

## Implementation Of E-Learning In Learning Management Education Innovation During The Covid-19 Pandemic

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**Abstract:** This study aims to see the effectiveness of e-learning implementation and student responses to e-learning during the Covid-19 pandemic on learning innovation management in education. The sample data in this study were 21 students. The instrument used in this study was a student response questionnaire sheet consisting of 15 items. The results of this study indicate that the instruments used were valid and reliable. This was evidenced by the results of the validity calculation which states that 15 questions were valid and no questions were issued. And also for the results of data reliability calculations using the Cronbach alpha method with a score of 0.88, this value was greater when compared with the  $r_{table}$  value for  $\alpha = 0.05$ , namely 0.4329. So it could be said that the data used was reliable. For the results of the analysis with the Rasch model assisted by the Winstep application, it was found that the quality of the questionnaire responses to E-Learning g on innovation and educational management materials at MAP Bengkulu University was very good. From the pairing T-test also obtained SIG <0.05, which means that there was a significant difference.

**Keywords:** E-learning, Pandemic, Covid-19

**Abstrak:** Penelitian ini bertujuan untuk melihat efektifitas implementasi e-learning dan respon mahasiswa terhadap pembelajaran e-learning di masa pandemi Covid-19 pada pembelajaran inovasi pengelolaan pendidikan. Sampel data pada penelitian ini yaitu 21 mahasiswa. Instrumen yang digunakan dalam penelitian ini yaitu lembar angket respon mahasiswa yang terdiri dari 15 item. Hasil penelitian ini menunjukkan bahwa instrumen yang digunakan valid dan reliabel. Ini dibuktikan dengan hasil perhitungan validitas yang menyatakan bahwa 15 pertanyaan valid dan tidak ada pertanyaan yang dikeluarkan. Dan juga untuk hasil perhitungan reliabilitas data dengan menggunakan metode alpha Cronbach dengan skor 0,88, nilai ini lebih besar jika dibandingkan dengan nilai  $r_{tabel}$  untuk  $\alpha=0,05$  yaitu 0,4329. Sehingga dapat dikatakan bahwa data yang digunakan reliabel. Untuk hasil analisis dengan model rasch berbantuan aplikasi winstep didapatkan bahwa kualitas dari angket respon terhadap pembelajaran E-Learning pada

*materi inovasi dan pengelolaan pendidikan di MAP Universitas Bengkulu adalah sangat baik. Dari pairing T-test juga didapatkan SIG<0,05 artinya terdapat perbedaan signifikan.*

**Kata Kunci:** *E-learning, Pandemi, Covid-19*

## INTRODUCTION

The world is faced with a serious threat of the corona virus or Corona Virus Disease 2019 (Covid-19) which first spread in December 2019 from the city of Wuhan, China (Dyah Purnama Sari&Sutapa, 2020). The COVID-19 pandemic is a devastating disaster for all inhabitants of the earth. All segments of human life on earth are disturbed, without exception of education. Many countries have decided to close schools, colleges and universities, including Indonesia (Syah, 2020). On March 24, 2020 the Minister of Education and Culture of the Republic of Indonesia issued Circular Number 4 of 2020 concerning Implementation of Education Policies in an Emergency for the Spread of COVID, in this Circular it was explained that the learning process is carried out at home through online/distance learning carried out to provide a learning experience meaningful to students. (Dewi, 2020). With the closing of schools, the government took steps so that the learning process was not left behind and students still received the right to gain knowledge. Therefore, the next government decision is that the learning process will continue but not face-to-face but online (Mastura&Santaria, 2020). Online learning or also known as online learning is learning that utilizes multimedia technology, video, virtual classes, animated online text, voice messages, e-mail, conference calls, and online video streaming (Jayul&Irwanto, 2020). Online learning during this pandemic is part of an effort to increase awareness of the spread of the covid-19 virus (Herlina&Suherman, 2020). Universities in the midst of the Covid-19 pandemic must continue to carry out the teaching and learning process by turning it into a Distance Learning Process (DLP). DLP is a challenge for every university to continue to carry out educational goals (Argaheni, 2020). The impact of a pandemic on education is that it is imperative for every workforce and student to know how online education works. Meanwhile, not everyone is proficient in technology at this time and not all regions have good networks for online learning. But because of the pandemic, everyone in educational institutions is required to be technology literate in order to provide creative learning to be given to their students and also have to do everything they can to get a good network to get or be able to provide these lessons (Anshori&Illiyin, 2020).

The use of technology in learning is not only caused by the need during a pandemic like today but also to meet the demands of learning in the 21st century. The 21st century is known to everyone as the age of knowledge which

is the main foundation for various aspects of life (Sole & Anggraeni, 2018). 21st century learning is required to be based on technology to balance the demands of the millennial era with the aim that later students will get used to 21st century life skills (Sugiyarti et al., 2018). In the 21st century, it is not only for students, teachers must also be ready to face the skills that exist in them (Risdianto, 2019). In the 21st century, changes occur very rapidly in the field of information technology, especially social media (Redhana, 2019). The 21st century, together with technological advances, is increasingly providing easy access for students to get instant answers to the learning process. Focus on answers and not on thinking, questioning, and solving. It can be ascertained that students will have minimal learning experience. In this context, educators have a duty to be able to make learning designs that allow students to be able to empower their literacy potential to solve complex problems and become meaningful learning throughout life (Prayogi & Aesthetics, 2019).

