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Covid-19 and its effect on the changing of energy industrial employment learning methods: analysis of the effectiveness

Covid-19 and its effect on the changing of energy industrial employment learning methods: analysis of the effectiveness

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Abstract. Although online learning at PT PLN (Persero) UPDL Palembang started in 2017, the level of effectiveness of online learning remains unknown for learning level 3 and above. To carry out cost efficiency in implementing the learning activity and to tackle the COVID-19 outbreak, PT PLN (Persero) UPDL Palembang that has a role in employee development plans to convert all of its learning methods to online learning. The effectiveness of learning activity can be measured by using four variables: delivery media, cognitive presence, social presence, and teaching presence. The learning effectiveness at PT PLN (Persero) UPDL Palembang are assessed by means of descriptive exploratory research using mixed quantitative and qualitative methods. It utilized data collection through questionnaires, interviews, observation, and documentation. Based on the analysis of collected data, it is concluded that online learning at PT PLN (Persero) UPDL Palembang has not been effective as the four parameters have not been fulfilled.

1. Introduction

PT Perusahaan Listrik Negara (Persero) is an Indonesian government-owned corporation that has a role in electricity distribution in Indonesia and generates the majority of the country's electrical power. As an energy company, PT. PLN needs to develop sustainability learning for the employee. The unit that has a role for that is on education and training centre unit.

PT PLN (Persero) UPDL Palembang has started online learning to develop employee skills and knowledge in the energy industry at 2nd level learning since 2017, and the total average online learning until 2019 is only 9.2%. Since the corona outbreak occurred in early 2020, all classroom learning activity cannot hold, so PT PLN (Persero) UPDL Palembang has changed all learning methods into online learning. According to Partner, participant interest, attention, and motivation are important in determining the success of the training program. People learn better when they can react positively to the learning environment [1]. Eggen and Kauchan suggest that the learning activity effectiveness can see from the activeness of students in learning, especially in organizing and seeking information. Therefore, the more active student in a learning activity means the learning activity was more influential [2]. Dabbagh & Bannan-Ritland defines that Online learning is an open and distributed learning environment that uses pedagogical tools, enabled by the internet and web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction [3].

The purpose of this research is to assess the effectiveness of online learning at PT PLN (Persero) UPDL Palembang, and the features of the learning delivery media affect the effectiveness of online learning.

2. Literature study

2.1. Online learning effectiveness

Garrison, Anderson, and Archer stated that online learning is useful if it meets three critical components: cognitive presence, social presence, and teaching presence. They develop a conceptual model of online learning activity, which they call a community of learning models. Figure 1 shows the community learning model that learning outcomes are useful if the three components are "presence" [4].

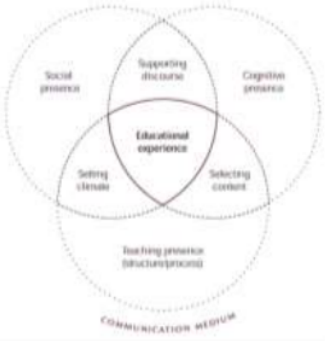

Figure 1/ Community of Inquiry

3. Method

3.1. Research design and schedule

The design in this study used a descriptive exploratory method with a mixed-method approach or also known as a combined quantitative and qualitative research. The data collection methods used were questionnaires, interviews, observations, and secondary data collection.

3.2. Research variable

The variables in this study were Delivery Media (Variable X_1), Social Presence (Variable X_2), Teaching Presence (Variable X_3), and Cognitive Presence (Variable Y_1).

3.3. Questionnaire validity test

The validity test uses to measure the validity of the research questionnaire. The validity test uses the Pearson correlation, the decision to know the instrument items validity. If at a significant level of 5% the value of r count> r table, the questionnaire instrument is valid [5]. Herewith the formula for the correlation coefficient between the x and y variables:

$$r_{xy} = \frac{n \sum XiYi - (\sum Xi)(\sum Yi)}{\sqrt{n \sum Xi^2 - (\sum Xi)^2 (n \sum Xi^2 - (\sum Xi)^2)}} \quad (1)$$

Table 1 Table "r" is used in the test instrument

Df	5 %	1 %	df	5 %	1 %
1	0.997	1.000	24	0.388	0.496
2	0.950	0.990	25	0.381	0.487
3	0.878	0.959	26	0.374	0.478
4	0.811	0.917	27	0.367	0.470
5	0.754	0.874	28	0.361	0.463
6	0.707	0.834	29	0.355	0.456
7	0.666	0.798	30	0.349	0.449

