



The Effect of The Pandemic on The Learning Outcomes of Vocational High School Students: In Terms of Perception, Learning Readiness, and Stress Level

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ARTICLE INFO

Article history:

Received October 02, 2023

Accepted March 22, 2023

Available online April 25, 2023

Kata Kunci:

Era New Normal, Kesiapan Belajar, Persepsi, Tingkat Stres

Keywords:

Learning Readiness, Pandemic, Perception, Stress Level



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ABSTRAK

Selama pandemi, pemerintah menerapkan mode pembelajaran daring. Namun ada ketidaksiapan pihak sekolah dalam mengelola model pembelajaran ini, sehingga kompetensi siswa tidak berkembang. Penelitian ini bertujuan untuk menganalisis pengaruh persepsi siswa, kesiapan belajar, dan tingkat stres terhadap hasil belajar di masa pandemi. Pendekatan penelitian yang digunakan adalah kuantitatif dengan desain survey dan korelasional. Teknik pengambilan sampel menggunakan random sampling dengan jumlah sampel 149 siswa SMK. Selanjutnya, angket dan nilai siswa digunakan untuk pengumpulan data. Teknik analisis data dilakukan dengan menggunakan kategorisasi berdasarkan teori Azwar. Hasil penelitian menunjukkan bahwa persepsi, kesiapan belajar, dan tingkat stres siswa berpengaruh signifikan terhadap hasil belajar. Peran guru perlu memperbaiki pola pembelajaran; sehingga pembelajaran lebih menarik dan menjalin komunikasi yang baik dengan siswa. Orang tua harus menyediakan tempat belajar yang kondusif. Sementara di masa pandemi, guru perlu memperhatikan dalam pemberian tugas, sehingga tidak membuat siswa kewalahan dan tertekan. Implikasinya adalah guru harus merancang pembelajaran yang lebih inovatif agar siswa antusias. Oleh karena itu, inovasi pembelajaran praktis penting untuk dikembangkan lebih lanjut.

ABSTRACT

During the pandemic, the government implemented an online mode of learning. However, there is an unpreparedness of the school in managing this mode of learning, therefore student competence does not develop. This study aims to analyses the effect of student perceptions, learning readiness, and stress levels on learning outcomes during the pandemic. The research approach used is quantitative with a survey and correlational design. Random sampling technique was used with a total sample of 149 of Vocational High School students. Furthermore, questionnaires and student scores were used for data collection. The data analysis technique is carried out using categorization based on Azwar's theory. The results showed that student' perceptions, readiness to learn, and stress levels had a significant effect on learning outcomes. The role of teacher needs to improve learning patterns; therefore learning is more interesting and establishes good communication with students. Parents must provide a conducive learning place. Meanwhile during the pandemic, teachers need to pay attention in giving assignments, therefore this does not make students overwhelmed and depressed. The implication is that teachers must design more innovative learning so that students are enthusiastic. Therefore, practical learning innovations are important to be developed further.

1. INTRODUCTION

Dealing with the unforeseen challenges caused by the COVID-19 pandemic has taken a significant toll on people all across the world and Indonesia is one of the countries affected by this outbreak (Liang et al., 2022; Surahman et al., 2022; Tasya, 2021). The government understanding that it is difficult to provide a quick solution to this problem implemented a new normal policy. The COVID-19 pandemic has caused a significant impact on various aspects of human life (Kiyota, 2022; Mohammadzadeh et al., 2022), such as education (Aristovnik et al., 2020; Pal et al., 2021). The solution provided for supporting the teaching and learning process during this pandemic is the online distance study (Goudeau et al., 2021; Rahmanti et al., 2021). During the pandemic, the government has implemented distance learning, an online mode of learning at all levels. This policy changes in the perspective and behavior of teachers and students in education. Many dimensions are essential to review, including the readiness of teachers and students in the learning process, infrastructure readiness, parental support, perceptions of students and teachers, and the determination of student learning outcomes (Prestiadi, 2020; Sadikin & Hamidah, 2020).

