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The Influence of Psychological Impact of Online Learning during Covid-19 on Student's Academic Achievement: A Case Study at Vocational Higher Education

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Original Article

The Influence of Psychological Impact of Online Learning during Covid-19 on Student's Academic Achievement: A Case Study at Vocational Higher Education

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Abstract. This study aimed to determine the influence of psychological impact that consist of depression, anxiety, and stress in students due to online learning in vocational higher education conducted during the Corona virus disease 2019 (COVID-19) on student's academic achievement. The samples in this study were 180 students of the Undergraduate Program Department of Commercial Administration of Politeknik Negeri Bengkalis. The Samples were taken using the purposive sampling technique focused solely on students who gained online learning in theory and practice courses since the use of online learning because of the COVID-19. The Data was collected using a DASS 42 instrument through online questionnaire. The results of this study showed that the psychological impact of depression, anxiety, and stress experienced by students because online learning does not have a partial significant effect but simultaneously affects academic achievement. Psychological impact contributed only 5.7% while the remaining 94.3% was influenced by other factors.

Keywords: Psychological Impact, Online Learning, Vocational Education

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Introduction

Indonesian Law Number 20 Year 2003 on the National education system stated that education is a conscious and planned effort to realize the atmosphere of learning and learning process so that learners actively develop their potential to have religious spiritual power, self-control, personality, intelligence, noble morals, as well as the necessary skills themselves, society, nation and State. Based on this understanding, it can be understood that education must be realized its importance and planned systematically, so that the atmosphere of learning and learning process runs optimally. With the formation of the atmosphere and learning process, students will actively develop their potential in accordance with their talents and interests. With the development of potential learners, they will have religious spiritual strength, self-control, personality, intelligence, noble morals, as well as the necessary skills of themselves, society, nation and State. This condition will continue even in the emergency of the Covid-19 pandemic as it is today. Teachers still try to give their best for the implementation of learning objectives such as making learning videos, carrying out online learning, even some who come directly to the students' homes.

In the early year of 2020, the world was surprised by the coronavirus diseases (COVID-19) outbreak which later infected almost all countries globally. COVID-19 is spreading rapidly globally and directly impacts 33 countries around the world that are affected. A total of 33 countries affected by COVID-19 reported 78,966 deaths caused by COVID-19 at the beginning of 2020 and the death toll increased by approximately 2,468 deaths every day (Khan & Fahad, 2020). The rapid transmission and growing number of cases caused WHO to decide on March 11, 2020, as the day of the COVID-19 Pandemic (Mona, 2020). In addition to causing death, based on UNESCO data, there are 290 million students (students and students) who are disrupted in the learning process, as a result of the closure of schools and campuses (Purwanto et al., 2020). Since the government announced the case of covid-19 in Indonesia, people are encouraged to do social distancing, where all activities such as work, study and worship are carried out at home to prevent the spread of covid-19. The National Disaster Management Agency (BNPB) issued decree number 13 A related to the determination of the emergency period due to coronavirus. Based on the determination, the Ministry of Education and Culture issued a Circular Letter of the Minister of Education and Culture Number: 36962/MPK. A/HK/2020 dated March 17, 2020 on Online Learning and Working from Home in order to Prevent the Spread of Corona Virus Disease (COVID-19). Meanwhile, at the higher education level, the Circular letter of the Director General of Higher Education and Culture No. 1 of 2020 concerning the Prevention of the Spread of Corona Virus Disease (COVID-19) in Universities. This then makes all universities have to stop the process of teaching and learning activities (KBM) face-to-face in the classroom and organize online learning.

Some universities in Indonesia have implemented online learning through blended learning system technology, which is a learning process that combines online and face-to-face learning between lecturers and students. However, due to the unexpected emergence of COVID-19, all universities in Indonesia and even worldwide are required to implement Information Technology (IT) to be used as an online learning media. Teachers, educators and learners, especially in Indonesia feel the impact of COVID-19, which according to Wahyudi (2020), this causes a variety of panic at the higher education level who are not ready to do online teaching.

