

The Effect of Learning Environment on Student Engagement in Generation Z Students during the COVID-19 Pandemic

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Abstract - The COVID-19 pandemic has had an impact on various sectors, especially the education sector. Many countries have decided to close educational institutions. Similarly, Indonesia must follow the government's instructions in anticipating the spread of the COVID-19 pandemic. Education has an important role in developing quality human resources. Therefore, the learning environment becomes a variable that plays an important role in generating high student engagement. This study aims to determine the effect of the learning environment on student engagement on generation Z students during the COVID-19 pandemic. This research was conducted in Bandung City and Bandung Regency using a quantitative approach, where data collection is done through questionnaires distributed online. The sample size in this study was at least 500 respondents of generation Z students. The data analysis techniques in this study use descriptive statistical analysis, simple regression analysis, hypothesis test (t-test), and determination coefficient test. From the test results, the results were obtained that there is a significant positive influence between the learning environment and student engagement.

Keywords - COVID-19 Pandemic, Generation Z, Learning Environment, Student Engagement, and University.

I. INTRODUCTION

In early 2020, life around the world was affected by the COVID-19 pandemic. The spread of the COVID-19 pandemic has presented its challenges to various sectors, especially the education sector. Many countries have decided to close educational institutions, as well as in Indonesia, where they must follow government instructions in anticipation of the spread of the COVID-19 pandemic. By the Circular of the Minister of Education and Culture Number 4 of 2020 concerning the Implementation of Education Policies in an Emergency the Spread of Coronavirus Disease (COVID-19), it is recommended to carry out the learning process from home through online learning [1].

Education is something that cannot be separated from teaching and learning activities and plays an important role in building a person's character and can determine success. Every student is expected to be engaged in learning activities. According to Martin and Bolliger [2], student engagement in online learning is very important because online learning tends to have fewer opportunities to engage with institutions. Student engagement in learning needs to be improved in the emotional aspect and

cognitive behavior to achieve academic achievement [3]. According to Radloff and Coates [4], the definition of student engagement is the time and effort devoted by students to educational activities. Based on data obtained from the PR Newswire Association LLC [5], 69% of students reported that they felt engaged with their classes and courses. However, online learning has several impacts on students, namely students become passive, less creative, and productive, online learning still confuses students, and students experience stress [6]. This shows a decrease in student engagement during the COVID-19 pandemic.

In achieving high student engagement, an adequate learning environment is needed because the quality of the learning environment is the main influence on student engagement in learning [7]. A less conducive learning environment will affect student learning activities, where it will lead to a lack of student interest in learning. Online learning is considered insufficient to accommodate all learning needs. The conditions of online learning make it difficult for lecturers to control and maintain learning conditions because they are limited in virtual space [8]. According to Schelechty in [9] state that by creating an environment where students are motivated to be engaged, the knowledge learned is more likely to be remembered.

In universities, there are various ages, but currently, all demographics of undergraduate colleges are dominated by generation Z. Generational differences will have different characteristics, expectations, values, and behavior. Likewise, generation Z who were born between 1995 - 2010. According to M. Johnson & L. Johnson in [10], it is necessary to understand the culture of generation Z to create good engagement. This is based on the unique characteristics possessed by each generation, where differences in generations also often cause different problems. As it is known that generation Z has the most dominant characteristic that is digital native because it grows and develops alongside digitalization in various aspects as well as they are experts in operating various technology media and have multi-tasking behavior. Through these characteristics can backfire in the learning process but also if used on target can increase the motivation of learning in the classroom and the love of students to learning activities.

Based on this background, this study consists of several research questions as follows:

1. What is the condition of the generation Z learning environment during the COVID-19 pandemic?

2. How was student engagement of generation Z during the COVID-19 pandemic?
3. How is the effect of the learning environment on student engagement of generation Z during the COVID-19 pandemic?

II. LITERATURE REVIEW

The learning environment is a physical, social, and psychological environment where students learn and are influenced by interactions between other students, lecturers, curriculum, facilities, and infrastructure. And there is a pattern of experience of everyone engaged in school both socially, emotionally, ethically, and academically [11; 12; 13]. The National School Climate Center describes the four main dimensions of the learning environment, namely safety, teaching and learning, interpersonal relationship, and institutional environment. From these four dimensions, we can find out the learning environment conditions that occur at the time of online learning [11].

Student engagement is a process in which students engage in learning where they will show attention, interest, and effort when they are studying. Where this engagement can be seen if students engage behaviorally, emotionally, and cognitively in each learning [14; 15; 16; 17]. The dimensions of student engagement are behavioral engagement, emotional engagement, cognitive engagement. Wherefrom this dimension we can find out the level of student engagement in learning [18].

