

## The Influence of Scientific Approach, Learning Motivation, and Student Responses on Statistical Learning Outcomes of STIE Muhammadiyah Mamuju Students

Rezki Novianti<sup>1</sup>, Abdul Rajab<sup>2</sup>

<sup>1</sup> STIE Muhammadiyah Mamuju/Manajemen

Email: [novisyam85@gmail.com](mailto:novisyam85@gmail.com)

<sup>2</sup>STIE Muhammadiyah Mamuju/Ekonomi Pembangunan

Email: [rajab.daeng@gmail.com](mailto:rajab.daeng@gmail.com)

(Received: 04-07-2020; Reviewed: 14-08-2020; Revised: 23-09-2020; Accepted: 21-10-2020; Published: 5-12-2020)



©2020 –Daya matematis: Jurnal inovasi pendidikan matematika. Ini adalah artikel dengan akses terbuka dibawah licensi CC BY-NC-4.0 (<https://creativecommons.org/licenses/by-nc/4.0/>)

### Abstract

Education plays an important role in improving the quality of human resources in an effort to create general welfare and the intellectual life of the nation. Because of its very strategic role, issues related to the quality of education have always been the main discussion in government, for example related to the education system and the quality of educators. The cause of this stems from learning, where the learning approach has been centered on lecturers so that students tend to be passive. The purpose of this study was to determine how much influence the motivation to learn, student responses by using a scientific approach to statistical learning outcomes for STIE Muhammadiyah Mamuju students, which in the end is expected to have a quality learning process and an increase in learning outcomes. This type of research is ex post facto in the form of multiple linear regression analysis, combined with experimental research, namely statistical learning through a scientific approach involving the experimental class and the control class. Data collection techniques in this study were tests, questionnaires or questionnaires, observation and documentation. Initially, the sampling was carried out by purposive random sampling, the number of samples used in this study was 35% of the total population of 427 so that the sample was 114 (4 classes). However, because the Covid19 pandemic was increasing and it did not allow researchers to carry out optimally, a sample of 35 students was selected in the experimental class (1 class) and 34 students in the control class (1 class). Purposive said, because the selection according to the researcher had met the requirements, namely on the campus, the statistics subject lecturer had used a scientific approach in the learning process. And it is called Random Sampling, because in determining the sample is done randomly without any strata in the population. Then the data analysis method used is the validity and reliability test of the instrument, descriptive analysis, classical assumption test, and multiple linear regression analysis and hypothesis testing using the F test (simultaneous) and t test (partial) with the help of the SPSS for Windows program software (Statistical Package for Social Science) version 23.0 in processing research data. The results showed a significant effect both partially and simultaneously between learning motivation and student responses to statistical learning outcomes with a scientific approach to STIE Muhammadiyah Mamuju students, where learning outcomes for the experimental class (using a scientific approach) were better than control class with a conventional approach.

**Keywords:** *Scientific Approach; Motivation to learn; Response; Learning outcomes.*

### INTRODUCTION

Education plays an important role in improving the quality of human resources in an effort to realize general welfare and the intellectual life of the nation. Because of its very strategic role, issues related to the quality of education have always been the main discussion in government, for example related to the education system and the quality of teaching staff. The cause of this stems from learning, where the learning approach has been centered on lecturers so that students tend to be passive. Quality improvement can be done by paying attention to innovations in the world of education by updating the curriculum, improving the quality of learning and the effectiveness of learning models or

methods.(Sudrajat, 2009)

Learning is a process of interaction between students and educators and learning resources in a learning environment. Educators, in this case the lecturer must understand the nature of the subject matter they teach and understand various learning models that can stimulate the ability of students to learn with careful planning by the educator. However, stimulating students' ability to take part in learning is sometimes not easy. Considering according to (Suwatno, 2009), there are certain obstacles to achieving learning outcomes so that in the end, the learning achievement achieved is below the predetermined minimum completeness standard.

