	1	59.8121	38.06963
IPA	59.8121	1	33.13578
MATHEMATICS	38.06963	33.13578	1
	B. Indonesia	IPA	Math

Based on the data above, the highest correlation value is 59.8121, namely between science and Indonesian subjects. While the lowest correlation is 33.13578 which is between math and science subjects. The data shows that the highest correlation between subjects is between Indonesian and science, while the weakest correlation value is between science and math. When looking at the data as a whole, we can conclude that the data is positive, this shows that students try to do maximum learning in all subjects tested.

The prediction of subjects against other subjects can be seen with the inverse correlation in table 3 below:

Table 3 Inverse correlation matrix

INDONESIAN LANGUAGE	**0.00598919**	**-0.002383584**	**-0.003078555**
IPA	0.000489005	0.0115965	-0.008322629
MATHEMATICS	-0.005044904	-0.006063495	0.028776209
	Bahasa Indonesia	IPA	Math

D. Data Analysis 2019 - 2020

The data analysis used in this section is the UN scores of 42 students in 2019-2020. The data used are students' national exam scores in B Indonesia, science, and math subjects. The correlation between these subjects can be seen in table 4 below:

Table 4. Basic Calculation

SUBJECT	**B INDONESIA**	**IPA**	**MATHEMATICS**
AMOUNT	3480	3451	3487
MEAN	82.85714	82.16667	83.02381
VARIAN	9.783972	8.288618	8.218931

Based on the data above, the highest average score is 83.02 in math subjects. The subject with the lowest average score is 82.16667, namely in science subjects. The data explains that the highest student ability is in math subjects, while the lowest student ability is in science subjects, namely 82.16. The correlation between subjects can be seen in table 5 below:

Table 5. Variance-Covariance Correlation Matrix

INDONESIAN LANGUAGE	**1**	**7.833333**	**8.265306**
IPA	7.833333	1	7.281746
MATHEMATICS	8.265306	7.281746	1
	Bahasa Indonesia	IPA	Math

The data above explains that the highest correlation value is 8.265306, namely in Indonesian and mathematics subjects. While the lowest correlation value is 7.281746, namely in math and science subjects. The overall correlation value has a positive value, this shows that students put maximum effort in all subjects.

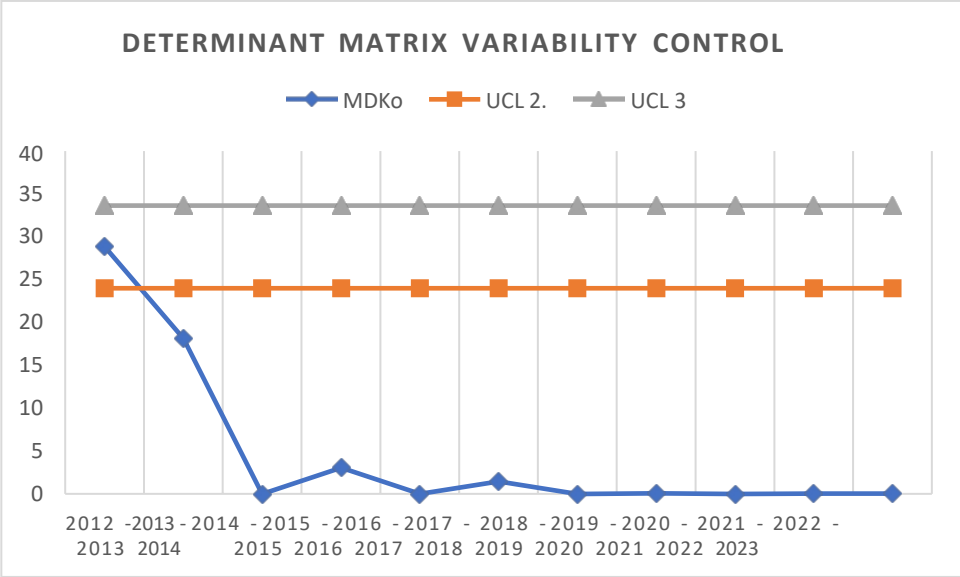
E. Learning Process Control Analysis

The data used in the analysis is a range of 11 classes in 2012 - 2023. The data used is data on student scores on the national exam consisting of scores in Indonesian, science, and math subjects.

