Take and give.pdf
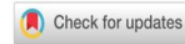
Take and give learning model during covid on students' learning outcomes in high school on ecosystem materials?

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Article Info

ABSTRACT

Covid-19 has a big impact on the world of education so that face-to-face learning is directly replaced by virtual learning by using learning applications. The research was aimed to determine the influence of the Take and Give model on the learning outcomes of the ecosystem materials of Az-Zahra Islamic High School students grade X. The research was conducted using a quasi-experimental method. Sampling from class X IPA was conducted equality test and random sampling technique. The cognitive learning instrument consisted of 20 multiple choice questions with five alternative answers that had a reliability score was 0.81. Research instruments were conducted validity tests and reliability tests. Analysis of hypothetical data was conducted using analysis of covariance (ANCOVA) test obtained result was 0.000 that stated that there was an influence on the students' cognitive learning outcomes that given the take and give model based on virtual. The results showed that the influence of taking and give learning models based on virtual learning had a significant impact on the students' learning outcomes grade X on ecosystem materials, which were shown in the final test scores of the experimental class which was 82,500 with a high category n-gain percentage was 52.8 and control class which was 76,111 with a moderate category n-gain percentage was 86.1. Based on research that applied the take and gives model can improve students' learning outcomes.

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INTRODUCTION

The world now is spreading outbreaks caused by a coronavirus and has a huge impact on society in almost all areas including education. The process and education system are forced to

change to prevent students from the transmission of coronavirus, whose transmission occurs through physical and air contact, as a result, the learning process must be conducted online at home facilitated with technology and learning applications available (Herliandry, Nurhasanah, Maria & Heru, 2020). The learning process must be maintained to avoid gaps or lost generations that can cause learning quality gaps that affect the learning process of learners (Fatmawati, 2019). One of the efforts to maintain the learning process in the pandemic is by internet-based online learning or virtual learning (Chick, Clifton, Peace, Propper, Hale, Alseidi & Vreeland, 2020).

Virtual learning is a learning tool that can be used in the process of learning remotely without face-to-face between educators and students assisted by the internet (Ubell, 2010). Based on interviews with students at SMA 2 Palembang, during the coronavirus pandemic, the learning system utilizes advances in information and communication technology with the help of google classroom application as a form of learning. One of the learnings used for virtual learning by utilizing android and educational applications (Septiana & Ningrum, 2017) Meanwhile in SMAN I Indralaya the learning process utilizes social media such as Whatsapp. However, among the research conducted above, there has not been a combination of virtual learning with taking and give models, especially in biological learning. Meanwhile, research conducted by Kurnia, Emi, &Ary (2017) showed that virtual learning can be combined with the discovery learning model in mathematics learning with smart sticker assistance to improve critical thinking skills. Virtual learning can be utilized in the learning process through the Communication Technology and Information (ICT) platform by using a take and give learning model that provides a new atmosphere in the learning process during the pandemic.

The take and give learning model is one of the cooperative learning models defined as a learning process that means learners receive material and give the material they master to other learners, and by handing out learners a control card (Sani, 2019). In the learning, the model takes and gives learning that gives and takes a different material that matches the syntax. The take and give model has two syntaxes, take and give. The two syntaxes mean receiving (take) the understood material information by a friend according to the control card given and giving (give) understood material information to friends according to the material on the control card.

Biological learning can have characteristics in developing the learners' skills and attitude to be active in learning and daily life (Nuryani, 2005). Biological learning understands living things that can improve knowledge, attitudes, and skills in interaction with the environment, learning related to living things and the environment for example ecosystem materials.

The research results of Cimer (2012) state that biological material learning is too difficult to learn because students do not understand and connect it with daily life, one of the biological materials that are considered difficult to understand by learners is the material cycle. The material cycle is part of an ecosystem material that learns about five biogeochemical cycles consisting of water cycles, carbon cycles, nitrogen cycles, phosphorus cycles, and sulfur cycles, plus most ecosystem materials consist of concept materials compared to fact and principle materials that make it difficult for learners to understand ecosystem materials that will affect the learning outcomes obtained by learners.

The results of previous research that has been conducted by Meda, Wakidi, & Syaiful (2017) Take and give learning model can improve the students' learning outcomes of class X IPS on historical materials at SMA Negeri I Pesisir Selatan in Bandar Lampung. Researchers conducted an interview with one of the grade X biology teachers at Az-Zahra Islamic High School that the students had already applied the PBL learning model in the learning process, but the students' learning outcomes had not been maximized and the students had never applied the take and give type cooperative learning model in the learning process by utilizing technological and communication advances for modern life with the help of virtual-based learning.