Departing from information sourced from Muhammadiyah Mamuju students, in this case the fourth semester management study program students, which we used as research samples, stated that statistical learning in general still uses the lecture method (conventional). In fact, now the demands of higher education prioritize aspects of knowledge, skills and attitudes. Changes to increase student activity in the classroom and outside the classroom by channeling their knowledge, so that their knowledge is not only theoretical (Rusman, 2011).

The role of using the scientific approach or the scientific approach, which prioritizes the process of learning, where students are directed to look for problem formulations and solve problems. The concept of a scientific approach includes; observe, ask, try, process, present and conclude and create (Madjid, 2014).

The results of research related to the scientific approach, learning motivation and responses to learning outcomes reveal that student learning outcomes after using the scientific approach can make students more active and interactive in delivering the learning material provided, so as to improve learning outcomes. This increase can be seen from the willingness of students to study, where students do not remain silent when given the opportunity to answer questions asked and ask questions when there is material that is not understood. In addition, there is a change in student habits where those who have not previously been able to solve problems on their own, are ashamed to ask and answer questions given by researchers, finally can do better learning activities (Fauziah, 2013).

Based on the background study that has been described above, it can be seen that there is an influence, learning motivation and student response by using the scientific approach to student learning outcomes. This is what motivates researchers to conduct research at STIE Muhammadiyah Mamuju, to see the effect of learning motivation and student responses with a scientific approach to statistical learning outcomes.

## **RESEARCH METHODS**

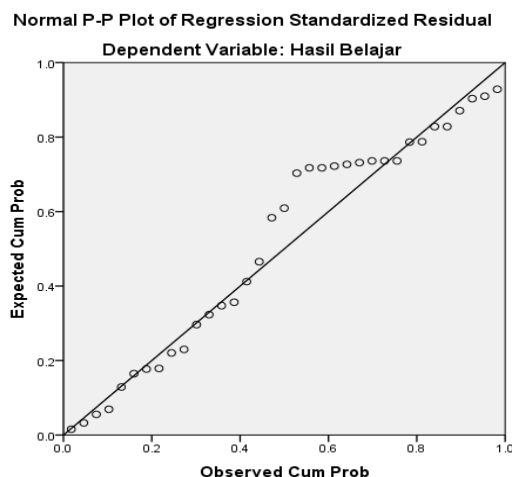
This type of research is ex post facto in the form of multiple linear regression analysis. Combined with experimental research, namely statistical learning through the scientific approach by involving the experimental class and the control class. The variables contained in this study are: The independent variables are learning motivation (X1), and student response (X2). The dependent variable is the statistical learning outcomes (Y). The time for conducting the research was the even semester 2019/2020 academic year. The research site will be carried out at campus II of the Muhammadiyah Mamuju School of Economics, having the address at Jl. Baharuddin Iopa No. 2 Mamuju West Sulawesi.

The instrument used to retrieve data in this study is an instrument that has been tested in advance with various validity tests of instruments such as content validity and construct validity by expert lecturers and then the research instrument will be tested on student groups in the experimental class and class control. The data analysis technique used is descriptive analysis and inferential analysis. Inferential statistical analysis is multiple linear regression

## RESULT AND DISCUSSION

### Result

#### Normality Test Results



#### Heteroscedasticity Assumption Test

Heteroscedasticity occurs when the error or residual of the model being observed does not have a constant variance from one observation to another. This means that each observation has different reliability due to changes in the background conditions not included in the model specifications. Heteroscedasticity tests the difference in residual variance from one observation period to another. How to predict the presence or absence of heteroscedasticity in a model can be seen from the model's Scatterplot image pattern, the analysis can be seen if the data points are spread over and carried over or around the 0 on the y-axis, the data points do not collect only above or below. the distribution of the data points should not form a wavy pattern that widens then narrows and widened again.

