

Self-efficacy and academic performance of vocational high school students

Efikasi diri dan performansi akademik siswa sekolah menengah Kejuruan

Fauzul Adim Ubaidillah^{1*}, Saifullah², Ahmad Rusli Hitomi³, Sefa Bulut⁴

¹ Universitas Ibrahimy, Situbondo

⁴ Ibn Haldun University Istanbul, Turkey

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Abstract: The aim of this research is to examine the role of self-efficacy on academic performance of Vocational High School students. This research uses a quantitative approach with a correlational research design. The participants of this research are at 115 students of the Vocational High School, Department of Electrical and Industrial Engineering who were obtained based on convenience sampling technique. The data analysis is used by regression analysis with Jeffrey's Amazing Statistics Program (JASP). The result of this research indicated that self-efficacy has a significant role on academic performance.

Keywords: self-efficacy; academic performance; student



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Introduction

In carrying out education at the tertiary level, there are various kinds of educational strategies carried out by each university with the aim of improving the quality of the quality of its graduate students. One of the educational strategies that can be implemented is by holding a double degree program for students. With the double degree program, it is possible for students to obtain a double degree at the same time in two different study programs. One of the universities that has this program is Merdeka University Malang.

Education according to Law Number 20 of 2003 is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character and the skills needed by them, society, nation and state. Education is one of the efforts to improve the quality of life and human welfare in order to advance the development of the nation and state (Rifa Hanifa Mardhiyah et al., 2021). The role of education in forming educated people is carried out through a process of developing self-potential so that the abilities possessed by educated people can become a means of understanding the environment, adaptation efforts and participation in change and have a predictive and anticipatory orientation (Lestari & Maulani, 2021). Vocational education is a type of secondary level education in Indonesia which aims to prepare students to work in certain fields and also

^{1*} Corresponding Author: Fauzul Adim Ubaidillah, email: fauzul.fishum@gmail.com, Universitas Ibrahimy, Situbondo, Jl. KHR. Banyuputih, Kabupaten Situbondo, Jawa Timur 68374

to continue to a higher level of education. Hermina (2022), defines vocational education as a teaching and learning process activity that prepares students to be able to work professionally in certain fields.

Vocational education as a type of education that focuses on teaching and the educational process on preparing graduates to be able to apply their expertise in the world of work requires that each student has good academic performance in accordance with their field (Arifin, 2016). In addition, academic performance is also related to the success or failure of students in studying at school. The results of research from Adenke & Oyesoji (2010) and Akomolafe et al., (2013), show that students who have low academic performance have a high failure rate in studying at school. Academic performance is a series of individual activities in carrying out academic tasks (APA Dict. Psychol. (2nd Ed.) ., (2016)). According to Bhagat (2013), academic performance is the result of the learning and teaching process in an educational institution that involves students and teachers in an effort to achieve educational and learning goals.

The results of research from Richardson et al., (2012) state that academic performance is affected by five aspects, namely: (1) personality traits; includes five personality traits, especially conscientiousness; (2) motivational factors; includes measurable aspects of motivation such as academic self-efficacy, locus of control, extrinsic and intrinsic academic motivation; (3) self-regulatory learning strategies; relating to individual strategies in managing motivation, cognition, emotion, time management and concentration in learning; (4) students approaches to learning; includes cognitive strategies in doing academic tasks such as memorizing and practicing; (5) psychosocial contextual influence; includes individual characteristics and experiences, individual social interactions with the academic system. Pintrich (Fun, 2021) is the main motivational variable in explaining social, contextual, motivational and cognitive interactions that affect academic performance such as exam results or final course results and Grade Point Average (GPA). Self-efficacy is one of the factors that contribute to students' academic performance. Self-efficacy is an individual's belief in his own ability to do something effectively (Nagayama Hall, 2021). Research results from Agustiani et al., (2016), Akram & Ghazanfar (2014), Bulent (2015), Maropamabi, (nd), Akomolafe et al., (2013), Shkullaku (2013), and Stajkovic et al., (2018), shows that self-efficacy has a role in improving academic performance. This study aims to examine the role of self-efficacy on the academic performance of Vocational High School (SMK) students.

Method

This research is a quantitative research with a correlational design. According to John & Timothy (2021), the use of a correlational design aims to explain the relationship or linkages between variables without any control or manipulation by researchers of these variables. This study examines the role of self-efficacy on the academic performance of vocational students majoring in electrical and industrial engineering. The participants of this study were 115 students of SMK 3 Bondowoso majoring in electrical and industrial engineering who were obtained through the convenience sampling technique.