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Based on preliminary research on online learning, several important facts were identified: students' perceptions of online learning were less attractive, teachers were confused about carrying out their duties, parents did not know their role, and the government was ambiguous in making decisions. This research is focused on students' perceptions of online learning during a pandemic. This perception is essential to reveal because it impacts learning readiness and student stress levels. Through initial observations, several facts were identified for further investigation: the perceptions of students who seemed disinterested in learning online. Students enjoy learning online, but there is a lack of clarity on concepts and procedures, inconsistent schedules, stress due to a significant learning load, and minimal feedback. With the establishment of online learning in this new normal era, many people believed that it is less effective. This is due to two main factors, such as student data quotas which are considered financially burdensome and unstable networks in certain areas. Therefore, some students' access has become intermittent hence the teaching and learning process is disrupted (Bączek et al., 2021; Nuryati et al., 2021). Educators are required to acquire the new skill of teaching in digital media (Fansury et al., 2020; Reyna et al., 2018). Teachers should be able to adapt quickly and work hard in preparing online learning materials. Meanwhile, in the change of learning patterns, students do not feel hampered by operational technical constraints (Chandrasiri & Weerakoon, 2022; Sato et al., 2022). Another obstacle for students is a lack of self-discipline and a less supportive learning environment at home (Bao, 2020; Chandrasiri & Weerakoon, 2022).

Moreover, during the COVID-19 pandemic, some changes also occur in the social environment of students. The pandemic makes it difficult for students to socialize and play with their friends hence their activities are more limited (Y. Kim & Yang, 2022; Ravindran et al., 2020). The loneliness level of adolescents which then has an impact on their stress level increases quite significantly during the pandemic (Bartone et al., 2022; Nasir et al., 2021). The large school workload during online learning and poor network connections for those living in villages increase their stress levels, because they are worried about their academic performance. This increasing stress levels, threatens the teaching and learning process and students' emotional health (Camacho-Zuñiga et al., 2021; Fernández-Batanero et al., 2021).

Based on preliminary research, the pandemic condition has caused a profound impact on the educational system which is now conducted online with many obstacles encountered. The existing obstacles and problems are experienced by several parties, such as students. To determine the effect of learning in this new normal era on students' academic performance, it is suggested to conduct a relative research. Therefore, this research aims to analyses the effect of the new normal era on the academic performance of vocational high school students in terms of perception, learning readiness, and stress levels.

2. METHOD

This type of research used a descriptive and quantitative approach. Data description was carried out through a survey method with a correlational approach. This approach was chosen because the data is obtained in the form of numbers, starting from data collection, data interpretation, and results display. Respondents in this study were Vocational High School students in Center of Java who studied during the pandemic. Respondents were determined by random sampling technique. One class was selected from each school as the subject hence the total population was 238. Sampling was carried out using the Slovin formula with an error tolerance value (e) of 5% and the total number of samples is approximately 149 people. Furthermore, the sampling method for each school was carried out using a proportional stratified random sampling technique, although the existing population is not homogeneous and has proportional strata. The samples of students from each partner school were taken randomly with the same portion. Therefore, the results of student subjects per school in Table 1.

Table 1. Sample Calculation Per School

Vocational High School	Population	Sample
State Vocational High School 2 Surakarta	36	22
State Vocational High School 5 Surakarta	36	23
State Vocational High School 2 Sukoharjo	32	20
State Vocational High School 4 Sukoharjo	32	20
State Vocational High School 1 Gesi	33	21
State Vocational High School 1 Sambirejo	34	21
State Vocational High School 1 Plupuh	35	22
Total	238	149

The results are rounded up to obtain the same total as the calculation using the Slovin formula, which is 149 students. After calculating the subject, the preparation of the instrument is carried out. In this research, data collection techniques are carried out using students' leger grades and a questionnaire. Leger grades are a list of students' original grades before being printed on the report card. This value is used as a benchmark for academic performance. Meanwhile, a questionnaire is a collection of questions or statements given to respondents which are usually related to facts or opinions as well as attitudes or preferences toward some elements (Hughes et al., 2023).

The questionnaire is used to measure the variables of perception, learning readiness, and stress level. Questionnaire development is carried out with the dimensions of each variable. The perception variable is measured based on the cognitive, affective, and conative dimensions from the theory of Rosenberg and Hovland. The readiness variable is measured based on the dimensions of self-management of learning and comfort with e-learning (Mustika & Royanto, 2021). Meanwhile, the stress level variable is measured based on the dimensions of feeling of unpredictability, uncontrollability, and overloading (Fajri,S.I.R. & Eryani, 2021). The questionnaire grid is presented in Tables 3, Table 4, and Table 5.