8	0.632	0.765	35	0.325	0.418
9	0.602	0.735	40	0.304	0.393
10	0.576	0.708	45	0.288	0.372
11	0.553	0.684	50	0.278	0.354
12	0.532	0.661	60	0.250	0.325
13	0.514	0.641	70	0.232	0.302
14	0.497	0.623	80	0.217	0.283
15	0.482	0.606	90	0.205	0.267
16	0.468	0.590	100	0.195	0.254
17	0.456	0.575	125	0.174	0.223
18	0.444	0.561	150	0.159	0.208
19	0.433	0.549	200	0.138	0.181
20	0.423	0.537	300	0.113	0.148
21	0.413	0.526	400	0.098	0.128
22	0.404	0.515	500	0.088	0.115
23	0.396	0.505	1000	0.062	0.081

3.4. Questionnaire reliability test

A reliability test uses to show how to trust the data from the questionnaire. It uses to determine the consistency and consistency of measurement. According to Wiratna Sujerwebi, the questionnaire questions declared reliable if Cronbach's alpha value is more significant than 0.6. The following is the instrument reliability formula [6]. Herewith the formula for calculating reliability:

$$r_{11} = \frac{k}{k-i}\left(1 - \frac{\sum \sigma_i^2}{\sigma_1^2}\right) \quad (2)$$

3.5. Triangulation

This research is a qualitative test using the Triangulation method. According to Sugiyono, there are three types, including triangulation of sources, triangulation of data collection techniques, and triangulation of time [7].

4. Results analysis

4.1. Validity test results

The total number of learning participants, instructors, and learning management during the study period was 908, based on the SLOVIN formula. It states that the minimum number of sampling is n = N / (1 + (N x e^2)); if the number of participants is 908, then sampling is required at least 278 [8]. In the instrument validity test, it was carried out by comparing the value of r-table with the calculated the R-value. Because the test sample used was 325 respondents, then the product-moment r-table value at 5% significance, the number r-table = 0.113. If r count> r table, then the question is valid. Validity testing was carried out using the SPSS Version 25 application. Table 2 below is the result of the validity test.

Table 2. Results of the questionnaire validity test on 325 respondents

No	Tested question	Number of respondent	R calculated	R table	Result	No	Tested question	Number of respondent	R calculated	R table	Result
Variable X1 (Media Delivery)						**Variable X3 (Teaching Presence)**					
1	Question 1	325	0.858	0.113	Valid	10	Question 10	325	0.865	0.113	Valid
2	Question 2	325	0.870	0.113	Valid	11	Question 11	325	0.869	0.113	Valid
3	Question 3	325	0.852	0.113	Valid	12	Question 12	325	0.902	0.113	Valid
4	Question 4	325	0.760	0.113	Valid	13	Question 13	325	0.823	0.113	Valid
5	Question 5	325	0.802	0.113	Valid	14	Question 14	325	0.909	0.113	Valid
6	Question 6	325	0.870	0.113	Valid	15	Question 15	325	0.923	0.113	Valid
7	Question 7	325	0.859	0.113	Valid	16	Question 16	325	0.902	0.113	Valid
8	Question 8	325	0.854	0.113	Valid	17	Question 17	325	0.899	0.113	Valid
9	Question 9	325	0.815	0.113	Valid	18	Question 18	325	0.894	0.113	Valid