The instruments used in this research are the self-efficacy scale and the academic performance scale. The self-efficacy scale consists of 30 items which were compiled by the researcher based on the self-efficacy aspects of Bandura (1977), namely: Magnitude, Generality and Strength. Examples of self-efficacy scale items: "I believe that I am able to complete the final school exams well." Academic performance is measured using an academic performance scale adapted from the Academic Performance Scale from Cassidy & Eachus (2000), which consists of 32 items. An example of an academic performance scale item: "I understand the characteristics and uses of semiconductor components." The results of the scale reliability test showed a reliability value of the self-efficacy scale of 0.948 and an academic performance scale of 0.966. Data analysis in this study used a simple linear regression test with the help of Jeffrey's Amazing Statistics Program (JASP) version 16.4.

Result

The participants of this study were 115 students of SMK 3 Bondowoso majoring in electrical and industrial engineering with an age range of 15 to 17 years. The average age of the participants was 16.34 years. The characteristics of the participants can be seen in table 1

Table 1
Characteristics of Participants

Characteristics of Participants	Total (N = 367)
Age (years)	
Means (SD)	16.34 (0.78)
mode (SD)	17.00 (0.78)
range	15 – 17
Gender, n (%)	
Man	70 (60.87%)
Woman	45 (39.13%)

The results of the descriptive analysis show that the general characteristics of self-efficacy and academic performance of SMK students majoring in electrical and industrial engineering include the mean, median, mode, standard deviation, minimum and maximum values. The results of the descriptive analysis can be seen in table 2.

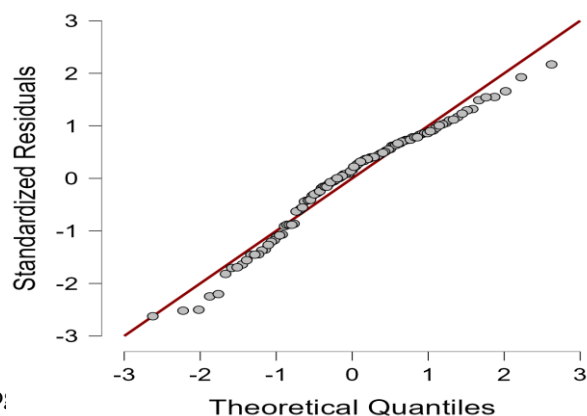
The assumption test in this study consisted of a normality test, heteroscedasticity test and linearity test. The normality test was carried out by looking at the QQ Plot image. *The standardized residuals* in the QQ Plot are along the diagonal line, which means that the normality assumptions in this study are met. QQ Plot can be seen in Figure 1

Table 2
Descriptive Analysis Results

	Self Efficacy	Academic Performance
Means	74.68	105.43
Median	73.00	117.00
mode	69.00	125.00
std. Deviation	15.03	26.07
Minimum	30.00	32.00
Maximum	105.00	134.00

Figure 1

Theoretical QQ Plot



The heteroscedasticity test shown in Figure 2 shows the distribution of residuals spread randomly and evenly around the baseline line (red line), which means that the assumption of heteroscedasticity in this study is fulfilled.

Figure 2

Heteroscedasticity Test Results

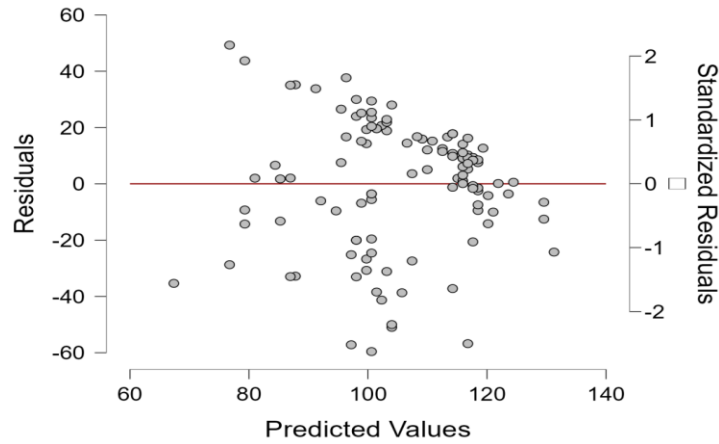
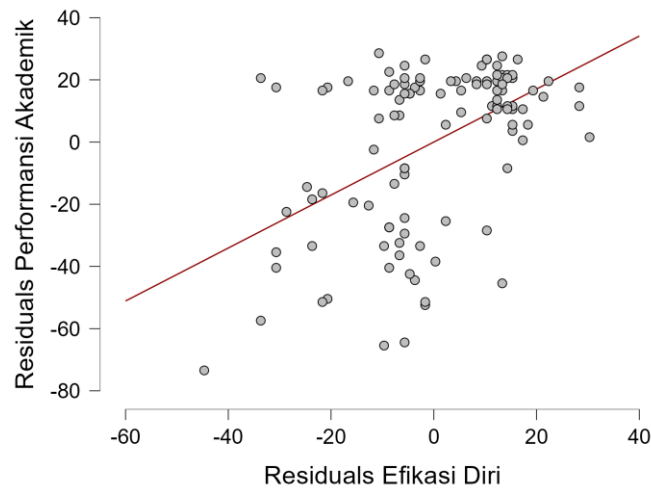