Different school environments affect students' interests and learning [19]. Similarly, research conducted by Nabilah and Aslamawati [20] stated that there is a positive relationship between the school climate and student engagement, the more positive the school climate, the higher the student engagement. Then, building a good relationship between lecturers and students can help create high engagement [21; 22]. Based on research conducted by researchers, shows that there is a significant positive relationship between the learning environment and student engagement. Students who have a positive perception of the school environment will influence their student engagement in school.

This study uses dimensions from NSCC that have four dimensions of safety, teaching and learning, interpersonal relationship, and institutional environment. As for student engagement using dimensions from Wonglorsaichon et al., [23] which includes three dimensions namely behavioral engagement, emotional engagement, and cognitive engagement.

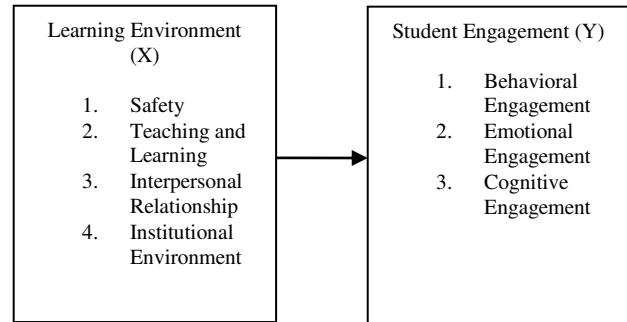


Fig. 1. Conceptual Framework

Based on the literature review and conceptual framework above, the hypotheses in this study are as follows:

- H0: The learning environment has no effect on student engagement in generation Z students during the COVID-19 pandemic
- H1: The learning environment has an effect on student engagement on generation Z students during the COVID-19 pandemic

III. METHODOLOGY

The methodology used in this research is a quantitative approach. The independent variable used in this study is the learning environment with a measuring instrument adopted from The National School Climate Central put forward by Thapa [11]. Meanwhile, a dependent variable in this study is Student Engagement using a statement belonging to Wonglorsaichon et al. [23]. Measurements on Learning Environment variables consist of 15 items and student engagement consists of 12 items. The measurement scale uses a four-point Likert scale. The use of a scale of one to four is based on a theory belonging to Cooper and Schindler [24] who said that there was a central tendency error because the assessor was reluctant to give extreme assessments.

The population in this study is all students who studied in The City of Bandung and Bandung Regency with a total population of 274,376 students [25]. While the sample used is a non-probability sampling with a sample size of 400 people based on the Slovin formula. However, to make the results of the study more precise and accurate, the researcher added a sample size with a minimum of 500 respondents. Respondents who will fill out this questionnaire are generation Z students who are in the period 2017/2018 – period 2020/2021. This study uses primary and secondary data. Primary data is obtained from questionnaire results that focus on learning environment variables and student engagement variables. Meanwhile, secondary data is used as supporting data derived from documentation in the form of government publications, articles, and other sources.

To prove a data can be used in the study, researchers conducted validity tests and reliability tests on 30 respondents first, this was done so that the data

obtained can be accounted for eligibility. Where the results obtained from all questionnaire items are declared valid and reliable. Then, the data analysis techniques used in this study are descriptive analysis, classic assumption test, simple linear regression analysis, hypothesis testing (t-test), and determination coefficient test. The analysis was done with the help of programming tools, namely SPSS.

IV. RESULTS

The respondent data obtained in this study was as many as 580 generation Z student respondents who studied in Bandung City and Bandung Regency during the COVID-19 pandemic. After that, an analysis was conducted related to the answer score of each research variable.

A. Descriptive Analysis

The first analysis is the descriptive analysis by classifying a variable data based on its group. For descriptive statistics calculations, there are assessment criteria as follows.

TABLE I. DESCRIPTIVE STATISTICAL ASSESSMENT CRITERIA

No	Percentage	Assessment Criteria
1	25% - 43.75%	Very Low
2	> 43.76% - 62.5%	Low
3	> 62.6% - 81.25%	High
4	> 81.26% - 100%	Very High

Here is a description on the descriptive statistics table:

SD (Strongly Disagree) = 1
 D (Disagree) = 2
 A (Agree) = 3
 SA (Strongly Agree) = 4

The dissemination of questionnaires on learning environment variables consists of 15 question items, with the following calculation results.