Variable X2 (Social Presence)						19	Question 19	30	0.916	0.361	Valid
1	Question 1	325	0.619	0.113	Valid	20	Question 20	325	0.882	0.113	Valid
2	Question 2	325	0.792	0.113	Valid	21	Question 21	325	0.899	0.113	Valid
3	Question 3	325	0.774	0.113	Valid	22	Question 22	325	0.894	0.113	Valid
4	Question 4	325	0.659	0.113	Valid	23	Question 23	325	0.895	0.113	Valid
5	Question 5	325	0.721	0.113	Valid	24	Question 24	325	0.806	0.113	Valid
6	Question 6	325	0.640	0.113	Valid	25	Question 25	325	0.893	0.113	Valid
7	Question 7	325	0.751	0.113	Valid	26	Question 26	325	0.834	0.113	Valid
8	Question 8	325	0.768	0.113	Valid	27	Question 27	325	0.885	0.113	Valid
9	Question 9	325	0.738	0.113	Valid	28	Question 28	325	0.878	0.113	Valid
10	Question 10	325	0.801	0.113	Valid	29	Question 29	325	0.898	0.113	Valid
11	Question 11	325	0.746	0.113	Valid	30	Question 30	325	0.896	0.113	Valid
12	Question 12	325	0.806	0.113	Valid	**Variable Y1 (Cognitive Presence)**					
13	Question 13	325	0.801	0.113	Valid	1	Question 1	325	0.781	0.113	Valid
14	Question 14	325	0.825	0.113	Valid	2	Question 2	325	0.819	0.113	Valid
15	Question 15	325	0.744	0.113	Valid	3	Question 3	325	0.869	0.113	Valid
16	Question 16	325	0.824	0.113	Valid	4	Question 4	325	0.873	0.113	Valid
17	Question 17	325	0.820	0.113	Valid	5	Question 5	325	0.865	0.113	Valid
Variable X3 (Teaching Presence)						6	Question 6	30	0.864	0.361	Valid
1	Question 1	325	0.884	0.113	Valid	7	Question 7	325	0.856	0.113	Valid
2	Question 2	325	0.879	0.113	Valid	8	Question 8	325	0.898	0.113	Valid
3	Question 3	325	0.854	0.113	Valid	9	Question 9	325	0.900	0.113	Valid
4	Question 4	325	0.882	0.113	Valid	10	Question 10	325	0.899	0.113	Valid
5	Question 5	325	0.743	0.113	Valid	11	Question 11	325	0.895	0.113	Valid
6	Question 6	325	0.880	0.113	Valid	12	Question 12	325	0.895	0.113	Valid
7	Question 7	325	0.729	0.113	Valid	13	Question 13	325	0.897	0.113	Valid
8	Question 8	325	0.817	0.113	Valid	14	Question 14	325	0.842	0.113	Valid
9	Question 9	325	0.857	0.113	Valid	15	Question 15	325	0.804	0.113	Valid

4.2. Reliability Test Results

The questionnaire can be declared reliable if Cronbach's alpha value is higher than 0.6. Table 3 is the result of reliable testing using the SPSS application Ver. 25.

Table 3. Questionnaire reliability test results on 325 respondents

No	Variable test	Cronbach's alpha	Result
1	Variable X1 (*Media Delivery*)	0.945	Reliable
2	Variable X2 (*Social Presence*)	0.956	Reliable
3	Variable X3 (*Teaching Presence*)	0.989	Reliable
4	Variable Y1 (*Cognitive Presence*)	0.976	Reliable

4.3. Delivery media

Based on the results of the survey conducted on 325 respondents, it shows that the average score for all indicators of the effectiveness of delivery media is 2.83 from the Linkert scale four as seen in Figure 2; this indicates that the media delivery provided is in the ineffective category.

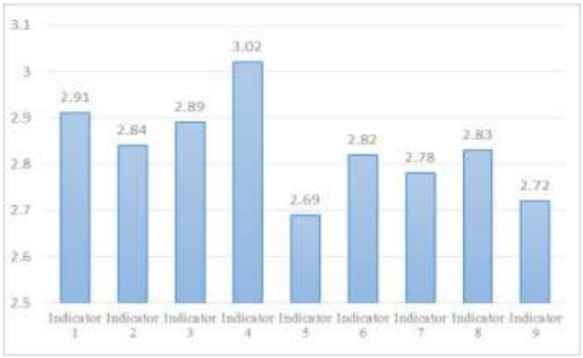

Figure 2 Survey results related to media delivery

The results of the interview stated that the main media features in the form of a webinar application were still minimal, so it had to be supported by other media such as WA groups and zoom meetings. However, unfortunately, the use of supporting media was still not optimal and even added a complicated impression because it must switch media while studying.

Based on the observations carried out, it saw that the webinar application features did not meet the learning needs. The contained of the webinar are:

- Learning class information, consisting of learning descriptions, objectives, participant requirements, and relationships with competency standards, learning methods, implementation strategies, learning strategies, certificates, and references.
- Sessions, consisting of viewing of broadcast material, chat menu, a list of learning participants, and video conferencing (currently not activated).
- Videos, consisting of videos related to learning materials.
- Handout file, consisting of all handout material handouts.