E-Learning is a learning system that can be used as a means for the teaching and learning process carried out without having to meet face to face between teachers and students (Utami et al., 2020). There are several roles that will be developed in e-learning, namely as administrator (admin), teacher (teacher) and user (student) (Purmadi & Surjono, 2016). The introduction of the concept of e-learning in the academic world has been applied. This concept called e-learning has created a process of transforming conventional education into digital form. At this time the concept of e-learning has been widely accepted by the world community (Ismail et al., 2018). The main weakness of e-learning, namely the intensity of meeting between students and teachers is very minimal and it is difficult to be able to socialize between students (Wardani et al., 2018). Other limitations regarding e-learning include; Weak control is caused by a lack of mastery of the concept of the method of using e-learning applications by both educators and their students, limited internet network access, availability of learning modules and the lack of other infrastructure by students (Usman, 2018). However, there are also several advantages of e-learning, namely: 1) The availability of e-moderating facilities where teachers and students can communicate easily through the internet on a regular basis or whenever communication activities are carried out without being limited by distance, place, and time; 2) Teachers and students can use structured and scheduled teaching materials via the internet; 3) Students can study (review) teaching materials at any time and anywhere if needed remembering teaching materials is stored on the computer; 4) If students need additional information related to the material they are learning, they can access the internet; 5) Both teachers and students can conduct discussions via the internet which can be followed by a large number of participants; 6) Changing the role of students

from being passive to being active; 7) Relatively more efficient. For example, those who live far from conventional universities or schools can access it (Hayati, 2020).

Based on the description above, it is necessary to conduct research with the aim of seeing the effectiveness of e-learning implementation and student responses to e-learning learning during the Covid-19 pandemic in learning innovation management of education.

## RESEARCH METHODS

This type of research is RND (research and development) using the Dick and Carey model. The population in this study were students of S2 Educational Administration, Bengkulu University. The samples taken were 21 students who were determined by purposive sampling technique. In this research article is a stage to see the effectiveness of e-learning implementation and student responses to e-learning learning during the Covid-19 pandemic on learning educational management innovations developed using a Likert scale questionnaire with a total of 15 questionnaire items. The questionnaire data was tested for its validity and reliability. The validity of the data can be seen from the resulting  $V_a$ , which is then adjusted according to the following interpretation.

To find the amount of  $V_a$  we can use the formula

$$V_a = \frac{\sum_1^3 A_i}{n}$$

Where  $\sum_1^3 A_i$  is the total score of acquisition while  $n$  is the number of items.

The  $V_a$  value that we get is then adjusted to the following validity interpretation table.

**Table 1. Interpretasi Validitas**

No	Magnitude	Criteria
1	$1 \leq V_a < 2$	Invalid
2	$2 \leq V_a < 3$	Less valid
3	$3 \leq V_a < 4$	Valid

To find data reliability we use a formula

$$R \text{ eliability} = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\Sigma \sigma_n}{\sigma_t} \right)$$

Where k is the number of items,  $\Sigma \sigma_n$  is the number of item variants and  $\sigma_t$  is the total variance. Data is said to be reliable if  $r_{\text{count}} > r_{\text{table}}$ . To confirm the results and determine the quality of the questionnaire given, data analysis was carried out using the Rasch Model using Winstep. Meanwhile, to see the effectiveness of the implementation of e-learning in learning innovation management of education during the Covid-19 pandemic, it was done by calculating the value of N-Gain and Pairing T Test.

## RESULT AND DISCUSSION

The student response questionnaire to MOOCs as an augmented reality assisted e-learning media was used in the form of a questionnaire developed based on the Likert scale. Questionnaire analysis was carried out to determine student responses to MOOCs as elearning media assisted by augmented reality. The questionnaire for this need was filled in by 47 respondents with 17 items. Assessment using a Likert scale with the maximum score of the questionnaire items is 4 and the minimum is 1. The following is the result of the validity calculation.

$$V_a = \frac{\Sigma^3 A_i}{n} = \frac{55,8571}{15} = 3,7238$$

Because the value of  $V_a = 3.3728$ , based on the validity interpretation table (table 1) it is said that the data we use is valid.

For data reliability we can see the following calculations:

$$R \text{ eliability} = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\Sigma \sigma_n}{\sigma_t} \right)$$

$$R \text{ eliability} = \left( \frac{15}{15-1} \right) \left( 1 - \frac{3,32}{20,50} \right)$$

$$R \text{ eliability} = (1,07)(0,83)$$

$$R \text{ eliability} = 0,88$$

The results we get are said to be  $r_{\text{count}}$ . Then we have to look at the  $r_{\text{table}}$  in the  $r_{\text{table}}$  or the simple correlation coefficient table for  $df = 19$ . In the table r, the  $r_{\text{table}}$

is 0.2876. Because the  $r_{\text{count}}$  is greater, namely 0.91 than the  $r_{\text{table}}$ , which is 0.4329, then the data is said to be reliable.

For analysis of response data to E-Learning learning on innovation and educational management materials at MAP Bengkulu University. A limited trial was conducted to determine the response to E-Learning learning on innovation and educational management material at the MAP of Bengkulu University to 21 respondents with 15 items. Assessment using a Likert scale with the maximum score of the questionnaire items is 4 and the minimum is 2. Data on the results of participant responses are stored in excel and then processed using the winstep program.

Data analysis was performed using the Rasch model and assisted by Winstep software developed by Linacre (2006). The Rasch model is able to see the interactions between respondents and items at once. In the Rasch model, a value is not seen based on the raw score, but a logit value that reflects the probability of selecting an item in a group of respondents (Wibisono, 2016).