Table 2. Perception Variable Grid

No	Dimension	Indicator	Item Number
1	Cognitive (Knowledge)	Students' knowledge and understanding of the new normal policy	1,2
2	Affective (Attitude)	Students' knowledge about online learning	3,4
		Students' assessment of online learning policy	5,6
3	Conative (Behaviour)	Students' assessment of the application of online learning	7,8
		Students' desire to stay active in online learning	9,10
		Students' desire to continue to support online learning	11,12
Total			12

Table 3. Learning Readiness Variable Grid

No	Dimension	Indicator	Item Number
1	Self-Management of Learning	Students' readiness in motivating/promoting themselves to learn independently	13,14
		Students' readiness in controlling themselves to learn independently	15,16
		Students' readiness in developing themselves to learn independently	17,18
2	Comfort With E-Learning	Students' readiness and environment in accessing the internet	19,20
		Readiness of students' support devices in accessing the internet	21,22
Total			10

Table 4. Stress Level Variable Grid

No	Dimension	Indicator	Item Number
1	Feeling of Unpredictability (helplessness/desperation)	Students' feelings about the COVID-19 pandemic and the new normal policy	23,24
2	Feeling of Uncontrollability (Unable to control feelings)	Students' emotional control attitude towards the new normal and online learning policies	25,26
3	Feeling of Overloaded (Pressured)	Students' attitude towards the pressure of online learning policy	27,28
		Students' attitude towards the pressure of online learning teaching patterns	29,30
Total			8

Among the 30 questions, validation and reliability tests were carried out using the SPSS application on 60 students. The results showed that 8 items were invalid, namely questions number 2, 5,

9, 11, 15, 21, 24, and 25. By considering each indicator that is deemed to still have at least one question representing it, the decision made is to remove the invalid items. The reliability test results showed that Cronbach's Alpha value is 0.739. The data analysis technique is carried out using categorization based on Azwar's theory. Categorization aims to simplify the data processing by placing individuals into separate groups in stages according to a continuum based on the measured attributes. After the categorization, the data is processed using the SPSS application to perform prerequisite and hypothesis tests. The prerequisite test is carried out to ensure that the data held are valid and the hypothesis test is carried out to ascertain the effect of the dependent on the independent variable. The prerequisite test is carried out using normality, linearity, multicollinearity, and heteroscedasticity tests. Meanwhile, hypothesis testing is carried out using multiple linear regression analysis, T-test, F-test, and coefficient of determination.

3. RESULT AND DISCUSSION

Result

This data description is carried out by categorizing each variable, such as perception, learning readiness, stress level, and academic performance. Categorization is performed by dividing the data into three parts, namely low, moderate, and high according to Azwar's theory. The scale used is 1 – 5, from each question. The categorization reference for each variable is obtained depending on the number of questions. Meanwhile, for the learning outcome variable, because the score used is the students' leger grades, the range is 1 - 100. Based on the results, the majority of students have a perception in the moderate category which tends to be high, which means they do not pay attention to learning in the new normal era. The majority of students have learning readiness in the moderate category and tend to be high, which means a growing interest in online study. The majority have a stress level in the moderate category which tends to be high in the implementation of learning in the new normal era. This means that students feel quite pressured with online learning. However, the majority have academic performance in the moderate category.