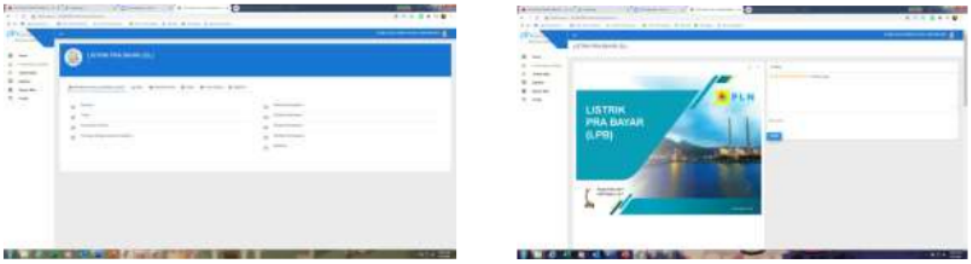

Figure 3 Display of learning class information and digital sessions on the webinar

Besides based on secondary data such as level one evaluation collected, there were still many complaints from learning participants regarding media delivery (webinars). Based on the above analysis, it concluded that media delivery still not sufficient. It saw from the results of the collected questionnaires, the interviewees' statements, the results of observations, and existing secondary data.

4.4. Social Presence

The average score obtained for variable social presence is only 2.67 from the Linkert scale four saw in figure 4. The social existence of this learning method is not fulfilling.

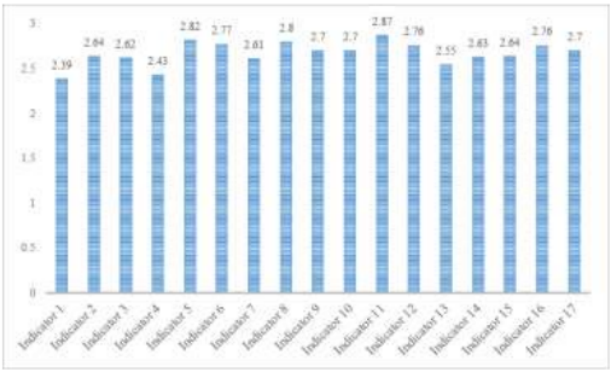

Figure 4 Survey results related to social presence

The results of the interview show that social presence saw in less than 10 percent of the learning participants. It showed at the time of the implementation of learning using a zoom. Several participants did not display videos even though it stated in the agreements. Besides, in the question and answer session, discussion, sharing of experiences, only a few of the participants responded even though the instructor had been fishing by calling the learning participants one by one.

Based on observations through the WA group, there was no social presence, such as a sense of intimacy between the participants and the instructor. The interactions within the WA group occurred in only one direction. WA group only functions to deliver assignments, fill in the attendance list, and send learning schedule information. Based on observations through the webinar, there is no interaction with the chat feature in the webinar. One of the variables of online learning effectiveness (social presence), as expressed by Garrison, Anderson, and Archer (2000), has yet to occur in online learning at PT PLN (Persero) UPDL Palembang.

4.5. Teaching Presence

Based on the survey result, the average score on the teaching presence Indicator is only 2.89 from the Linkert scale four, as in Figure 4, and this means that 325 respondents have not felt the presence of an instructor.

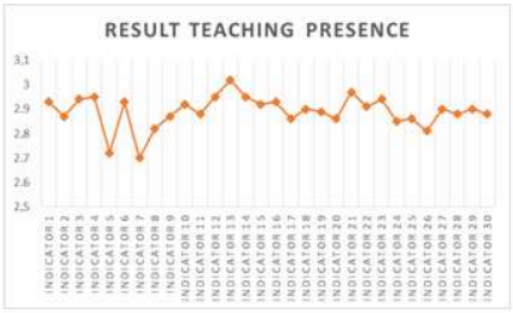

Figure 5 Survey results related to teaching presence

The lack of instructor presence saw in the monitoring of the WA group. The majority of the instructors were passive, surprisingly participants asked through the group, there were some instructors who did not respond, even if they were responding, they usually experienced delays in answering them. Based on observations through zoom media on the first day of learning the instructor's presence was not visible. This is because not all instructors introduce themselves to participants, deliver lesson plans, and convey learning objectives, expectations to be achieved, games such as ice-breaking, and quizzes. Based on the secondary data collected, there are still complaints from learning participants through level one evaluation, such as the instructor is too stiff; the instructor does not master the material, and so on. Besides, the passing rate of participants from the 944 participants who attended was only 868 participants who passed; of those who passed, there were still 176 participants with C and D scores, as seen in Figure 6.