During the current COVID-19 pandemic, almost all universities prepare the implementation of online learning methods for all courses by utilizing the Learning Management System (LMS). Universities that are used to doing distance lectures, learning online using LMS is common every day). Through LMS, students can access lecture materials, discussion boards through discussion forums, chatrooms, and access lecture assignments provided by lecturers. Through online learning, lecturers are also required to be more creative in providing learning materials by creating learning videos in the form of tutorials uploaded on Youtube, maximizing the use of Google Classroom, WhatsApp Group and video conferencing applications such as Zoom, Skype, Hangouts and Webex (Wahyudi, 2020). Electronic system-based teaching can improve self-learning capabilities and the ability to display information with technology devices. Undeniably, technology always has two sides, namely advantages and disadvantages. Online learning also has weaknesses, the negative side of the online learning system, one of which is that not all lecturers and students have the same level of understanding towards operating devices and internet network problems such as depleted quotas and internet networks are often errors if in the area. This makes online learning take place only to assign tasks remotely without any feedback or interaction with learners. So that if done continuously can cause psychological impacts for learners.

Several studies related to online learning have been done. Khairani, Daud, & Adnan (2020) conducted research on students' perception of the use of Google Classroom in blended learning. The results showed that students' perception of Google Classroom usage was 69% with excellent categories. Tantri (2018) conducted research on social presence in online learning based on the point of view of open and distance education learners. The results showed that online learning has a positive impact on the expectation of connectedness, aspects of knowledge, and social aspects (socio-emotional). Maulana & Hamidi (2020) conducted research on students'

perception of online learning in practical subjects in vocational education. The results showed that students give positive perceptions for aspects of the learning process, lecturer capabilities, and facilities and infrastructure. Mustakim (2020) conducted research related to the effectiveness of online learning in grade XI students of WAJO High School in mathematics subjects. The results showed that 23% of students rated online math learning as highly effective, 46.7% rated effective, 20% rated it as normal, and 10% rated it ineffective.

Previous research has only focused on the implementation of online learning on the effectiveness of learning, while research related to the impact of online learning on students' psychological is still not done. This is because during the COVID-19 pandemic, not only one or two courses are conducted online, but all courses must be conducted online. The application of online learning based on Islamic education is affected by social distancing in the world of Islamic education, especially among students with poor student psychological consequences. As a result, students lack social interaction with the surrounding environment, the effectiveness of learning is reduced and feel boredom (Mahmudah, 2020). Online learning in vocational education resulted in 48% of students experiencing stress above normal (Maulana & Iswari, 2020). This is because the burden of teaching in vocational education programs is prepared by prioritizing the load of practical courses compared to the load of theoretical courses. This will be very difficult for students without direct guidance by lecturers who are teaching courses. Therefore, this study aims to find out the psychological impact (depression, anxiety, and stress) that caused of online learning during the COVID-19 pandemic on academic achievement in students in vocational higher education. It is expected that this research can be a consideration for educators in designing online learning.

Method

This Research was associative research with a quantitative approach. This is because this study looked at the effects of psychological impacts that consist of depression, anxiety, and stress caused by online learning during the pandemic on student academic achievement. The research was conducted in March-August 2020 and took place at Politeknik Negeri Bengkalis.

Participants

The sample in this research was a student of Applied Bachelor Program of The Department of Commercial Administration of Politeknik Negeri Bengkalis. The Commerce Administration Department was chosen because it can conduct online lectures for theory and practicum lectures, while other majors cannot conduct practicum lectures online due to tool limitations. The students sampled were semester II, IV, and VI students. Semester VIII students are not sampled because they are taking an undergraduate thesis.

Sampling Procedures

Sampling techniques are carried out using purposive sampling techniques that only focus on students of the Applied Bachelor Program of the Department of Commercial Administration who are taking theory and practice courses conducted online. Students got online learning for all courses started from March 27 to June 12, 2020, namely since the enactment of the Circular Letter of the Director of Politeknik Negeri Bengkalis on March 24, 2020 on the implementation of online learning to avoid the spread of COVID-19. Online lectures start from the 6th to the 14th meeting using the Zoom Meeting or Google Classroom platform and come with learning videos uploaded on YouTube. The number of samples in the population is as many as 323 people so with an error of 5%, then by using the Slovin's formula obtained a sample of at least 178 people.