The results of multiple linear regression analysis on respondents' responses include independent variables, namely Learning Motivation (X1), Student Response (X2) based on a scientific approach to the dependent variable Learning Outcomes (Y). Based on the results of the coefficient statistical analysis of the Unstandardized Coefficients column part B in the table above, it can be seen that the magnitude of the constant value or  $a = 12.33$  and the coefficient  $b_1 = 1.35$ ,  $b_2 = 0.97$ . So that a multiple linear regression equation can be made between Learning Motivation (X1), student response work (X2) to learning outcomes (Y), namely:  $Y = 12.34 + 0.35X_1 + 0.97X_2 + e$ .

Based on the results of the study, it was found that the  $\text{sig} = 0.000$  by using the significance limit  $\alpha = 0.05$ , it can be seen that the level of  $\text{sig} = 0.000 < \alpha = 0.05$  and  $F_{\text{count}} = 64.87 > F_{\text{table}} 3.28$ . So this means that together there is a significant influence on learning motivation and student response through a scientific approach to learning outcomes.

From the results of the descriptive analysis, it was found that the number of students who completed learning or who achieved individual completeness was 32 out of 35 students or around 91.43%. While the number of students who have not completed is 3 out of 35 students or about 8.57%. While the individual completeness control class consisted of 30 people from 34 students or about 88.23%. This data shows that classical completeness is fulfilled. And the experimental class is better than the control class. Or in other words, the statistical learning outcomes of the experimental class using the scientific approach are better than the control class with the conventional approach.

#### Discussion

The purpose of this study was to find out how much influence the learning motivation and response through the scientific approach to statistical learning outcomes for STIE Muhammadiyah Mamuju students. Through the process of learning statistics 2 with a scientific approach, it is hoped that learning motivation and student response will increase, which in the end will increase learning outcomes. In the

research, the initial plan (proposal) for sampling was 4 classes with a total of 114 students. However, during the implementation of the study, researchers were constrained by the increasing pandemic conditions so that there were limitations on activities on campus. So the researcher decided to take a sample of 2 classes, namely the experimental class as many as 35 students and the control class as many as 34 students.

In this research, students are expected to have curiosity, responsibility, be creative, independent and be able to find solutions to problems at hand. The learning process carried out will experience many obstacles if differences in student characteristics are not considered. Other things that are student characteristics are student intellectual development, level of motivation, response, thinking ability, cognitive style, learning style, etc. Based on preliminary observations, the academic abilities of students in the MJ-4A class of Management Study Program at STIE Muhammadiyah Mamuju vary, consisting of students who have abilities categorized as high, medium and low groups. Based on the students' background knowledge, they have studied the Statistics 1 subject but have never participated in learning with a scientific approach. The researcher then took 2 classes as the sample, namely the experimental class and the control class. After this learning, it is hoped that students can actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data, draw conclusions and communicate concepts, found law or principle.

## **CONCLUSION AND SUGGESTION**

The results of the validation of the research instrument developed have been declared valid by the validator that it has met the validity requirements and is worthy of being tested and The results of the analysis that have been put forward in the discussion show that there is a significant influence both partially and simultaneously between learning motivation and response through the scientific approach to statistical learning outcomes in STIE Muhammadiyah Mamuju students and the learning motivation variable that most dominantly influences statistical learning outcomes.

There was a very long time interval between the research schedule that was supposed to be carried out and the disbursement of funds. Makes us have to carry out research according to the original proposal or plan even though the funds have not been disbursed. And we work on it by using personal funds in advance according to the RAB that was made previously. Because if we wait for the disbursement of new funds to research, then we will be very difficult and not in accordance with our research objectives. Not to mention the Covid19 pandemic period which limited face to face on campus so that the sample taken was 1 experimental class and 1 control class without reducing the essence of our research.