Before carrying out the regression test, it is necessary to do a prerequisite test. Prerequisite tests carried out are normality test, linearity test, multicollinearity test, and heteroscedasticity test. The normality test is carried out using the Kolmogorov Smirnov method. Based on the Kolmogorov Smirnov table above, the significance value obtained is 0.576. This means that the significance value is > 0.05, hence it is stated that the existing data is normally distributed. The linearity test results are shown in the ANOVA table in the Deviation from Linearity section and the probability value is 0.904. The probability value is > 0.05 hence it is said that there is a linear relationship between the variables X and Y. The multicollinearity test is carried out by observing the tolerance value or VIF in the coefficients table. Based on the coefficients table above, the tolerance value of X1, X2, and X3 is 0.722 > 0.10, 0.683 > 0.10, and 0.767 > 0.10. While the VIF value of X1, X2, and X3 is 1.386 < 10, 1.465 < 10, and 1.303 < 10, respectively. Therefore, it is said that there is no multicollinearity symptom. The heteroscedasticity test is carried out using the glejser test. The p-value of X1, X2, and X3 is 0.737 > 0.05, 0.063 > 0.05, and 0.126 > 0.05, respectively. Therefore, it is said that the data do not experience heteroscedasticity symptom. This analysis is used to ascertain the correlation between students' perception (X₁), learning readiness (X₂), and stress level (X₃) on the study outcomes in the new normal era (Y). The analysis is described by the equation $Y = a + b_1X_1 + b_2X_2 + b_3X_3$. The constant values for each variable are obtained in the coefficients table as show in Table 5. In the Unstandardized Coefficients column B, the values are entered into the multiple linear regression equation. The T-test aims to determine the effect of each independent on the dependent variable. This test is carried out by observing the significance value in the coefficients table. When the Sig. value is <0.05, Ho is rejected and Ha is accepted, which means that the independent variable has an effect on the dependent and vice versa. Result if T-test is show in Table 6.

Table 5. Result for Multiple Linier Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	72.396	2.311		31.324	0.00
1 Perception	0.315	0.056	0.255	5.603	0.00
Learning Readiness	0.396	0.052	0.355	7.575	0.00
Stress Level	-0.619	0.055	-0.498	-11.275	0.00

Table 6. Result of T-test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
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Learning Readiness	0.396	0.052	0.355	7.575	0.00
Stress Level	-0.619	0.055	-0.498	-11.275	0.00

Based on the coefficients table above, the three variables X have a Sig. value of less than 0.05. Therefore, it is stated that the variables X have a partial effect on that of Y. The F-test aims to determine the effect of all independent on the dependent variable. This test is carried out by observing the significance value in the ANOVA table. When the Sig. value is < 0.05, Ho is rejected and Ha is accepted, which means that all independent variables have an effect on the dependent and vice versa. Result of F-test is show in Table 7.

Table 7. Result of F-test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2971.967	3	990.656	174.245	.000
	Residual	824.384	145	5.685		
	Total	3796.351	148			

Based on the ANOVA as show in Table 7, the significance value is 0.000, which is < 0.05. Therefore, it is stated that Ho is rejected and Ha is accepted, which means that all independent variables (X₁, X₂, and X₃) have an effect on the dependent (Y). The coefficient of determination is used to ascertain the magnitude of the effect of the independent on the dependent variable. Based on the analysis data, the R square value is 0.783 or 78.3%. This means that the effect of the independent on the dependent variable is 78.3%.

Discussion

Based on data analysis, the majority of students have a perception about learning in the new normal era in the moderate category. This means that students do not pay attention to online learning during this pandemic. However, 10.7% of them have a perception in the low category and do not support this idea. While 6.7% have a perception in the high category by supporting online learning during the pandemic. This is similar to previous study who stated that the perception of students at State Senior High School 1 East Bintan is in the moderate category (Komarudin & Prabowo, 2020).

This perception is caused by students feeling that learning in the new normal era seems boring and difficult to be understood, hence some have a bad perception. This is in line with previous study who stated that students feel that learning in the new normal era is less interesting and difficult to be understood (Ogolodom et al., 2022). In the hypothesis test, the significance value obtained from the T-test is 0.000, which is smaller than 0.05 hence, Ho is rejected and Ha is accepted, and the constant value is 0.315. This means that perception has an effect on academic performance with a positive correlation of 0.315. This is in line with previous research which proved that the perception of students had an effect on their academic performance (Evendi et al., 2021). Therefore, it is stated that the perception of vocational high school students about learning in the new normal era has an effect on their outcomes.

The hypothesis test results indicate that the T-test's significant value is 0.000 (less than 0.05), so Ho is rejected, and Ha is accepted. The constant value is 0.315. It shows that there is an effect of perception on learning outcomes with a positive correlation of 0.315. This is in line with previous study, which proves that there is an influence on student perceptions of learning outcomes when studying with an online system (Wei et al., 2021). Thus, it can be concluded that vocational students' perception of learning in the new normal era influences learning outcomes.