The results of previous research have not discussed the students' learning outcomes in the learning process by using the take and give learning model by utilizing the internet through means in virtual learning. Az-Zahra Islamic High School implemented virtual learning in 2016 by using zoom application as a means in previous learning so that researchers feel interested in research the students' learning outcomes in the take and give learning process with learning conducted based on virtual learning at Az-Zahra Islamic High School. Research conducted by the learning process with the title of the study "The Influence of Take and Give Learning Model Based on Virtual Learning on The Students' Learning Outcomes of Ecosystem Materials of High School Students Grade X ".

RESEARCH METHODS
Research Design

The research was conducted using the Quasi-Experimental Design method with a nonequivalent control group design. Quasi-Experimental Design is a research design that applies the existence of control classes and experimental classes by providing different treatments and the existence of pretests and posttests. The research design can be seen in Table 1.

Table 1. Nonequivalent control group design

Class	Pretest	Treatment	Posttest
Experiment	O_1	Model take and give	O_2
Control	O_1	Direct learning	O_2

Note:
O1   : Pretest;   O2   : Posttest

Population and Samples

The population in this study is the entire class X IPA at Az- Zahra Islamic High School Palembang, the school year 2019/2020 with a total of 108 students. Samples are part of the number and characteristics that the population has. Researchers conducted an equality test followed by random sampling techniques. Random Sampling is a sampling technique by drawing or random (Sugiyono, 2017). The samples in this study were X IPA 1 (experimental class) consisting of 17 males and 19 females and X IPA 2 (control class) consisting of 15 males and 21 females.

Instruments

Data collection techniques in the research conducted were objective tests, observation sheets, and questionnaires. Objective tests used to measure the students' cognitive learning outcomes who have been treated, observation sheets used in research to measure the implementation of learning by using the take and give model, and questionnaires were given to learners to know the learners' response to learning by using the take and give model. Data collection techniques can be seen in Table 2.

Table 2. Research instruments

No	Instruments	Form	Time
1.	Objective test (*Pretest*)	Multiple choice	Beginning of learning
2.	Objective test (*Posttest*)	Multiple choice	End of learning
3.	Observation of RPP stage implementation	Observation sheet	During the learning process
4.	Student affective observation	Observation sheet	During the learning process
5.	Student response questionnaire	Questionnaire	End of learning

Procedures

The research procedure was carried out into three stages: the preparation stage, the implementation stage, and the completion stage.

Stage I Preparation

Researchers chose the right learning model according to the material to be taught in the implementation of learning and determined the school to be studied samples in the study using random sampling techniques, Preparing the syllabus and lesson plan (RPP) with KD 3.10 ecosystem materials. Analyze the components of the ecosystem and the interaction between them, preparing the instrument for the form of multiple-choice type objective tests to be used for pretest and posttest questions. preparing questionnaires of student responses during the learning process using the take and give model, and holding validity of test instruments, attitude observation sheets, Lesson Plan (RPP) sheets, and preparing the management of research permits.

Implementation Stage

The learning activities carried out by the researchers provided preliminary tests (Pretest) to students, the learning process was carried out with two meetings and researchers entered the first meeting to carry out the learning process using the Powerpoint display through the zoom application, researchers opened the learning with greetings, prayers, explaining basic competencies (KD), and learning objectives through zoom, researchers explained learning materials through zoom and learners had been divided into 6 groups consisting of 6 people through zoom and Whatsapp group, the researchers instructed the learner to prepare a control card and the learner was given different sub-materials through zoom (name, material, and name of the friend who gave the material), the learner understood the material according to the sub material obtained and each group shared material information and control card through the Whatsapp group and recorded the material to be delivered by group on Whatsapp group (Take and Give), Take phase: Students who have received material information through whatsapp were instructed to return to zoom and received information provided by other groups through zoom, Give phase: Each group shared material information in other groups through zoom and learners discussed if there were differences of opinion and question and answer from each group through zoom, and researchers provided questions and explained material that was poorly understood by learners through zoom and researchers explained material that had not been understood by learners through Zoom

In the second meeting, the students who had been divided into six groups of six people based on the absent number of students did the same as the first meeting, making it easier for the students to form their group. Researchers described ecosystem learning materials through Powerpoints displayed through zoom with a share screen. After explaining the learning materials, the students have been divided into groups to prepare their respective control cards consisting of the name, sub-material, material obtained, and the name of the recipient of the material provided. Then the researchers shared the sub-material of the ecosystem with different materials of each group, the sub-materials were the components of the ecosystem, the terrestrial ecosystem, the marine ecosystem, the interaction between components, the food chain, and the food webs, all of it through zoom.