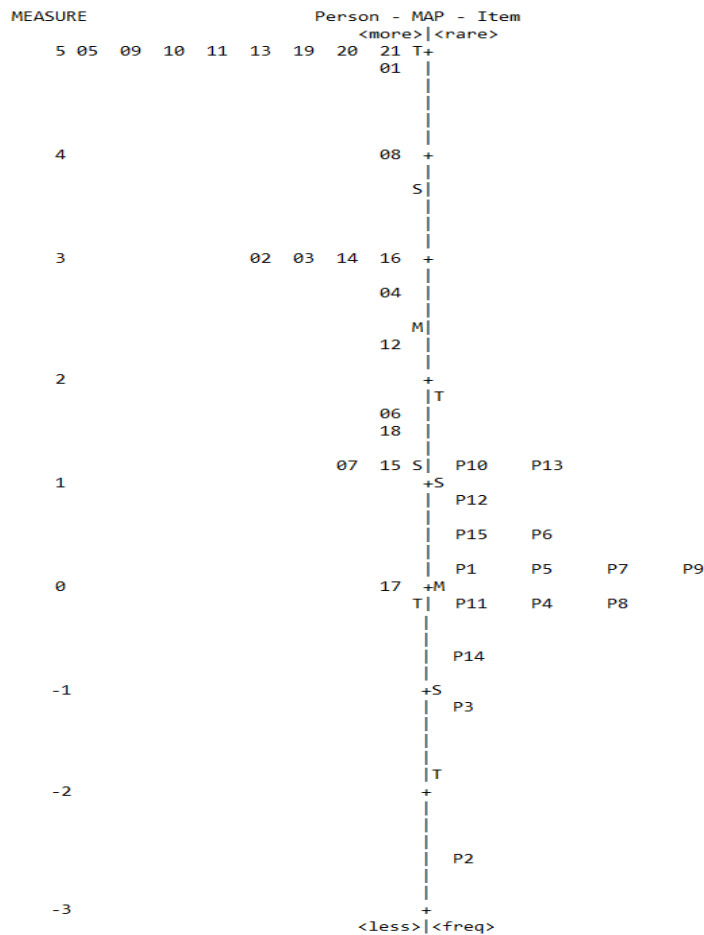
According to Sumintono&Widhiarso (2014) the superiority of Rasch modeling compared to other methods, especially classical test theory, is the ability to predict missing data Rasch Model Application, Self Efficacy Scale, Student Career Journal of Psychology 251 (missing data), based on individual response patterns. This advantage makes the results of the Rasch model statistical analysis more accurate in the research conducted, and more importantly, Rasch modeling is able to produce standard error measurement values for the instruments used which can improve the accuracy of calculations. Calibration is carried out in Rasch modeling simultaneously in three ways, namely measurement scale, respondent (person), and item (item). An instrument that is not calibrated has the possibility of producing invalid data and can cause research activities to fail (Ardiyanti, 2017).

There are two approaches that accommodate the posteriori approach in testing the consistency of item parameters for a number of respondents, namely Mixed Rasch Modeling (MRM) and Hybrid Rasch-Latent Class Modeling (Hybrid Rasch-Latent Class Modeling). MRM was developed by Rost (1990) which integrates the Rasch model and latent class analysis in one model (Risdianto, et.al., 2021). This model assumes that the Rasch model applies to any distribution of respondent groups derived from a mixture of Rasch modeling and latent class analysis (Widhiarso, 2013).

The instrument used to analyze this is the non-test technique. The non-test technique is an instrument development in the affective domain in the form of a questionnaire. The collected data were analyzed using the Rasch Model.

The instrument in this study was used to collect data on the validity test of experts and limited trials (Asyhar et al., 2018).

From the data obtained using the Winstep Variable Maps data (Wright map), the results can be seen in the image below:



**Figure 1. Variable Map Test**

In figure 1 the Variable Map Test consists of measures (showing the logit scale). On the left side is the distribution of the subject (respondent) 's ability, while on the right side is the distribution of items (questions). From this map, it can be seen that in general the questions on the test are more difficult than the respondent's ability. On the map on the right there are 15 questions that have validity levels of varying difficulty starting from P10 and P13 tang which are the most difficult questionnaire items leading to P2 which has the lowest response items. From the questionnaire data, the question with the

lowest difficulty level is question no. 2 (P2) with the average logit item which is -2.61. And for the ones with the highest ability values, namely item number 10 (P10) and no. 13 (P13), which is in the top position with an average logit item of +1.18. Theoretically, with this question, there will be no respondent who has a chance to answer the question correctly because it has a lower ability than the difficulty level of the question.

This shows a good thing because in this case each question given can provide information regarding the ability of the respondent being tested. If we look at the distribution of the response items, they are diverse and grouped. Next we will analyze the M-S-T distance found on the Wright map above. It can be seen that the ability of the respondents is only slightly wider than the distribution found in the difficulty level of the response items. In the context of the level of difficulty contained in the response items, this means that the item responses to the questions have not too much diversity and the ability of the respondents is not much different. This is in accordance with if there is a wider distribution of person abilities than the distribution of items, it can be concluded that the level of person (respondent) ability is different.

On the left wright map, there are 21 respondents who have various ability values and are also grouped. From the data above, it can be seen that almost all respondents have a high level of ability in answering the questionnaire items given. On the map on the left with 21 respondents who have the highest level of ability with codes number 05, 09, 10, 11, 13, 19, 20 and 21, by getting the maximum value that can be obtained. Has a logit average of (+6.09 logit). From the person variable map data, it can be seen that respondents / participants who have the highest score for the ability to answer questions and have the highest ability are 21 respondents, and for respondents who have the lowest ability is respondent no. 17. From the variable map data, it can be seen that even though respondent no.20 has the lowest ability, he is still able to answer the most difficult response items, namely no.10 (P10) and no.13 (P13). This means that almost all respondents agreed with all the questionnaire item responses given to participants, and showed that the questionnaire data was valid and reable.