First analyze the process control by calculating the determinant value of the covariance matrix, can be seen in the following table:

Table 6. determinant of covariance matrix and UCL value

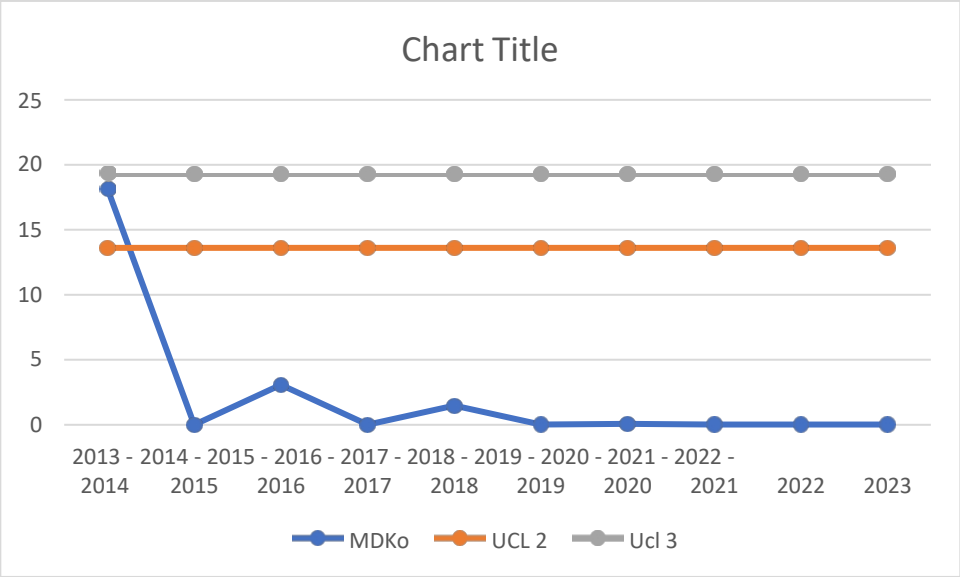
YEAR	**MDKO**	**UCL 2.**	**UCL 3**
2012 - 2013	28.84768	23.990	33.638
2013 - 2014	18.15177	23.990	33.638
2014 - 2015	0.000186	23.990	33.638
2015 - 2016	3.05895	23.990	33.638
2016 - 2017	0.000117	23.990	33.638
2017 - 2018	1.45886	23.990	33.638
2018 - 2019	0.002368	23.990	33.638
2019 - 2020	0.049788	23.990	33.638
2020 - 2021	0.005479	23.990	33.638
2021 - 2022	0.01623	23.990	33.638
2022 - 2023	0.024024	23.990	33.638



Based on the results of the data obtained, we can explain the value in 2012 - 2013 the learning process is not going well, this can be seen from the value of the determinant covariance matrix (MDKov) passing the UCL value limit of 2. If the data obtained will be used to control the learning process in the following year, the prediction data will be refined so that the data obtained is not above the UCL. The iteration process is used to refine the control by not including the values in 2012 - 2013.

The analysis of iteration 2, namely data analysis for 2013 - 2023 can be seen in the following table:

YEAR	MDKO	UCL 2	UCL 3
2013 - 2014	18.15177	13.613	19.281
2014 - 2015	0.000186	13.613	19.281
2015 - 2016	3.05895	13.613	19.281
2016 - 2017	0.000117	13.613	19.281
2017 - 2018	1.45886	13.613	19.281
2018 - 2019	0.002368	13.613	19.281
2019 - 2020	0.049788	13.613	19.281
2020 - 2021	0.005479	13.613	19.281
2021 - 2022	0.01623	13.613	19.281
2022 - 2023	0.024024	13.613	19.281



The data above explains the variableity control line (MDKoV) and the PBM achievement control line (T^2) are on the bottom line of UCL 2 and UCL 3. This shows that the learning process for 10 years has been going well and in accordance with the learning outcomes. it can be concluded that the UN scores from 2013 - 2023 can be used as a controller of the learning process.

F. Summary

a. Correlation between subjects

1. UN data 2017 - 2018

a) Based on the data obtained, we can conclude that in the UN subjects namely B Indonesia, Science, and Mathematics at MIS Teladan GUPPI Tebing Tinggi school in 2017 - 2018, the average value in B Indonesia subject is 60.19 with a standard deviation of 13.93, science subject is 60.05 with a standard deviation of 10.37, and math subject is 66.76 with a standard deviation of 6.96.

b) The highest correlation between subjects in 2017-2018 was 59.8121, between science and Bahasa Indonesia. While the lowest correlation is 33.13578 which is between math and science subjects

2. UN score data 2019 - 2020
   a) Based on the data obtained, we can conclude that in the UN subjects, namely B Indonesia, Science, and Mathematics at MIS Teladan GUPPI Tebing Tinggi school in 2019-2020, the average score in B Indonesia subject is 82.85 with a standard deviation of 3.13, science subject is 82.17 with a standard deviation of 2.88, and math subject is 83.02 with a standard deviation of 2.87.
   b) The highest correlation value is 8.265306, namely in Indonesian and mathematics subjects. While the lowest correlation value is 7.281746, namely in math and science subjects.

b. Learning Process Control

Data for 10 years on UN exam scores, namely 2017 - 2023, shows a mismatch between the learning process and the results of learning outcomes. this statement can be seen from the variable graph with the determinant of the covariance matrix which appears to exceed the limit of the UCL 2 value *(uper control limit)*. After the 2017 - 2018 data is excluded, the control graph is already in a position below the UCL. This statement shows that the data is valid to be used to show the learning process.

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