Materials and Apparatus

Psychological impact research data consisting of depression, anxiety, and stress were obtained by using questionnaires that filled out online by students at the end of the 14th meeting using Google Form. The questionnaire used adapted the DASS 42 Instrument issued by the Psychology Foundation of Australia and has been translated into Indonesian by (Evalina Debora Damanik, 2006), Faculty of Psychology, University of Indonesia. The validity and reliability of the instruments were tested in two independent groups with a total sample of 144 people, and were declared valid with the lowest validity being 0.3532, while the reliability value was 0.9483 (Damanik, 2011). Respondents were asked to respond using the ordinal scale, namely: 0 = never, 1 = sometimes, 2 = often, 3 = often. In addition, in-depth interviews are also used to some students to get more detailed information. Student academic achievement data is obtained from the Department of Academic and Student Administration (BAAK).

Procedures

Psychological impacts consisting of depression, anxiety, and stress were measured using a questionnaire in the form of DASS 42 Instruments through GoogleForm. The questionnaire was given after students got the 14th meeting which was the last meeting. The interpretation of depression, anxiety, and stress levels experienced by students in this study refer to the measurement standard of DASS 42, as in Table 1.

Tabel 1. Interpretation of DASS 42 Instrument Score.

Category	Depression (D)	Anxiety (A)	Stress (S)
Normal	0 - 9	0 - 7	0 - 14
Mild	10 - 13	8 - 9	15 - 18
Moderate	14 - 20	10 - 14	19 - 25
Severe	21 - 27	15 - 19	26 - 33
Extremely Severe	28 +	20 +	34 +

Source: (Lovibond & Lovibond, 1995)

Design or Data Analysis

In this study, there are three independent variables: the level of depression, anxiety, and stress of students. At the same time, the dependent variable is the academic achievement of students. The data analysis technique used in this study was multiple linear regression. The hypotheses and research models in this study are as follows:

- H₁ : Student depression level due to online learning affects academic achievement partially.
- H₂ : Student anxiety level due to online learning affects academic achievement partially.
- H₃ : Student stress level due to online learning affects academic achievement partially.
- H₄ : Student depression, anxiety, stress level due to online learning affects academic achievement simultaneously.

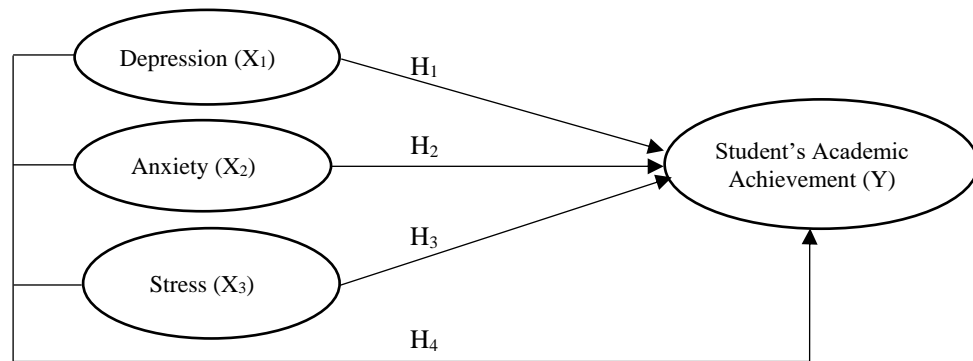


Figure 1. Research Model

Result

DASS42 instruments in the form of questionnaires were filled out online by students majoring in commercial administration from the applied undergraduate program of international business administration (ABI) semester II and semester IV, and applied undergraduate study program of public finance accounting (AKP) semester II with a total of 180 respondents. Students majoring in commercial administration were chosen because they could conduct practical courses online. The characteristics of respondents can be seen in Table 2.

Table 2. Characteristics of Respondents

Gender	Number of Respondents						Total (%)
	Male (%)		Female (%)				
	17 (9)		163 (91)				180 (100)
Age (Years)	17 (%)	18 (%)	19 (%)	20 (%)	21 (%)	22 (%)	Total (%)
	4 (2)	36 (20)	89 (50)	45(25)	4 (2)	2 (1)	180 (100)

Source: Processed data, 2020

Normality Test

Normality test is done by using SPSS 25. The Kolmogorov-Smirnov test was used to see if residual Normally distributed. The hypothetical formulation as follows:

H_0 : Residual have Normal distribution.