When comparing the average logit item with the logit person, it can be seen that the logit person is larger (+2.20 logit), this indicates that the overall ability is only slightly higher than the question difficulty. If we compare the distance between M-S-T on the Wright map above, it can be seen that the distribution for student ability (on the left) is wider than the distribution on the difficulty level of the item (right). In the context of the difficulty level of the questions, this shows that the items of diversity are not very far apart; However,



from the aspect of student ability, it can be seen that the ability distance is very wide (Untary, Helverasari; Risdianto, 2020)

To find out the level of difficulty of the questions more precisely on the logit scale, using the measure item, the results obtained are as in the table below:

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL		INFIT		OUTFIT		PTMEASUR-AL		EXACT MATCH		Item
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%		
10	75	21	1.18	.56	.75	-.64	.73	-.65	.76	.73	69.2	65.2	P10	
13	75	21	1.18	.56	.74	-.70	.89	-.18	.75	.73	69.2	65.2	P13	
12	76	21	.86	.57	.93	-.08	.89	-.17	.74	.70	76.9	67.8	P12	
6	77	21	.53	.59	1.23	.70	1.14	.46	.66	.67	61.5	70.3	P6	
15	77	21	.53	.59	1.29	.86	1.21	.61	.70	.67	76.9	70.3	P15	
1	78	21	.17	.60	.80	-.47	.76	-.40	.67	.63	76.9	72.0	P1	
5	78	21	.17	.60	.96	.01	.87	-.15	.64	.63	61.5	72.0	P5	
7	78	21	.17	.60	1.23	.69	1.16	.48	.56	.63	61.5	72.0	P7	
9	78	21	.17	.60	1.15	.51	1.06	.28	.58	.63	61.5	72.0	P9	
4	79	21	-.21	.63	.99	.09	.92	.03	.59	.59	84.6	73.5	P4	
8	79	21	-.21	.63	1.03	.21	1.03	.23	.57	.59	69.2	73.5	P8	
11	79	21	-.21	.63	.96	.01	.79	-.24	.66	.59	84.6	73.5	P11	
14	80	21	-.63	.67	1.09	.35	1.72	1.11	.47	.54	76.9	75.4	P14	
3	81	21	-1.11	.73	.68	-.68	.45	-.53	.58	.48	84.6	80.1	P3	
2	83	21	-2.61	1.10	1.29	.60	1.47	.76	.18	.29	92.3	92.3	P2	
MEAN	78.2	21.0	.00	.64	1.01	.1	1.01	.1			73.8	73.0		
P.S.D	2.1	.0	.92	.13	.20	.5	.30	.5			9.6	6.3		

Figure 2. Table of Response Item Analysis

Based on the results of the student response analysis using the help of the winsteps program in Figure 2, it can be seen that the total count is all filled with 21 responses. This shows that all respondents answered all the items given. From the picture above we can see that the item column shows the level of difficulty of the items shown in the measure column, namely the most difficult response questionnaire items, namely P10 and P13 and the easiest is P2. The difficulty level of the questions makes it easy for us to identify which questions are difficult and which are easy.

Iteman's analysis and Rasch modeling analysis when combined will provide complementary data. Iteman's analysis analyzes the questions as a whole while the Rasch modeling analysis is able to analyze the relationship between the item questions and the respondents. In the iteman analysis, respondents with the same score are considered to have the same ability, while in Rasch modeling, respondents with the same score can be seen their ability level. In the Rasch

analysis the model can find out the person fit. The determination of person fit also uses the same criteria as item fit (Nuryanti et al., 2018).

Winstep software is a computational tool in the Rasch model to analyze the scores generated from the test instrument with the aim of knowing the MNSQ Outfit, ZSTD Outfit, Point Measure Correlation, Item reliability and Cornbach Alpha. MNSQ outfit is useful for seeing the suitability of data with the model used. The expected mean square value is 1 (one). If the mean-square value of the infit is greater than one, the variation of the instrument is greater than the prediction made by the Rasch model. If the infit value is less than 1, then the variation on the instrument is less when compared to the predictions made by the Rasch model (Wahyuningsih, 2020).

The score data were analyzed using the Rasch Model assisted by the Winsteps program. Based on the Item Measure analysis (Table 2), the difficulty level of the questions can be classified. Classification of the level of difficulty can be done by comparing the Measure value for each item with the S.D Measure value. The grouping of items based on their level of difficulty can be seen in Table 3. Item Fit Order analysis (Table 3) shows that there is one item that is not fit, namely number 14, so it needs to be discarded or replaced. This is because question number 14 has one criterion that does not meet the criteria for a fit item. The other twelve questions can be defended because they meet one of the following fit item criteria (Sabekti&Khoirunnisa, 2018).

To find out the level of suitability of the question (item fit), whose meaning is in accordance with the ideal model of measurement. Select table 10. Item fit order. The table below shows that the item fit indicators for all question items are outfit means square ( $0.5 < \text{MNSQ} < 1.5$ ), outfit Z-standard ( $-2.0 < \text{ZSTD} < +2.0$ ), and point measure correlation. ( $0.4 < \text{Pt Measure corr} < 0.85$ ), it does not indicate any problem. In other words, all the questions given can be understood well by all respondents, there are no questions that are misconceptions (Sumintono, 2015).