TABLE II. DESCRIPTIVE STATISTICS OF LEARNING ENVIRONMENT

Code	SD (*1)	D (*2)	A (*3)	SA (*4)	Score	%
S1	8	42	188	342	2,024	87.24
S2	2	22	179	377	2,091	90.13
S3	8	25	166	381	2,080	89.66
S4	2	36	234	308	2,008	86.55
S5	16	107	287	170	1,771	76.34
TL1	1	45	290	244	1,937	83.49
TL2	3	70	281	226	1,890	81.47
TL3	1	51	318	210	1,897	81.77
IR1	14	183	307	76	1,605	69.18
IR2	0	21	264	295	2,014	86.81
IR3	14	97	344	125	1,740	75.00
IR4	9	97	301	173	1,798	77.50
IE1	16	107	245	212	1,813	78.15
IE2	44	226	241	69	1,495	64.44
IE3	15	124	315	126	1,712	73.79
Total Score and Percentage					27,875	80.10

Based on Table 2, it can be seen that the overall score gained 27,875 with an average percentage of 80.10%. Then, the highest score obtained on question item S2 (safety indicator with item number 2) is 2,091 and the percentage is 90.13%. Meanwhile, the lowest score was the IE2 question item (institutional environment indicator with item number 2) of 1,495 and a percentage of 64.44%.

For student engagement variables consist of 12 question items, with the following calculation results:

TABLE III. DESCRIPTIVE STATISTICS OF STUDENT ENGAGEMENT

Code	SD (*1)	D (*2)	A (*3)	SA (*4)	Score	%
BE1	75	271	209	25	1,344	57.93
BE2	11	95	355	119	1,742	75.09
BE3	5	30	185	360	2,060	88.79
BE4	1	9	190	380	2,109	90.91
BE5	1	25	258	296	2,009	86.59
EE1	11	120	359	90	1,688	72.76
EE2	27	120	190	243	1,809	77.97
EE3	17	69	257	237	1,874	80.78
CE1	16	126	290	148	1,730	74.57
CE2	9	106	315	150	1,766	76.12
CE3	6	56	258	260	1,932	83.28
CE4	4	32	277	267	1,967	84.78
Total Score and Percentage					22,030	79.13

Based on Table 3 above shows that the overall score is 22,030 and the average percentage obtained is 79.13%. Then, the highest score obtained on the be4 question item (behavioral engagement indicator with item number 4) is 2,109 with a percentage of 90.91%. Meanwhile, the lowest score obtained was 1,344 with a percentage of 57.93%.

B. Classical Assumption

Furthermore is to do a simple linear regression analysis but before doing the test it is necessary to conduct a classic assumption test first which includes normality test, linearity test, and heteroscedasticity test. The three classic assumption tests are performed as a prerequisite for conducting simple linear regression tests.

Normality tests showed that the data had been normally distributed with a Sig value. (two-tailed) $0.200 > 0.05$, it can be concluded that the data is normally distributed. Then, the linearity test obtained a Sig value. $0.108 > 0.05$ which means there is a linear relationship between learning environment variables and student engagement variables. And the last is a test of heteroscedasticity showing that the value of Sig. $0.739 > 0.05$ then the regression model does not occur heteroscedasticity.

C. Simple Linear Regression Test

After that, a simple linear regression analysis was conducted in this study, with the following analysis results.

TABLE IV. SIMPLE LINEAR REGRESSION ANALYSIS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.663	0.769		3.464	<0.001
Learning Environment	0.005	0.016	0.014	0.333	0.739

Based on the calculation results in Table 4, it can be seen that the constant (a) is 18.839 and the regression coefficient count (b) is 0.402. Then obtained linear regression equation as follows.

$$Y = a + bX$$

$$Y = 18.839 + 0.402X$$

Based on the equation above can be concluded the coefficient of regression for independent variables is positive with a constant of 18.839 which means that there is an increase in the value of the learning environment by one unit, then student engagement increases by 0.402 one unit, and vice versa.

D. Hypothesis Test (t-test)

Then a hypothesis test is conducted using a t-test, with the results of data processing as follows.

TABLE V. HYPOTHESIS TEST (T-TEST)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.663	.769		3.464	<.001
Learning Environment	.005	.016	.014	.333	.739

Based on the table above can be concluded that the value of t count 15,433 > t table 1,964 then H0 is rejected and H1 is accepted which means there is a significant positive influence between the variables of the learning environment to the variables of student engagement in generation Z students in Bandung City and Bandung Regency during the COVID-19 pandemic.

E. Coefficients of Determination

The last test conducted is a coefficient of determination to know how the influence between learning environment variables and student engagement variables that are described in the table below.

TABLE VI. COEFFICIENT OF DETERMINATION TEST

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.540	0.292	0.291	3.683

Based on the table above shows that the value of the coefficient of determination or R Square is 0.292. So it can be concluded that the influence of the learning environment on student engagement is 29.2% and the remaining 70.8% is explained by other factors that are not used in this study.