H_a : Residual did not have Normal distribution.

Based on Table 3, it shows that P_{value} for Kolmogorov-Smirnov Test of $0.200 > 0.05$, then H_0 is not rejected so it can be concluded that residual have Normal distribution.

Table 3. Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	,057	180	,200*	,981	180	,017

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Source: SPSS output, 2020

Multicollinearity Test

Multicollinearity in regression is viewed as more of disadvantage, as it practically inflates unnecessarily the standard errors of coefficients in regression. Variance Inflation Factor (VIF) of 5 and above is not good for the regression model because it might render other significant variables redundant (Akinwande, Dikko, & Samson, 2015). Based on Table 4, it shows that all independent variables have a VIF value of less than 5, so it can be concluded that there is no Multicollinearity.

Table 4. Collinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
1		
	(Constant)	
	Depression_D	,352 2,840
	Anxiety_A	,286 3,498
	Stress_S	,307 3,255

Source: SPSS output, 2020

Heteroskedasticity Test

Heteroscedasticity produces a distinctive fan or cone shape in residual plots (Frost, 2019). Heteroscedasticity checked by assessing the residuals by fitted value plots specifically. Typically, the telltale pattern for heteroscedasticity is that as the fitted values increases, the variance of the residuals also increases. Based on Figure 2, it appears that there is no specific pattern in the scatterplot, so it can be concluded that there are no symptoms of heteroscedasticity.

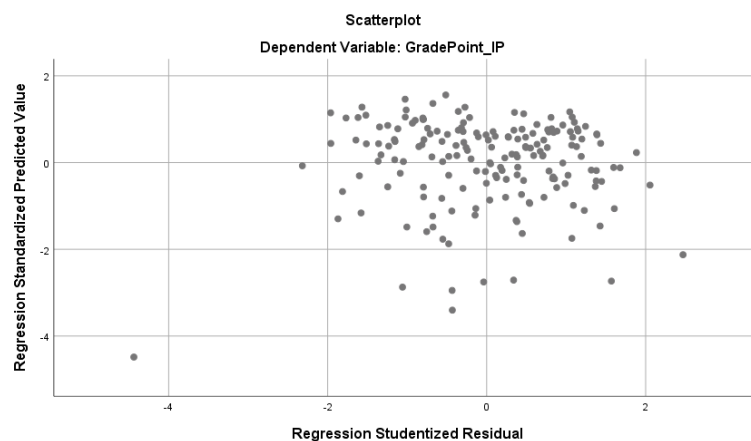


Figure 2. Scatter Plot Residual vs Predicted value
Source: SPSS output, 2020

Autocorrelation Test

Autocorrelation means that the data has a correlation with its lagged value. To confirm whether or not the data has a correlation with the lagged value, run test of randomness is applied. The criteria of decision making on the run test are if the value of Asymp.Sig (2-tailed) is less than 0.05, then there are symptoms of autocorrelation. Whereas if the value

of Asymp.Sig (2-tailed) is more than 0.05 then there are no symptoms of autocorrelation based on Table 5 seen that the value of Asymp. Sig = 0.55 > 0.05, so it can be concluded that there are no symptoms of autocorrelation.

Table 5. Result of Runs Test

	Unstandardized Residual
Test Value ^a	,01017
Cases < Test Value	90
Cases >= Test Value	90
Total Cases	180
Number of Runs	87
Z	-,598
Asymp. Sig. (2-tailed)	,550

a. Median

Source: SPSS output, 2020

Multiple Linear Regression

Multiple linear regression analysis was performed to measure the strength of the influence of independent variables on the dependent variable that consist of partial tests (t_{tests}), simultaneous tests (F_{tests}), and determinant coefficient tests (R^2). A partial test (t_{test}) conducted to measure how much the influence of each independent variable on the dependent variable partially.