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	TOTAL MEASURE	MODEL		INFIT		OUTFIT		PTMEASUR-AL		EXACT MATCH		Item
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%		
14	80	21	-.63	.67	1.09	.35	1.72	1.11	.47	.54	76.9	75.4	P14	
2	83	21	-2.61	1.10	1.29	.60	1.47	.76	.18	.29	92.3	92.3	P2	
15	77	21	.53	.59	1.29	.86	1.21	.61	.70	.67	76.9	70.3	P15	
6	77	21	.53	.59	1.23	.70	1.14	.46	.66	.67	61.5	70.3	P6	
7	78	21	.17	.60	1.23	.69	1.16	.48	.56	.63	61.5	72.0	P7	
9	78	21	.17	.60	1.15	.51	1.06	.28	.58	.63	61.5	72.0	P9	
8	79	21	-.21	.63	1.03	.21	1.03	.23	.57	.59	69.2	73.5	P8	
4	79	21	-.21	.63	.99	.09	.92	.03	.59	.59	84.6	73.5	P4	
5	78	21	.17	.60	.96	.01	.87	-.15	.64	.63	61.5	72.0	P5	
11	79	21	-.21	.63	.96	.01	.79	-.24	.66	.59	84.6	73.5	P11	
12	76	21	.86	.57	.93	-.08	.89	-.17	.74	.70	76.9	67.8	P12	
13	75	21	1.18	.56	.74	-.70	.89	-.18	.75	.73	69.2	65.2	P13	
1	78	21	.17	.60	.80	-.47	.76	-.40	.67	.63	76.9	72.0	P1	
10	75	21	1.18	.56	.75	-.64	.73	-.65	.76	.73	69.2	65.2	P10	
3	81	21	-1.11	.73	.68	-.68	.45	-.53	.58	.48	84.6	80.1	P3	
MEAN	78.2	21.0	.00	.64	1.01	.1	1.01	.1			73.8	73.0		
P.SD	2.1	.0	.92	.13	.20	.5	.30	.5			9.6	6.3		

**Figure 3. Table of Problem Conformity Level**

Based on the results of the student response analysis using thewinsteps program in Figure 3, 15 items of misfit were obtained, and 15 items of fit were obtained, so that the final instrument was 15 items. From the data above, it can be seen that from all items for the Outfit Mean Square value, item no.14 has an MNSQ of 1.72, for ZSTD of 1.11 and the Corr value of 0.47 all of which are in accordance with predetermined criteria. If there is 1 criterion that still meets the required criteria, then the item does not need to be replaced or can be maintained.

One of the focuses of developing a Rasch-based measuring instrument or item response theory is to adapt the measuring instrument to the participant's ability. If the measured participants are at an intermediate level, the development of the test is directed at that level of ability. This adjustment can be seen in the graph of the measuring instrument information function. This graph shows which level of ability the measuring instrument will provide maximum information (Rachman&Napitupulu, 2017).

The following shows the suitability curve for response item no.14 in the curve image below, it can be seen that there is 1 response that is outside the limits of the Outfit confidence space. This can also be shown by the ICC graph as shown below:

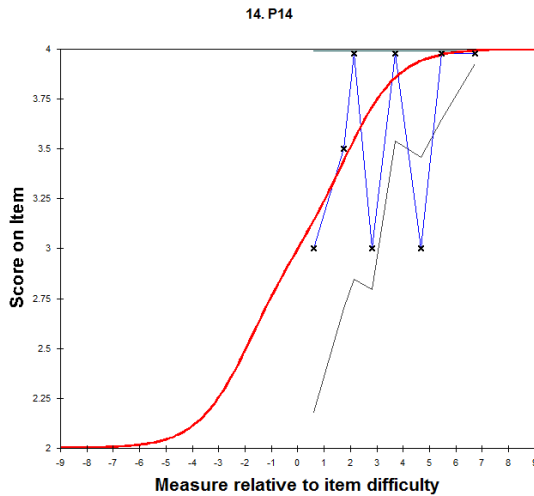


Figure 4. Graph of ICC Expected Score

From the graph of the expected ICC score above, we can see that the question with code P14 has 1 response that is out of the predetermined limit.

To analyze the ability of the respondents who filled out the questionnaire items, we chose the 17 Person Measure table. Ability data will be displayed sequentially from highest to lowest, as follows:

Person STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-CORR.	AL-EXP.	EXACT OBS%	MATCH EXP%	Person
5	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	05
9	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	09
10	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	10
11	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	11
13	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	13
19	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	19
20	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	20
21	60	15	6.09	1.85	MAXIMUM	MEASURE			.00	.00	100.0	100.0	21
1	59	15	4.82	1.05	.87	.13	.43	-.05	.34	.15	93.3	93.3	01
8	58	15	4.03	.77	1.00	.19	1.33	.63	.12	.21	86.7	86.7	08
2	56	15	3.12	.60	1.05	.25	.97	.13	.22	.28	73.3	73.4	02
3	56	15	3.12	.60	.83	-.46	.69	-.42	.45	.28	73.3	73.4	03
14	56	15	3.12	.60	.87	-.32	.81	-.17	.38	.28	86.7	73.4	14
16	56	15	3.12	.60	1.22	.75	1.13	.41	.05	.28	60.0	73.4	16
4	55	15	2.78	.57	.84	-.52	.73	-.47	.45	.31	73.3	69.1	04
12	53	15	2.19	.53	1.21	.85	2.10	2.42	-.09	.35	60.0	63.3	12
6	51	15	1.64	.52	.79	-.65	.76	-.65	.43	.38	66.7	64.3	06
18	50	15	1.37	.52	.63	-1.21	.59	-1.21	.56	.40	86.7	67.0	18
7	49	15	1.10	.52	.73	-.70	.72	-.71	.36	.41	73.3	69.5	07
15	49	15	1.10	.52	1.41	1.13	1.39	1.04	.55	.41	60.0	69.5	15
17	45	15	-.01	.53	1.40	1.01	1.43	1.06	.40	.42	66.7	72.9	17
MEAN	55.9	15.0	3.82	1.08	.99	.0	1.01	.2			73.8	73.0	
P.SD	4.5	.0	2.05	.61	.24	.7	.44	.9			10.9	8.1	