Completion Stage

Researchers provided preliminary tests (Pretest) to students to measure the ability of learners before carrying out the learning process of the take and give model. The initial test (Pretest) was given to 20 multiple choice questions with five alternative answer options and activities conducted after implementing a virtual-based take and give model. Researchers provided post-test to students

in control classes and experimental classes using a google form, researchers provided response questionnaires to students for experimental classes using a google form, analyzed test data of students' learning outcomes, lesson plan (RPP) through attitude observation sheets, and student responses, the data obtained are analyzed by calculating normality tests to determine normality data, the data obtained was analyzed by testing homogeneity to know the homogeneity or not of the data obtained, researchers test hypotheses using ANCOVA test, so that it could know the hypothesis accepted or rejected in the study and researchers made discussions about the results of the study so that it could be concluded the implementation of the study using learning models.

Data Analysis

Data analysis in the study conducted were an objective test, observation sheet, affective sheet, and response questionnaire using Statistical Product and Service Solutions (SPSS) 25 Version and Microsoft Excel application. After the researchers collected the data, researchers were able to carry out data analysis techniques conducted using normality tests using Shapiro-Wilk and Kolmogorov Smirnov, homogeneity tests using Levene test, interaction test, and hypothesis test using Analysis Of Covariance (ANCOVA) using Statistical Product and Service Solutions (SPSS) 25 Version application and descriptive data analysis in the form of observation sheet implementation of take and give model learning, student attitude observation sheet, and student response questionnaire consisting of 16 statements and consisting of four aspects, namely: learning model, motivation, activity, and material understanding analyzed using Microsoft Excel.

RESULTS

Implementation of the learning process using a virtual learning-based take and give learning model that during the learning process during two meetings showed observation results at the time of the first meeting in the learning process experienced time constraints and the internet network used. In the second meeting, the learning process is more directed and time-coordinated. Learning process using zoom app and WhatsApp group. The result of the observation of the implementation of the learning process that had been analyzed the implementation of learning was 81% which stated that the learning was well in its implementation based on virtual.

Learning using the zoom application and WhatsApp group combined with take and give model produced a students' response that can be seen when the student was given a response questionnaire consisting of positive statements and negative statements. The questionnaire response given gave a positive response to be applied in the learning process. The positive response was due to a new atmosphere in learning and models that had not been applied in the learning process.

The learning process was conducted by researchers with a sample of class X IPA 1 as experimental class and X IPA 2 as control class with a total of 36 students in each class. Written tests were conducted before and after receiving learning materials using learning models and learning systems implemented by educators. Questions given to students were 20 questions with five alternative answers.

The n-gain percentage of cognitive learning outcomes achieved by students in the control class was spread across all categories: low, moderate, and high. The most dominant n-gain percentage achieved by learners in the control class was the moderate category. Students in the experimental class were not spread across all n-gain categories only medium and high categories, but the most dominant n-gain percentage achieved by learners was the high category.

The results obtained in the experimental class and control class were obtained from the Kolmogorov test - Smirnov and Shapiro-Wilk significance. The data of the study results that had been tested for normality value of significance was more than 0.05 which can be concluded that the data tested is normally distributed which can be seen in Table 3.

Data that had been tested for normality and normal distribution, followed by homogeneity tests and students' learning outcomes homogeneity tests showed results obtained using a Levene test of 0.258. The result of the value obtained was said to be of significance due to the value of more than 0.05 (0.258 > 0.005). Data of significance meant that it was homogeneous.