Based on data analysis, students' learning readiness in the new normal era is in the moderate category. This means that the majority feel quite ready to undergo this online learning. However, 32.9% of students have learning readiness in the high category which means they have the willingness to undergo online study. While 4% have learning readiness in the low category which means they are not willing to undergo online study. Previous research also stated that the learning readiness of vocational high school students in the new normal era is at a moderate level, because several factors are causing hindrance

(Noviansyah & Mujiono, 2021). These obstacles include students having difficulty concentrating due to the unsupportive learning environment at home and the lack of an internet network connection.

According to previous study students' learning readiness greatly influences their outcomes hence a hypothesis test is carried out (Guo & Wan, 2022). In the hypothesis test, the significance value obtained from the T-test is 0.000, which is smaller than 0.05 hence H_0 is rejected and H_a is accepted and the constant value is 0.396. This means that learning readiness has an effect on outcomes with a positive correlation of 0.396. This is in line with other study who proved that learning readiness has an effect on outcomes (Ningsih, 2020). Therefore, it is stated that the readiness of vocational high school students for learning in the new normal era has an effect on their outcomes.

Based on data analysis, the majority of students have a stress level on learning in the new normal era in the moderate category. This result is in line with previous study who explained that students experience an increase in their stress level in the new normal era, even though it does not interfere with the learning process (Pfeifer et al., 2022). Meanwhile, about 43.6% of students have a stress level in the high category which means they experienced pressure in learning. While 4% have a stress level in the low category which means students are satisfied and did not experience pressure.

Stress is a mental health problem that has increased during the pandemic. Students' stress level increases during learning in the new normal era, and they experienced pressure due to a lot of homework and monotonous study methods stated that another factor that makes students experience pressure is the short period of time given to work on assignments and the lack of understanding of the materia (Adegboye et al., 2021; Black Thomas, 2022; Farris et al., 2021). According to previous study pressure is also experienced in the process of achieving academic excellent, even though they do not understand the material taught during online learning (Khawar et al., 2021; Oktawirawan, 2020).

In the hypothesis test, the significance value obtained from the T-test is 0.000 smaller than 0.05, hence H_0 is rejected and H_a is accepted and the constant is -0.619. This means that stress level has an effect on academic performance with a negative correlation of 0.619 (S. H. Kim & Park, 2021). Therefore, it is stated that the stress level of vocational high school students, obtained from learning in the new normal era has an effect on their study outcomes.

Based on the discussion, students' perception, learning readiness, and stress level are considered to have an effect on their academic performance, both partially as evidenced by the T-test and as a whole as indicated by the F-test. The effect of the three variables on the academic performance is 78.3%. When the range of the effect is 0% - 100% simultaneously, the impact of X variable on Y is in the high category. Based on the research data, several interesting facts were obtained. Online learning has a positive impact on student learning outcomes. Even though learning is not used online, it is proven that student learning outcomes tend to be stable. They can master the key competencies of each teaching material. The habits of millennial children in operating gadgets can support learning activities through online mode.

The implication of this study is build the implementation of online learning. Among the three influencing factors, stress level is the strongest. This is supported by several studies on the impact caused by stress. Furthermore, stress affects human life in many ways. Stress also disturbs sleep, affects mood, and makes you sick. But more importantly, it damages the brain. Parental support in the form of motivation, assistance, and fulfillment of internet facilities is needed. Furthermore, teacher innovation in packaging learning can reduce student stress levels. Meanwhile, education for parents in online learning is very necessary. Teacher innovation in managing online classes is important to improve.

4. CONCLUSION

In this study, we analyzed the impact of students' perceptions, readiness to learn, and stress levels during the pandemic as seen from their learning outcomes as benchmarks. The majority of students from 7 SMKs around Solo Raya already have good technology skills so they don't have any problems with online learning during the pandemic. In addition, the majority of students also did not object to online learning, although some students did not support it because online learning was considered boring and monotonous. The pressure of online learning is also considered heavier than face-to-face learning. Because in online learning students have a lot of homework compared to face-to-face learning. Thus, online learning is considered to work well in Indonesia if teachers provide learning variations and reduce homework assignments.

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