Figure 5. Person Measure Order Table

In Figure 5 the person measure order table above, it can be seen that all respondents answered the 15 response questionnaire items that were given. In the picture above, the measure column shows the ability of each respondent in logit units. Respondents who have the highest score are 21 respondents, one of whom is respondent no. 05, 09, 10, 11, 13, 19, 20 and 21 with measure value = +6.09, it can be seen in the table of infit and outfit values for 47 respondents who have the highest ability is already the Maximun measure. For respondents who have the lowest value with measure = -0.01, namely respondent no 17. It can be seen from the data above that there are several respondents who have the same logitvalue, this means that the raw score is the same (total score) as well as the ability. To further see which respondents have higher ability, it can be seen from the scalogram. The scalogram can be used to see which respondents have higher ability even though they have the same logit value. The level of ability here is the response data in approving the questionnaire response items given to the results of the questionnaire response to E-Learning learning on innovation and educational management materials at the MAP of Bengkulu University.

To find out the aspect of the mismatch of the response with the ideal model as shown in table 6 person fit order, as in the table below:

Person STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD	PTMEASUR-CORR.	AL-EXP.	EXACT OBS%	MATCH EXP%	Person
12	53	15	2.19	.53	1.21	.85	2.10	2.42	A-.09	.35	60.0	63.3	12
17	45	15	-.01	.53	1.40	1.01	1.43	1.06	B .40	.42	66.7	72.9	17
15	49	15	1.10	.52	1.41	1.13	1.39	1.04	C .55	.41	60.0	69.5	15
8	58	15	4.03	.77	1.00	.19	1.33	.63	D .12	.21	86.7	86.7	08
16	56	15	3.12	.60	1.22	.75	1.13	.41	E .05	.28	60.0	73.4	16
2	56	15	3.12	.60	1.05	.25	.97	.13	F .22	.28	73.3	73.4	02
1	59	15	4.82	1.05	.87	.13	.43	-.05	G .34	.15	93.3	93.3	01
14	56	15	3.12	.60	.87	-.32	.81	-.17	f .38	.28	86.7	73.4	14
4	55	15	2.78	.57	.84	-.52	.73	-.47	e .45	.31	73.3	69.1	04
3	56	15	3.12	.60	.83	-.46	.69	-.42	d .45	.28	73.3	73.4	03
6	51	15	1.64	.52	.79	-.65	.76	-.65	c .43	.38	66.7	64.3	06
7	49	15	1.10	.52	.73	-.70	.72	-.71	b .36	.41	73.3	69.5	07
18	50	15	1.37	.52	.63	-1.21	.59	-1.21	a .56	.40	86.7	67.0	18
MEAN	55.9	15.0	3.82	1.08	.99	.0	1.01	.2			73.8	73.0	
P.SD	4.5	.0	2.05	.61	.24	.7	.44	.9			10.9	8.1	

Figure 6. Misfit Person Table

In the table above, it can be seen that the least fit is the respondent with code 12. This indicates that the three respondents tend to have an inconsistent pattern in answering these questions. And it can be seen that all respondents

have at least 1 predetermined limit criteria value as in the Person Misfit Table. And to see a more complete fit can be seen in the following Guttman matrix:

GUTTMAN SCALOGRAM OF RESPONSES:

Person	Item		
	1	1	1111
	2	3	34481157965203
-----			
5		+	4444444444444444 05
9		+	4444444444444444 09
10		+	4444444444444444 10
11		+	4444444444444444 11
13		+	4444444444444444 13
19		+	4444444444444444 19
20		+	4444444444444444 20
21		+	4444444444444444 21
1		+	4444444444444443 01
8		+	4434444444444434 08
2		+	444434343444434 02
3		+	444444344434343 03
14		+	444434443444433 14
16		+	444344433344444 16
4		+	444444434334334 04
12		+	343444434333443 12
6		+	434343443433333 06
18		+	444333334343333 18
7		+	434333333443333 07
15		+	443344344332233 15
17		+	433432333422333 17
-----			
	1	1	1111
	2	3	34481157965203

**Figure 7. Scologramguttman table**

From the Guttman scologram table we can see the pattern of respondents' answers, we can see that there are similarities in the answers between the 21 respondents who have the highest ability, one of them from respondents nos. 05, 09, 10, 11, 13, 19, 20 and 21 have the same answer pattern. There are not many similarities in the answers to the current respondents.

From the similarity of the respondent's response pattern, this could be an indication that the respondents were cooperating with each other or cheating in the implementation of filling out the questionnaire items so that it needs to be re-evaluated. It can be seen that the scologram has an irregular / inconsistent response pattern with the answer, this also shows that on certain points he tends to agree with the statement (getting a high / difficult item score) while on other items he tends to reject (get a low item score /easy). This is probably because at that time the respondents lacked motivation to respond to the scale. This low motivation causes them to give careless responses. The implication is that their responses are varied and inconsistent, depending on their mood when responding to the grain. However, this does not affect the overall response results (Risdianto et al., 2020).