## **REFERENCES**

- Rusman dkk. 2011. Pembelajaran Berbasis Teknologi Informasi dan Komunikasi. Jakarta: Rajawali Pers.
- Madjid, Abdul. 2014. Strategi Pembelajaran. Bandung: PT. Remaja Rosdakarya.
- Sudrajat, N. 2009. Penilaian Hasil Proses Belajar Mengajar. Bandung: PT Remaja Rosdakarya.
- Suwatno. 2009. Mengatasi Kesulitan Belajar Melalui Klinik Pembelajaran. Makalah disampaikan pada Workshop Evaluasi dan Pengembangan Teaching Klinik Bagi Dosen Universitas Negeri Padang.
- Uno, H. B. 2011. Model Pembelajaran. Jakarta: Bumi Aksara.
- Uno, H. B. 2010. Teori Motivasi dan Pengukurannya. Jakarta: Bumi Aksara.
- Fauziah, R., Abdullah, A.G., & Hakim, D.L. 2013. Pembelajaran Sainifik Elektronika Dasar Berorientasi Pembelajaran Berbasis Masalah. Invotec, (online), Vol.IX, No.2 (<http://edu.jurnal.upi.edu> Diakses 01 Agustus 2019).
- M Mukhlisin, F Diantoro. 2019. Pengaruh Pendekatan Sainifik dan Motivasi Belajar Terhadap Hasil Belajar Peserta Didik. Jurnal Penelitian Islam. Vol.13, No.1 (<http://jurnal.iainponorogo.ac.id/index.php/kodifikasia/article/view/1709> Diakses 01 Agustus 2019).
- H Tambunan. 2019. The Effectiveness of The Problem Solving Strategy and the Scientific Approach of Students Mathematical Capabilities in High Order Thinking Skills. International Electronic