Table 3. Normality test

	Class	Kolmogorov- Smirnov			Shapiro-Wilk		
		Statistic	df	Sig	Statistic	df	Sig
Pretest result	Control	0.143	36	0.060	0.950	36	0.105
	Experiment	0.133	36	0.111	0.950	36	0.105
Posttest result	Control	0.139	36	0.076	0.943	36	0.061
	Experiment	0.122	36	0.199	0.964	36	0.291

Data on the results of learning affective of learners would affect students in the teaching and learning process, data on the observation of the attitude of learners during the learning process. The effective observation sheet consisted of indicators related to social attitudes. Indicators that can be observed in virtual learning-based research were attitudes of responsibility and discipline, obtained from observation activities conducted in control classes and experimental classes. Category per indicator of students' effective results
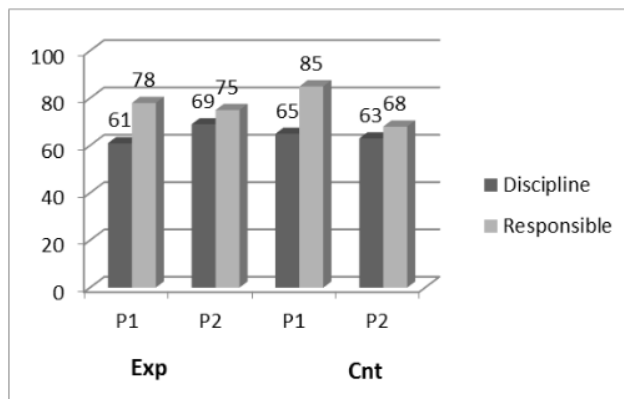
Figure I. Percentage of student effective learning outcomes

Based on the data that has been analyzed in Figure I shows that the attitude of learners which includes attitudes of responsibility and discipline with an average value for all indicators at each meeting can be said to increase. The data states that each student experiences to progress in attitudes of responsibility and discipline

Hypothetical Test of Students' Cognitive Learning Outcomes

Hypothesis tests were conducted using Analysis of Covariance (ANCOVA), but before being tested with Analysis of Covariance, the first was an influence test on the results of students' cognitive learning initial test (Pretest) and final test (Posttest) as a condition before the hypothesis test using an ANCOVA test.

Interaction test using Analysis of Covariance resulted in a pretest class relationship score of 0.054 students. The data above 0.054 (Sig> 0.05) meant that the results of the interaction test showed that there was no interaction between the initial test (Pretest) and the final test (Posttest) so that it could be continued for hypothesis testing using Analysis of Covariance (ANCOVA).

Table 4. Ancova test on students' cognitive learning outcomes

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2728.408[a]	2	1364.204	19.434	.000	.360
Intercept	17154.582	1	17154.582	244.384	.000	.780
Pretest	100.283	1	100.283	1.429	.236	.020
Kelas	2667.149	1	2667.149	37.996	.000	.355
Error	4843.467	69	70.195			
Total	428475.000	72				
Corrected Total	7571.875	71				

Based on Table 4 shows the cognitive learning results of learners from Analysis of Covariance (ANCOVA) by using the SPSS v.25 application program consisting of the corrected model, intercept, pretest, and class. Based on the data that has been tested interaction test and the Analysis of Covariance test (ANCOVA) in the experimental class and control class with different learning results were very real (P = 0.000 < 0.005). The results of the learning results showed that Ho was rejected and HI was accepted, so from the data obtained it can be concluded that the influence of take and give learning model based on virtual learning influenced improving the learning outcomes of ecosystem materials to students class X.

The learning process implemented the take and give model with virtual-based by utilizing the Communication Technology and Information (ICT) platform. The activities of the learning implementation process were observed through observation sheets filled by observers. The result of the observation sheet was that learning activities were classified as good in the implementation process. The implementation of good learning was reviewed based on the opinions of students in the classroom. The opinions of students can be seen by filling out the student response questionnaire that can be seen in Table 5.

Table 5. The average percentage of student response to take and give the model

No	Categories	Student Response Percentage Category (%)				
		Excellent	Good	Fair	Poor	Very poor
1	Learning Model	89	11	0	0	0
2	Motivation	53	42	6	0	0
3	Activity	31	69	0	0	0
4	Material Comprehension	39	58	3	0	0
		53	45	2	0	0

Based on the questionnaire response given to students after following the learning process. The response questionnaire consists of four aspects, namely: learning model, motivation, activity, and understanding with negative and positive statements that analyzed using Microsoft Excel, showing that students feel attracted to the learning model learned on a virtual basis to influence learning interests by providing a new atmosphere in the implementation of the learning process applied by researchers.

DISCUSSION

Maintaining the learning process in the covid-19 period leads educators to find solutions that can still carry out the teaching and learning process that is effectively used in this situation.