To see the effectiveness of e-learning implementation in learning innovation management in education, the calculation of the N-Gain Score and pairing T-test is performed. Based on the calculation of the N-Gain score, the

results are quite effective with a percentage of 69.50%. For Pairing = T test the results are as follows :

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE-TEST	5.3000	25	1.53433	.30687
	POS-TEST	8.7400	25	.80519	.16104

**Figure 8. Paired Sample Statistics Table**

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	PRE-TEST & POS-TEST	25	.369	.069

**Figure 9. Paired Sample Correlations Table**

**Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRE-TEST - POS-TEST	-3.44000	1.44568	.28914	-4.03675	-2.84325	-11.897	24	.000

**Figure 10. Paired Sample Correlations Table**

GIS <0.05 There is a significant difference.

## CONCLUSION

From the analysis that has been carried out based on the questionnaire analysis of the response items to E-Learning learning on innovation and educational management materials at the MAP of the University of Bengkulu, it can be concluded that the quality of the response questionnaire to E-Learning learning on innovation material and educational management at MAP Bengkulu University is very good. So that it can be used to determine the response to E-Learning learning on innovation and educational management materials at MAP Bengkulu University. And from the results of the analysis of respondents and questionnaire items, it shows that the majority of respondents agree with all the questionnaire items given, thus indicating that the response to E-Learning learning on innovation and educational management material at MAP Bengkulu University, many agree. In addition, the results of this study indicate that the instruments used are valid and reliable. This is evidenced by the results of the validity calculation which states that 15 questions are valid and no questions are issued. And also for the results of data reliability calculations using the Cronbach alpha method with a score of 0.88, this value is greater when compared with the rtable value for  $\alpha = 0.05$ , namely 0.4329. So it can be said that the data used is reliable. From the pairing T-test also obtained SIG <0.05,

which means that there is a significant difference. Even so, further research is needed to determine the response to E-Learning learning on innovation and educational management materials at the MAP of Bengkulu University for other types of subject matter.■

## REFERENCES

- Anshori, I., & Illiyyin, U. (2020). Dampak Covid-19 Terhadap Proses Pembelajaran Di Mts Al-Asyhar Bungah Gresik. *Jurnal Manajemen Pendidikan Islam*, 181–199. <https://doi.org/10.30868/im.v3i02.803>
- Ardiyanti, D. (2017). Aplikasi Model Rasch pada Pengembangan Skala Efikasi Diri dalam Pengambilan Keputusan Karir Siswa [Application of the Rasch Model on the Development of Self-Efficiency Scale in Student Career Decision Making]. *Jurnal Psikologi*, 43(3), 248.
- Argaheni, N. B. (2020). Sistematis Review: Dampak Perkuliahan Daring Saat Pandemi COVID-19 Terhadap Mahasiswa Indonesia. *PLACENTUM: Jurnal Ilmiah Kesehatan Dan Aplikasinya*, 8(2), 99. <https://doi.org/10.20961/placentum.v8i2.43008>
- Asyhar, N., Mujasam, Yusuf, I., & Widyaningsih, S. W. (2018). Pengembangan Media Pembelajaran Fisika Berbasis Multimedia Interaktif Pada Materi Gerak Parabola Di Sma. *Prosiding*, 03, 18–27.
- Dewi, W. A. F. (2020). Dampak COVID-19 terhadap Implementasi Pembelajaran Daring di Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 2(1), 55–61. <https://doi.org/10.31004/edukatif.v2i1.89>
- Dyah Purnama Sari, & Sutapa, P. (2020). Efektifitas Pembelajaran Jarak Jauh dengan Daring Selama Pandemi COVID-19 Mata Pelajaran Pendidikan Jasmani Olahraga dan Kesehatan (PJOK). *Pediatric Critical Care Medicine*, 19–29.
- Hayati, N. (2020). Metode Pembelajaran Daring/E-LEARNING YANG EFEKTIF. *E-Learning Yang Efektif*. Bali: *Jurusan Ilmu Pendidikan ...*, 1–9.
- Herlina, H., & Suherman, M. (2020). Potensi Pembelajaran Pendidikan Jasmani Olahraga Dan Kesehatan (Pjok) Di Tengah Pandemi Corona Virus Disease (Covid)-19 Di Sekolah Dasar. *Tadulako Journal Sport Sciences And Physical Education*, 8(1), 1–7. <http://jurnal.untad.ac.id/jurnal/index.php/PJKR/article/view/16186>
- Ismail, M. E., Hashim, S., Ismail, I. M., Ismail, A., Daud, K. A. M., & Khairudin, M. (2018). Penggunaan Massive Open Online Course (Mooc) Dalam Kalangan Pelajar Vokasional. *Journal of Nusantara Studies*, 3(1), 30–41.
- Jayul, A., & Irwanto, E. (2020). Model Pembelajaran Daring Sebagai Alternatif Proses Kegiatan Belajar Pendidikan Jasmani di Tengah Pandemi