- Journal of Mathematics. Vol.14 No.2 P293-302 2019 ( <https://www.iejme.com> diakses 01 August 2019).
- S Saputra, H Prasetyono. 2020. The Effect Of Scientific Approach To The Activity Of Learning Students In SMPN 25 Tangerang City. *Jurnal PAJAR (Pendidikan dan Pengajaran)*. Vol. 4 No.1(<http://dx.doi.org/10.33578/pjr.v4i1.7910> Diakses Juli 2020).
- A. Riska Atika, Ridwan Idris, Andi Ika Prasasti Abrar, Ahmad Farham Majid. 2020. Problem-Based Learning With A Scientific Approach As A Solution To Develop Students' Mathematics Learning Outcomes. *Jurnal Matematika dan Pembelajaran (MAPAN)*. Vol.8 No.1 2020 (<https://doi.org/10.24252/mapan.2020v8n1a4> Diakses Juli 2020).
- R Sabilal. 2019. Pengaruh Penerapan Scientific Approach Berbantuan Penilaian Formatif Terhadap Motivasi Belajar Dan Hasil Belajar Fisika Siswa Kelas Xi Pada Materi Elastisitas. Disertasi dan Tesis Program Pascasarjana UM. (<http://karya-ilmiah.um.ac.id/index.php/disertasi/article/view/81512>)
- Febriana, Nurul Fitria. 2015. Pendekatan Sainifik terhadap Menulis Deskripsi Anak Kesulitan Menulis (Disgrafia). *Jurnal Pendidikan Khusus*. Vol. 1 No.1
- Machin. 2014. Implementasi Pendekatan Sainifik, Penanaman Karakter Dan Konservasi Pada Pembelajaran Materi Pertumbuhan. *Jurnal Pendidikan IPA Indonesia*, (online), Vol. 3, No.1 (<http://www.journal.unnes.ac.id/nju> Diakses 1 Agustus 2019).
- Nafi'ah, I. Prasetyo. 2015. Analisis Kebiasaan Berpikir Kritis Siswa Saat Pembelajaran IPA Kurikulum 2013 Berpendekatan Scientific. *Unnes Journal of Biology Education* (online), Vol. 4, No.1 (<http://www.journal.unnes.ac.id> Diakses 2 Agustus 2019).
- Ting, K. L. Siew, N.M. 2014. Effects of Outdoor School Ground Lessons on Students Science Process Skills and Scientific Curiosity. *Journal of Education and Learning*, (online), Vol.3, No.3 163 | Vol 1 No 2, Maret 2018 (<http://www.ccsenet.org/journal> Diakses 3 Agustus 2019).
- Daryanto. 2014. Pendekatan Pembelajaran Sainifik Kurikulum 2013. Yogyakarta: Gava Media.
- Said, I.M., Sutadji., M., & Sudandi, M. 2016. The Scientific Approach-Based Cooperative Learning Tool for Vocational Students Vocation Program of Autotronic (Automotive Electronic) Engineering. *Journal of Research & Method in Education (IOSR-JRME)*, (online), Vol.6, No.3 (<http://www.iosrjournals.org> Diakses 3 Agustus 2019).
- Santrock, J.W. 2013. Psikologi Pendidikan. Jakarta: Kencana.
- Slavin, R.E. 2010. Cooperative Learning: Teori, Riset, and Praktik (Terjemahan dari Cooperative Learning: Theory, Research, dan Practice. Bustin: Allyn and Bacon). Bandung: Nusa Media.
- Syafiuddin., Hala., Y, dan Danial., M. 2017. Pengembangan Perangkat Pembelajaran Biologi Berbasis Pendekatan Sainifik Peserta Didik MAN Dampang Bantaeng. *Jurnal Bionature*, (online),. Vol. 17, No. 1 (<http://www.ojs.unm.ac.id/index.php> Diakses 4 Agustus 2019).
- Wiemann, C., & Giber, S. 2015. Taking a Scientific Approach to Science Education, Part I-Research. *Microbe* (online), Vol. 10, No.4 (<http://www.cwsei.ubc.ca> Diakses 4 Agustus 2019).
- Wijayanti. 2014. Pengembangan Autentic Assesment Berbasis Proyek Dengan Pendekatan Sainifik Untuk Meningkatkan Keterampilan Berpikir Ilmiah Mahasiswa. *Jurnal Pendidikan IPA Indonesia*, (online), Vol.3, No.2 (<http://www.journal.unnes.ac.id/nju> Diakses 5 Agustus 2019)
- Sardiman, A.M. 2010. Interaksi dan Motivasi Belajar Mengajar. Jakarta: Rajawali Pers.
- Aritonang, K. T. 2008. Minat & Motivasi dalam Meningkatkan Hasil Belajar. *Jurnal Pendidikan Penabur*, (online), No.3, ([http:// bpkpenabur.or.id/](http://bpkpenabur.or.id/) Diakses 05 Agustus 2019).
- Dimiyati & Mudjiono. 2006. Belajar dan Pembelajaran. Jakarta: Rineka Cipta
- Hamdu, G., & Agustina, L. 2011. Pengaruh Motivasi Belajar Siswa Terhadap Pesta Belajar Purwa Atmaja Prawira. 2012. Psikologi Pendidikan dalam Perspektif Baru. Jogjakarta: ArRuzz Media.
- Soemanto. 2015. Psikologi Pendidikan. Jakarta : Rineka Cipta
- Kartini Kartono dan Dali Gulo, Kamus Psikologi, (Bandung: Pionor Jaya, 2003), hal. 419
- Kosasih, E. 2014. Strategi Belajar dan Pembelajaran Implementasi Kurikulum 2013. Bandung: Yrama Widya.
- Sudjana, N. 2009. Penilaian Hasil Proses Belajar Mengajar. Bandung: PT Remaja Rosdakarya.
- Wasty. S. 2010. Penilaian Hasil Belajar Mengajar. Bandung: PT Remaja Rosdakarya.
- Tiro, M.A. 2015. Analisis Korelasi dan Regresi. Makassar: Andira Publisher.
- Sugiyono. 2013. Metode Penelitian Pendidikan. Bandung: Alfabeta.
- Sudijono, A. 2010. Statistik Pendidikan. Jakarta: Raja Grafindo Persada.