Figure *partial regression plot* of self-efficacy and academic performance forms a straight line, which means there is a linear relationship between self-efficacy and academic performance. Figure *partial regression plot* can be seen in Figure 3.

Figure 3

Partial Plot Regression



Linear Regression Test Results using The results of the ANOVA test in table 2 show that the F value is 35.91 with a significance level of less than 0.01 ($F = 35.91; p < 0.01$). These results show that self-efficacy in the regression model is significantly able to predict academic performance. The *R Square* value (R^2) in table 3 is 0.24 indicating 0.24 or 24% of the academic performance variance can be explained by self-efficacy.

Table 2

ANOVA Test Results

H ₁	Regression	18685.76	1	18685.76	35.91	< .001
	residual	58792.50	113	520.29		
	Total	77478.26	114			

Note. The intercept model is omitted, as no meaningful information can be shown

Table 3*Model Summary - Academic Performance*

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.00	0.00	0.00	26.07
H ₁	0.49	0.24	0.23	22.81

Discussion

The results of the regression analysis show that self-efficacy has a very significant role in academic performance. The results of this study indicate that students with a high level of self-efficacy tend to have better academic performance compared to students who have a low level of self-efficacy. This is in line with several previous studies including research from (Ahmad & Safaria, 2013; Akomolafe et al., 2013; Alegre, 2014; Alhadabi & Karpinski, 2020; Dogan, 2015; Talsma et al., 2018), which states that the efficacy Self has a role in improving academic performance.

Self-efficacy affects the selection of types of activities that students will do at school. Students with low self-efficacy in the learning process tend to avoid many tasks, especially academic assignments that are difficult to do. Meanwhile, students with high self-efficacy tend to be enthusiastic when doing assignments. Students with high self-efficacy are more consistent in trying to do assignments compared to students with low levels of self-efficacy (Wentzel & Miele, 2016). Self-efficacy is a psychological aspect needed by students in carrying out academic tasks, especially academic assignments in exact fields such as electrical and industrial engineering majors. The results of research from Ducay & Alave (2021), state that self-efficacy is a factor that plays a significant role in students' academic performance in mathematics.

Bandura (in Yamamoto, 2004) states that there are four sources of self-efficacy which include: (1) *mastery experience*, related to individual experiences of individual success and failure in the past which can be used as a source of information to increase individual self-efficacy; (2) *physiological arousal*, related to individual enthusiasm when doing tasks and facing challenges in the process of doing tasks; (3) *vicarious experience*, is the experience or success of other people in carrying out tasks or achieving goals that can be used as a reference by individuals in carrying out tasks or achieving goals and (4) *social persuasion* in the form of encouragement, criticism and suggestions as well as guidance from other people.

Stipek (in Santrock, 2018) states that there are six ways to develop students' self-efficacy, namely: (1) teaching students specific strategies that can help students improve their ability to focus on doing their assignments; (2) guide students in determining long-term and short-term goals to be achieved by students and teach students to assess each progress in an effort to achieve these goals; (3) discussing students' mastery of a certain material and giving appreciation when the student is able to master a certain material; (4) combine and align training with student goal setting in the academic field; (5) teachers, parents and peers provide positive support for students, especially when these students experience difficulties; (6) helping students to have confidence in their cognitive abilities.

Simpulan

This study examines the role of self-efficacy on the academic performance of vocational high school (SMK) students. The results of this study indicate that self-efficacy has a significant role in students' academic performance. Improving students' academic performance at school can be done by developing students' self-efficacy. The limitation of this study is that there is no comparison between the results of measuring academic performance using a scale and the results of measuring academic performance using tests or report card scores. In addition, the sampling technique uses convenience sampling which allows the research sample obtained does not represent the condition of the population. Suggestions for future researchers are to develop this research to

be more varied by examining other factors that can play a role in improving student academic performance. Suggestions for the school are expected to provide training for students in developing self-efficacy so that they are able to achieve maximum academic performance.

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