- Covid-19 Achmad. *Jurnal Pendidikan Kesehatan Rekreasi*, 6(2), 190–199.
- Mastura, & Santaria, R. (2020). Dampak Pandemi Covid-19 terhadap Proses Pengajaran bagi Guru dan Siswa Pendahuluan. *Jurnal Studi Guru Dan Pembelajaran*, 3(2), 289–295.
- Nuryanti, S., Masykuri, M., & Susilowati, E. (2018). Analisis Iteman dan model Rasch pada pengembangan instrumen kemampuan berpikir kritis peserta didik sekolah menengah kejuruan. *Jurnal Inovasi Pendidikan*, 4(2), 224–233.
- Prayogi, R. D., & Estetika, R. (2019). Kecakapan Abad 21 : Kompetensi Digital Pendidik Masa Depan. *Jurnal Manajemen Pendidikan*, 14(2), 144–151. <http://journals.ums.ac.id/index.php/jmp/article/download/9486/5193>
- Purmadi, A., & Surjono, H. D. (2016). Pengembangan Bahan Ajar Berbasis Web Berdasarkan Gaya Belajar Siswa Untuk Mata Pelajaran Fisika. *Jurnal Inovasi Teknologi Pendidikan*, 3(2), 151. <https://doi.org/10.21831/jitp.v3i2.8285>
- Rachman, T., & Napitupulu, D. B. (2017). Rasch Model for Validation a User Acceptance Instrument for Evaluating E-learning System. *CommIT (Communication and Information Technology) Journal*, 11(1), 9. <https://doi.org/10.21512/commit.v11i1.2042>
- Redhana, I. W. (2019). Mengembangkan Keterampilan Abad Ke-21 Dalam Pembelajaran Kimia. *Jurnal Inovasi Pendidikan Kimia*, 13(1), 2239–2253.
- Risdianto, E. (2019). *Kepemimpinan Dalam Dunia Pendidikan Di Indonesia di Era Revolusi Industri 4.0*. 1–12.
- Risdianto, E., Darmawan, A., Kristiawan, M., Wachidi, & Riyanto. (2020). Rasch Model Analysis On The Feasibility Test Of Basic Physics Ii Practical Guide Using Augmented Reality. *ARPN Journal of Engineering and Applied Sciences*, 15(4), 482–490.
- Risdianto, E., Wachidi, Riyanto, Alexon, Fathurrochman, I., Kusen. (2021). Blended Learning Model Based on Massive Open Online Courses (MOOCs) Assisted by Augmented Reality (BMA) Model as the Electronic Learning Media in the Pandemic Covid-19. *Al- Ishlah: Jurnal Pendidikan*, 13 (1), 228-241. <http://www.journal.staihubbulwathan.id/index.php/alishlah/issue/view/30>.
- Sabekti, A. W., & Khoirunnisa, F. (2018). Penggunaan Rasch Model Untuk Mengembangkan Instrumen Pengukuran Kemampuan Berikir Kritis Siswa Pada Topik Ikatan Kimia. *Jurnal Zarah*, 6(2), 68–75. <https://doi.org/10.31629/zarah.v6i2.724>
- Sole, F. B., & Anggraeni, D. M. (2018). Inovasi Pembelajaran Elektronik dan Tantangan Guru Abad 21. *Jurnal Penelitian Dan Pengkajian Ilmu*

- Pendidikan: E-Saintika*, 2(1), 10. <https://doi.org/10.36312/e-saintika.v2i1.79>
- Sugiyarti, L., Arif, A., & Mursalin. (2018). Pembelajaran Abad 21 Di Sd. *Prosiding Seminar Dan Diskusi Nasional Pendidikan Dasar 2018: Pembelajaran Abad 21*, 439–444.
- Sumintono, B. dan W. (2015). *Aplikasi Permodelan Rasch pada Assessment Pendidikan*. (B. Trim (ed.)). Trim Komunikata.
- Syah, R. H. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan, dan Proses Pembelajaran. *SALAM: Jurnal Sosial Dan Budaya Syar-I*, 7(5), 395–402. <https://doi.org/10.15408/sjsbs.v7i5.15314>
- Untary, Helverasari; Risdianto, E. dan K. (2020). *Analisis Data Penelitian dengan Model Rasch dan Winstep*. Halaman Moeka.
- Usman, U. (2018). Komunikasi Pendidikan Berbasis Blended Learning Dalam Membentuk Kemandirian Belajar. *Jurnal Jurnalisa*, 4(1), 136–150. <https://doi.org/10.24252/jurnalisa.v4i1.5626>
- Utami, Y. P., Alan, D., Cahyono, D., & Indonesia, U. T. (2020). Study at home : analisis kesulitan belajar matematika pada proses pembelajaran daring. *Jurnal Ilmiah Matematika Realistik*, 1(1), 20–26. <http://jim.teknokrat.ac.id/index.php/pendidikanmatematika/index%0ASTUDY>
- Wahyuningsih, S. A. (2020). Penggunaan Model Rasch Untuk Analisis Instrumen the Use of Rasch Model for Analyzing Test. *Jurnal Pendidikan Matematika*, 3(1), 45–50.
- Wardani, D. N., Toenlio, A. J. E., & Wedi, A. (2018). Daya Tarik Pembelajaran Di Era 21 Dengan Blended Learning. *Jurnal Kajian Teknologi Pendidikan (JKTP)*, 1(1), 13–18.
- Wibisono, S. (2016). Aplikasi Model Rasch Untuk Validasi Fundamentalisme Agama Bagi Responden Muslim. *Jurnal Pengukuran Psikologi Dan Pendidikan Indonesia*, 5(1), 729–750.
- Widhiarso, W. (2013). Aplikasi Model Rasch Campuran Dalam Mengevaluasi Pengukuran Harga Diri. *Jurnal Penelitian Dan Evaluasi Pendidikan*, 17(1), 172–187. <https://doi.org/10.21831/pep.v17i1.1367>.