Figure 6 Percentage of grade attainment

4.6. Cognitive presence

Cognitive presence influence by media delivery, social presence, and teaching presence strongly. Because the other three independent variables are not fulfilled, certainly, cognitive presence has the same result. It showed in the results of the survey related to cognitive presence, which only got an average score of 2.77 indicators from the Linkert four scale as seen in Figure 7.

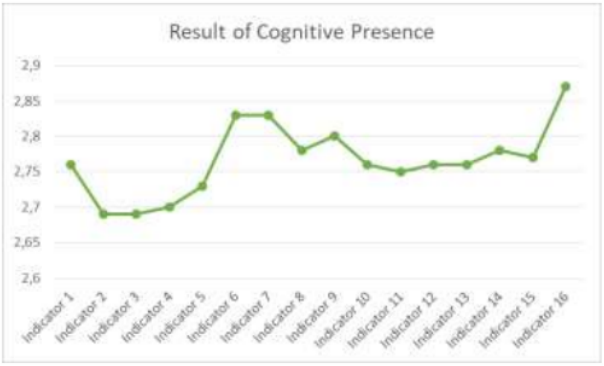

Figure 7 Percentage related to cognitive presence

According to the participant's statement during the interview, even though Zoom media used to increase engagement with the participants, it is still a challenge. Besides, the absence of cognitive presence shows that there is no motivation for participants to take part in learning. It showed from the 1179 invited participants. The latter attended only 944 participants that the average attendance rate was only about 80 percent.

5. Conclusions

PT PLN (Persero) UPDL Palembang. From the research conducted on 62 learning titles, 863 learning participants, 41 instructors, and four learning managers at PT PLN (Persero) UPDL Palembang, it can be concluded that the survey results for the delivery media variable were 2.83, the social presence was 2.67, the teaching presence was 2.89, and the cognitive presence was 2.77 on the Linkert scale four. The effectiveness of online learning at PT PLN (Persero) UPDL Palembang is still not fulfilled; it showed in the results of survey questionnaires, interviews, observations, and other supporting data. The learning media delivery feature plays a vital role in increasing the effectiveness of learning.

References

[1] Partner 2009 *Implementing the Kirkpatrick Evaluation Model Plus*
[2] A.Jacobden, Paul Eggen, dan Donald Kauchak.2009 *Method for Teaching*
[3] N. Dabbagh and B. Bannan-Ritland 2007 *OnlineLearning: Concepts, Strategies, and Application*
[4] Terry Anderson 2008 *Theory and Practice of Online Learnin*g. Athabasca University.
[5] Supranto, J 2002 *Statistik dan Aplikasi* Volume **6-112**
[6] Sujarweni, Wiratna 2012 *Statistika Untuk Penelitian* page 192
[7] Sugiyono. 2007 *Metode Penelitian Kuantitatif Kualitatif dan R&D* page 273
[8] Slavin, R.E. 2009 *Educational Psychology*. Sixth Edition Boston: Allyn and Bacon
[9] Noe, Raymond A 2005 *Employee Training and Development*, Book McGraw-Hill.
[10] Petrea Redmond 2014 *Reflection as an Indicator of Cognitive Presence*, Jurnal E–Learning and Digital Media Volume **11**
[11] Moleong, Lexy J 2007 *Metodologi Penelitian Kualitatif,* Remaja Rosdakarya, Bandung.

[12] Niki Raga Tantri, 2018, *Kehadiran Sosial Dalam Pembelajaran Daring Berdasarkan Sudut Pandang Pembelajar Pendidikan Terbuka Dan Jarak Jauh*, Jurnal Pendidikan Terbuka Dan Jarak Jauh Vol. **19**

[13] Risal, 2017, *Effectiveness Of The Use Of E-Learning Media Web Based On The Results Subject Kkpi State Student Learning SMK 5 Enrekang*, University Makassar.

[14] Fransisca. Monica, 2017, *Pengujian Validitas, Praktikalitas, Dan Efektivitas Media E-Learning Di Sekolah Menengah Kejuruan*, Jurnal Ilmiah Pendidikan Teknik Elektro FKIP UNTIRTA.

[15] Ahmad FikriZulfikar, and friend, 2019, *The Effectiveness of Online Learning with Facilitation Method*, Procedia Computer Science Volume **161** pages 3s2-40

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