Table 6. Result of Partial Test (t_{test})

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,652	,029		126,179	,000
	Depression_D	-,006	,003	-,228	-1,852	,066
	Anxiety_A	,003	,003	,138	1,010	,314
	Stress_S	-,003	,003	-,135	-1,019	,309

a. Dependent Variable: GradePoint_IP

Source: SPSS output, 2020

Based on the results of the partial test (t_{test}) in Table 6 showed that the regression coefficient for depression was -0.006 with a significant value of 0.066 greater than α (0.05) then H_1 was rejected. Therefore, it can be concluded that depression experienced by students because online learning has no significant effect on academic achievement. The regression coefficient for anxiety was 0.003, with a significant value of 0.314 greater than α (0.05) then H_2 was rejected. Therefore, it can be concluded that the anxiety experienced by students because online learning has no significant effect on academic achievement. The regression coefficient for depression is -0.003 with a significant value of 0.309 greater than α (0.05) then H_3 is rejected. Therefore, it can be concluded that the stress experienced by students because online learning has no significant effect on academic achievement.

Simultaneous test (F_{test}) is conducted to see the effect of all independent variables on dependent variables simultaneously. Based on the results of F_{test} in Table 7 showed that the value of p_{value} or significance of 0.016, which is greater than α (0.05) then H_4 is received. Therefore, it can be concluded that depression, anxiety, and stress experienced

by students because online learning has a significant impact on academic achievement simultaneously.

Table 7. Result of ANOVA Test (F_{test})

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,372	3	,124	3,540	,016 ^b
	Residual	6,170	176	,035		
	Total	6,542	179			

a. Dependent Variable: GradePoint_IP

b. Predictors: (Constant), Stress_S, Depression_D, Anxiety_A

Source: SPSS output, 2020

Based on the results of multiple linear regression analysis obtained regression equation as follows:

$$Y = 3.652 - 0.006X_1 + 0.003X_2 - 0.003X_3 \quad (1)$$

which:

Y = Grade Point (IP)

X₁ = Depression

X₂ = Anxiety

X₃ = Stress

Based on Table 7, the result of the coefficient determinant for regression model in equation (1) is 0.057. This shows that depression, anxiety, and stress experienced by students due to online learning contributed to the influence of academic achievement by only 5.7% while the remaining 94.3% were influenced by other factors.

Table 7. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,239 ^a	,057	,041	,18723	1,684

a. Predictors: (Constant), Stress_S, Depression_D, Anxiety_A

b. Dependent Variable: GradePoint_IP

Source: SPSS output, 2020

Discussion

Online learning is considered to be the best solution for the implementation of teaching and learning activities in the midst of the COVID-19 pandemic. Online learning will provide an opportunity for students to still be able to attend a lesson or course without any distance and time restrictions. So that students can follow the learning in a safe environment with the aim of maintaining health and safety. The implementation of online learning must be supported by adequate infrastructure and competent human resources so that it can run effectively. This is to avoid the negative effects of online learning, such as online learning that takes place only as a medium to assign tasks remotely without any feedback or interaction with students. So if done continuously can cause psychological impacts such as depression, anxiety, and stress of the task given by lecturers. This can get worse if the existing infrastructure is not supported especially in rural areas such as slow internet connections, inadequate electricity, and incompatible student devices.

The Effect of Depression on Student Academic Achievement

Depression is a mood disorder, a prolonged emotional condition that colors the entire mental process (thinking, feeling, and behaving a person) (Kaplan, et al., 2010). In the discussion of emotions covered include affects, mood, other emotions, psychological disorders related to mood (Sadock, 2010). Major depression is a common and treatable mental disorder characterized by changes in mood, and cognitive and physical symptoms over a 2-week period (Sarmiento & Lau, 2020). The results of the t_{test} on regression showed that depression experienced by students due to online learning had no effect on academic achievement. Based on the results of the questionnaire, 29% of students had depression levels above normal. The results of interviews with students who have severe levels of depression show that their mood changes because in every online lecture is always constrained by unstable internet networks/ connections. This is due to the domicile of students who are on the island of Bengkalis, which is in the outermost category of regions, so that there is still uneven internet access. Online lectures conducted by lecturers at the State Polytechnic using GoogleClassroom are equipped with learning videos from YouTube, so that even though the internet condition is unstable students can still download it and watch it repeatedly to understand the lecture material. This is what causes depression experienced by students because online learning has no effect on academic achievement. The results of this study are in line with Gunawan & Sunarman (2017) that the use of GoogleClassroom provides 88% effectiveness to the learning outcomes of vocational school students. This is also in line with the research results of Nirfayanti & Nurbaeti (2019) which showed that the implementation of GoogleClassroom resulted in average student learning outcomes in high categories. Sari (2019) also found that Google Classroom services have a significant influence in terms of ease, benefit, and quality on the effectiveness of learning. Santosa, Negara, & Samsul Bahri (2020) added that the use of GoogleClassroom LMS needs to have supporting applications in order for learning to be effective.