This is in line with Bao (2020) educators' solutions to maintain learning by changing the pattern of education that was previously face-to-face to online without face-to-face anymore. One way of implementing face-to-face learning can be done with virtual learning. The development of technology is not limited to the current industrial revolution 4.0, so that virtual learning is effectively implemented even though educators and students are in different places (Verawardina, Asnur, Lubis & Hendriyani, 2020).

Virtual learning-based Learning can be used with zoom and social media applications such as Whatsapp applications. This is in line with Abidah, Hidaayatullaah, Simamora, Fehabutar, & Mutakinati (2020) Infrastructure that supports virtual learning through various discussion spaces such as Whatsapp, smart classrooms, zoom, and google classrooms. Whatsapp features include Whatsapp group which can be used to send text messages, pictures, and files in various formats. Chick, Clifton, Peace, Propper, Hale, Alseidi & Vreeland (2020) virtual learning can use zoom application in the learning process because zoom application is easy to access through computers, phones, and tablets and in the process of learning implementation can be recorded and stored. Virtual learning by utilizing the zoom application makes students more motivated, develops independence, and creativity in learning skills by utilizing online learning using cooperative learning models, one of which is the take and give learning model.

Students who have been given different sub-materials looking for material information related to the sub material obtained according to the control card, after the learners searched for it, then understood the material obtained, after understanding the material the learners shared the material in the group through Whatsapp group. The Whatsapp group consists of group members and researchers. Each member of the group was obliged to ask about the material shared by his friend so that there was a discussion about the material obtained by the group members and the explanation of the material that had not been understood by the learner and each student was obliged to send his/her control card in Whatsapp group as well as voice recording. The contents of the voice recording that be sent by the student were the material that corresponds to the control card through the Whatsapp voice note. The storage of voice recordings was useful so that all members of the group got complete material in the learning process both from the control card and the voice recording. Examples of stages in the activity of give and take material information were students who got sub-material components of the ecosystem provided the material that had been found from various sources to members of the group and members of the group also provided sub materials that correspond to the control card to students who had provided sub-material information such as land ecosystems, marine ecosystems, food webs, food chains and interactions between components. After the students provided information and got information from their group friends. The researcher instructed the students to return to zoom for each group member to deliver the learning materials obtained to all classmates. After all, students submit learning materials, researchers provided an opportunity to ask other learners and researchers explained the material that had not been understood or material that understood differently, at the end of the discussion the researcher gave questions to each student that was different from the sub-material on the control card and tasks to be done at home to know the learner's understanding of the material studied.

Normality tests and homogeneity tests showed that data were normally distributed and homogeneous data variations. Researchers who had analyzed normality tests and homogeneity tests conducted interaction tests as a condition before the Analysis Of Covariance (ANCOVA) test that aimed to determine whether or not there was an interaction between the class and the initial test (pretest). Interaction tests that had been conducted showed that there was no relationship between the class and the initial test (pretest) conducted by the learner so that the student's learning outcomes increased due to different treatment in the experimental class and control class. Based on

the Analysis Of Covariance (ANCOVA) test showed that the influence of the application of take and give learning model on cognitive learning outcomes so that the comparison of the value of students' learning outcomes was characterized by improved students' learning outcomes in the learning process that students experienced an improvement in both control classes and experimental classes. The average improvement in cognitive learning outcomes in the initial test of the average experimental class learner was 36,389 and the control class was 37,083 which saw an increase in tests at the end of the experimental class was 82,500 and the control class was 76,111. In experimental classes, there was a higher increase than the control class, as well as higher test class gain scores than the control class because the experiment class applied the take and give learning model. Thus, it had an effect on improving students' cognitive learning outcomes that take and give learning model based on virtual learning which had a significant effect on the students' learning outcomes of ecosystem materials in grade X high school. Increasing cognitive learning outcomes of different learners in experimental classrooms due to the learning process carried out in experimental classrooms using the take and give learning model, learners involved in the learning process, and different learning atmospheres made students remain focused on receiving learning. The statement is in line with the research of Meda, Wakidi & Syaiful (2017) that applying take and give learning model can improve students' learning outcomes on historical learning about the theory material of Islamic religion and culture entry into Indonesia at Bandar Lampung High School. Students who quickly understand the material will affect the learning outcomes so that it increases. It also agrees with the research of Udayanti & Nanci (2017) learning by applying take and give model will make learners build knowledge that becomes their own because in the process of finding and understanding the material students are directly involved in the activity. The statement is in line with Miswar, Suwarni & Septiana (2013) learning process activities followed by students who apply take and give models and control cards make students look for their information related to the material and understand the material to build new knowledge derived from old knowledge and new knowledge gained when understanding the material. So that the development of knowledge that has an impact on the improvement of the test scores of learners. The improvement of Students' cognitive learning outcomes indicated that the learners had learned because there were changes in their cognitive (knowledge) aspects.