V. DISCUSSION

Based on the results of the data processing that has been presented before, then the researchers will write a discussion about the results of the processing. The first is a discussion about descriptive statistics analysis conducted on 580 respondents will be explained based on variables used in the study, namely learning environment and student engagement. Can be seen in the calculation of descriptive statistics learning environment variables (see Table 2) shows that the highest score obtained by the question item S2 is 2,091 and the percentage of 90.13%, with the question indicator "I feel comfortable because it has never alluded to socioeconomic status issues". So it can be concluded that most of them show a sense of security physically, emotionally, and socially in daily lectures.

Meanwhile, the lowest score obtained on IE2 question items was 1,495 and a percentage of 64.44%, with the question indicator "The material presented in online learning is visually appealing". This indicates that students lack an interest in learning during online learning due to the lack of visual interest in the materials provided. In addition, in the learning environment variables get an average score of the percentage of the total overall score of 80.10% where the value is in the range of 62.5% - 81.25%. Therefore, it can be concluded that the learning environment in generation Z students during the COVID-19 pandemic is relatively high.

Then, the student engagement variable descriptive statistics calculation (see Table 3) shows that the highest score obtained by BE4 question items was 2,109 and a percentage of 90.91%, with the indicator "I listen to others when they give me feedback when discussing". This means that most of them have good behavior when following learning which includes the effort and attention they give to other students. Meanwhile, the lowest score obtained by BE1 question items was 1,344 and a percentage of 57.93%, with the question indicator "I studied the material first before studying class". It can be concluded that generation Z students show less good behavior in terms of perseverance and more effort in preparing for learning. In addition, student engagement variables get a total percentage of the overall score of 79.13% and are in the range of 62.5% - 81.25%. Therefore, student engagement in generation Z students during the COVID-19 pandemic belongs to a high category.

The next step is to conduct a simple linear regression analysis test, where previously a classic

assumption test has been conducted first whose analysis results have been described in the results section. The discussion on simple linear regression analysis explains that there is a positive relationship in the learning environment variables to student engagement variables in generation Z students who study in Bandung and Bandung. Positive signs indicate a direction of direct relationship, which means that if the learning environment gets better, then the level of student engagement will increase, and vice versa.

After the above test, hypothetical testing was conducted using a t-test that aims to determine whether or not there is an influence between learning environment variables and student engagement variables by calculating the correlation. Based on calculations in a t-test (see Table 5) in column t obtained a calculated t count for the learning environment variable of 15,433, then compared to the t table worth 1964 and a significance value of 0.05. So that the calculated t count $15,433 > t \text{ table } 1,964$. Therefore, H_0 is rejected and H_1 is accepted which means that the learning environment has a significant positive effect on student engagement.

And the last is a coefficient of determination test that aims to measure how far learning environment variables affect student engagement variables. Based on the calculation of the determination coefficient test (see Table 6) indicates that the correlation coefficient (R) obtained is 0.540, so the R Square obtained is 0.292. This means that the ability of learning environment variables in explaining student engagement variables is 29.2% and the remaining 70.8% which means explained by factors other than learning environment not observed in this study.

VI. CONCLUSION

This study was conducted to determine the effect of the learning environment on student engagement in generation Z students during the COVID-19 pandemic. The data in this study was obtained from the dissemination of questionnaires of 580 generation Z students who studied in Bandung City and Bandung Regency. Based on the results and discussion of data analysis, conclusions are obtained that refer to the research questions as follows.

1. What is the condition of the generation Z learning environment during the COVID-19 pandemic?

Based on the test results obtained from descriptive statistics get a percentage result of 80.10% is on the high criteria. It can be concluded that generation Z students who studied in Bandung and Bandung regency during the COVID-19 pandemic have a good learning environment in undergoing lectures conducted online.

2. How was student engagement of generation Z during the COVID-19 pandemic?

Based on the results of the study showed that the level of student engagement in generation Z students during the COVID-19 pandemic has a percentage yield of 79.09% and is at a high criterion. This means that generation Z students who studied in Bandung and Bandung during the COVID-19 pandemic have a good engagement in implementing student engagement in their daily lectures.

3. How is the effect of the learning environment on student engagement of generation Z during the COVID-19 pandemic?

The test results obtained based on simple linear regression, hypothesis test (t-test), and coefficient of determination can be concluded that the learning environment has a significant positive influence on student engagement in generation Z students during the COVID-19 pandemic where the relationship of the two variables is 29.2%. This is in line with research conducted by Basnyat [26] which suggests that there is a significant positive influence between school environment variables and student engagement variables and academic success. Then, the results of this study also showed a positive relationship, in the sense that if the learning environment is getting better, then the level of student engagement will increase, and vice versa.

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