The Effect of Anxiety on Student Academic Achievement

Anxiety disorders are common in childhood, adolescence, and adulthood, and frequently comorbid with other mental disorders (Essau, Lewinsohn, Lim, Ho, & Rohde, 2018). Anxiety disorders occur due to the interaction of biopsychosocial factors, including genetic susceptibility that interacts with certain conditions. It is characterized by excessive and irrational anxiety and worries even sometimes unrealistic to various events of daily life. This condition is experienced for at least 6 months (Sullivan et al., 2007). The results of the t_{test} on regression showed that the anxiety experienced by students due to online learning had no significant effect on academic achievement. Based on the results of the questionnaire, 70% of students had above normal anxiety levels. The results of interviews with students who experience anxiety at a very severe level indicate that there are several causes, namely: limited internet quota, unstable internet connection, and a lot of lecture assignments in a short time. This causes anxiety and anxiety from yourself to be able to attend lectures online and complete tasks given on time. So that students have responded incorrectly and incorrectly to threats caused by selective attention to negative things in the environment, distortions in the processing of information and a very negative view of the ability of one's self to deal with threats (Howard et al. 2007). Some higher education institutions provide internet quota assistance to students for the implementation of online learning. In addition, based on the circular of the Director General of Higher Education Number 821 year 2020 concerning Internet Quota Provision Program for Students and Lecturers. The government through the Minister of Education and Culture provides this free program to students and educators. This program aims to support the implementation

of distance learning during the COVID-19 pandemic. The form of assistance is provided in the form of internet quota (data package) to access conference meeting applications in order to keep face-to-face learning online. With this assistance, students no longer have anxiety about running out of internet quota, so the anxiety that occurs because online learning has no significant effect on academic achievement.

The Effect of Stress on Student Academic Achievement

Stress is an unpleasant feeling and is interpreted differently from one individual to another (Kaplan & Saddock, 2010). Stress can be defined as a state when there is a discrepancy between the demands received and the ability to cope (Maramis, 2009). The results of the t_{test} on regression showed that the stress experienced by students due to online learning had no significant effect on academic achievement. Based on the results of the questionnaire, 46% of students had above normal stress levels. Based on the results of interviews with students who have stress levels in very heavy categories indicate that there are several causes of stress experienced by students when attending online learning, namely: incompatible devices/gadgets, limited internet quota, unstable internet connection, a lot of lecture assignments in a short period of time, and elusive material. This is because to participate in online learning, every student must have supporting facilities/devices. In addition, in terms of lecture materials, especially in vocational higher education that has more composition of practical courses, during this time when facing obstacles during practicum, it can directly ask the lecturers who help the course of lectures. However, this cannot be done through online learning using GoogleClassroom. The type of stress experienced by students in the form of frustration is the expectations desired and the reality that occurs is not as expected. This is due to the demands of too many lectures and makes students work too hard because of the necessity to do it (Smet, 1994). Each student's response will be different to the stressor given. Personality type and level of student development can affect the body's response where the more mature in its development, the better the ability to overcome stressors (Yusuf, 2008). Politeknik Negeri Bengkalis has a policy of giving practicum report collection time up to one week in accordance with academic regulations in 2019, so that students have enough time to complete the practicum report. This results in the stress experienced by students have no significant effect on academic achievement.

Conclusion

Based on the results of the study, it can be concluded that the psychological impact of depression, anxiety, and stress experienced by students because online learning does not have a significant effect partially but simultaneously affects academic achievement. Psychological impact contributed only 5.7% while other factors influenced the remaining 94.3%. This is because online learning is carried out using GoogleClassroom which is equipped with Video from Youtube so that it can solve some problems in rural areas, such as unstable internet connection or limited electricity. Internet quota program from the Ministry of Education and Culture is very helpful for students in the implementation of online learning.

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