Learning applied with take and give learning model using control card media in the learning process centered on learners. The take and give learning model required learners to communicate with their friends in learning and used control cards for sub-materials to be given to their friends and researchers. Take and give using the control card and searched for information based on the material obtained to provide information to other students (Septiana & Ningrum, 2017).

Students who are given different materials according to the control card looked for material information according to their control card to share with their friends. Students who had been looking for material information shared the material that had been studied so that the material provided would be easier to understand by the students who received the material. Students who were listening to the explanation of their friends so that there was a stimulus of sound waves to the brain that made the ability of the action of brain's mechanism increased to record information obtained by students.

Learning that stimulates hearing by accompanied by the interaction of learners with the environment makes itself develop (Salirawati, 2008). This is in line with Sani (2016) by looking at the cone of Edgar Dale's experience that learners allow remembering 50% of what is heard and seen then increases to 70% of what is said and can reach 90% of what the learners do about the information obtained during the learning activities. Learning with learners uses the auditory senses to obtain material information with concentration and then construct the material obtained in the form of notes in the learning process, making it easier to understand and over a long period.

Students who had received the material must write, read, and summarized the material provided. Writing and summarizing a material can stimulate the brain so that the written material would be easier to remember and stored in the brain. Writing the material found by self could improve the ability of memory to remember the material studied rather than not taking notes or writing anything in the learning process (Dewi, Ayu, Ida, Komang, & Rahayu, 2014). It is in line with Laely (2013) that reading begins as a sensory process. Cues and stimuli for reading enter through the ears, eyes, and in the case of braille, through the fingers in the results of his research reading and writing activities can improve memory and improve student learning outcomes. Students who take notes of material learned indirectly would read, understand the writing, and listen to the material described by the teacher, making it easier to understand and remember the material. Students had their writing style in writing notes on the control card that were easy to understand themselves and others who read them. Taking notes would help learners in more detail on material points, to increase retention, and help remember what is stored in memory according to Septyani, Rahmi & Meilinda (2014). Students wrote, searched, and understood materials to exchange material information so that all learning materials were obtained by each student. Students who exchange information on learning materials would not only affect their cognitive knowledge but would affect attitudes in the learning process.

Based on research that had implemented a take and give learning model based on virtual learning, students provided a positive response in the learning process so that the learning applied was able to improve learning outcomes and influence the attitude of learners in the learning process on ecosystem materials. Research that had been conducted can be concluded that the influence of take and give learning model based on virtual learning affects improving the learning outcomes of the ecosystem materials of grade X students at Az- Zahra Islamic High School, Palembang.

CONCLUSION

Based on the research that has been carried out can be concluded that the take and give learning model can be utilized in virtual learning by using several communication technology and information (ICT) platforms in the digital era such as zoom, WhatsApp, and google form. The implementation of different learning between online and offline provided a new atmosphere in the learning process for learners, with the applications used for learning by keeping up with the progress of the times. Implementation of learning by utilizing platforms for the learning process using zoom and WhatsApp groups to share information, applications that are easily accessible and affordable to students and teachers. Google form was used to provide final tests and response questionnaires while initial tests were given directly before schools close due to the covid-19 outbreak. The process of implementation of learning was different that provided a new atmosphere for students and teachers so that it affects the students' learning outcomes who experience improvements in the classroom and the control class shows that the value obtained by the experimental class is higher than the control class because the learning process utilized control cards and the distribution of different sub-materials in each student. The application of take and give learning model based on virtual learning, there are several that need to be improved for further research to use learning applications such as google classroom, Edmodo, Quiepper, and teacher room. Researchers are more time-regulating in the learning process and if they want to measure attitudes better by using a questionnaire of attitudes given at the beginning of learning and at the end so that it can be tested analysis of Coovariatec (ANCOVA).

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