



Need Assessment : Development of Massive Open Online Courses Video-Based Competency Training Management

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Abstract PP PAUD and Central Java Dikmas are tasked with overseeing all early childhood education institutions and community education throughout the Central Java region. This study aims to analyze the process of planning, organizing, implementing, and evaluating the massive open online course (MOOC) that took place at PP PAUD and Dikmas Central Java during the COVID-19 pandemic. This research is quantitative research with a descriptive approach. The sample in this study were PAUD teachers throughout Central Java and MOOC Education and Training supervisors at PP PAUD and Dikmas Central Java. Sample selection was carried out using the Simple Random Sampling method. The research instruments used were questionnaires, documentation, and interviews that experts have validated. Data analysis techniques used descriptive statistical analysis and percentages for questionnaire results and verbal analysis for interviews and documents. Based on the results and analysis of the discussion, we observe that MOOC in PP PAUD and Central Java Dikmas is going well. However, the content developed must still be adapted to the scope of PP PAUD. The materials in MOOCs need to be entirely focused on the essential competencies and core competencies of PP PAUD. Therefore, it is necessary to manage and develop video-based training through MOOCs.

Keywords: Massive Open Online Course (MOOC), COVID-19 Pandemic, PP PAUD , Dikmas Central Java.

1. INTRODUCTION

The Covid – 19 pandemic outbreak that occurred throughout the world and the Industrial Revolution 4.0 witnessed a change in the educational paradigm stemming from the widespread use of information and communication technology (ICT). At the highest level of exposure to Covid-19, the Indonesian government and the Ministry of Education and Culture of the Republic of Indonesia are prohibited from implementing remote learning and training with the assistance of using information and communication technology (ICT). With the proliferation of ICTs, online, open and flexible learning has moved from the periphery to mainstream education. ICT improves the quality and capacity of online educational content delivery. The online network is a distributed, flexible, accessible and, most importantly, a potentially open learning space. The Covid -19 pandemic and the Industrial Revolution 4.0 have demanded openness in the field of education. Openness in education has evolved over time and has emerged in various forms (Weller, 2013).

Open education is identical to the pattern of open access to learning resources. One form of open access to learning resources is online learning with an open nature. It is a means to connect thousands of students from various locations, backgrounds and cultures on global

topics and interests. Online-based learning that connects students online is nothing new in the world of education and learning (Alahmari & Kyei-Blankson, 2018). The massive open online course (MOOC) is the latest development of the open learning movement.

MOOC is a new challenge in the world of Indonesian education (Chacon & Beltran, 2014; Goh et al., 2018; Zheng et al., 2018). MOOC is an online learning course with unlimited participants, and this course can be accessed openly through the website (Kaplan & Haenlein, 2016). MOOCs are a learning model aimed at unrestricted participation and open access via the web. MOOCs are a new and widely researched development in distance education (Bozkurt et al., 2017), which was first introduced in 2008 and emerged as a popular mode of learning in 2012 having four main characteristics, including: a) Massive, which means large with unlimited scalability; b) Open, meaning that it is open without any prerequisites for participants other than access to a computer or mobile device and the Internet; c) Online, which means that the prepared material can be distributed openly and can be accessed via the Internet; d) Courses, which means that MOOCs have a repository to accommodate many courses or teaching materials to be shared openly.

According to Martin (2012), there are three essential characteristics in the implementation of MOOCs: a) massiveness: MOOCs can easily accommodate several learners in a large capacity; b) openness: openness involves several key concepts: software, registration, curriculum and assessment, including communication interactions, collaboration, sharing and learning environment; c) connectivism, MOOCs offer an online teaching methodology inspired by the connectivist philosophy.

MOOC is not a traditional course. MOOC facts have the potential to reach a large number of people, meaning MOOCs can reach a wide range of various needs in education and training. Some previously conducted studies include Sharples et al. (2015), who focused on contextual learning where to access mobile content; the goal was to offer a connected learning experience where learning can develop easily despite changes in time and location; and Gutierrez-Rojas et al. (2017), which emphasises the aspect of how to provide support to students who are less experienced in MOOCs.

This has attracted a lot of attention from both the academic and public realms. The first MOOC was offered in 2008 at the University of Manitoba and was entitled 'Connectivism and Connective Knowledge' (Liyanagunawardena et al., 2013). The feel of MOOC has also expanded online learning to a large scale around the world, presenting new opportunities as well as new challenges (Goh et al., 2018; Zheng et al., 2018).

As for Indonesia, one of the MOOC online education services is provided by PT Education Technology Indonesia, with the support of several leading universities, including the Bandung Institute of Technology (ITB), University of Indonesia (UI), Surabaya Institute of Technology (ITS), and other educational institutions, one of which is the PAUD Development Centre and Central Java Dimas. This institution provides free online courses with the support of leading education figures. Among them are Prof. Dr. Ir. Mohammad Nur, DEA (former Minister of Education and ITS Chancellor), Prof. Ronald Kasali, Ph.D. (Professor of UI), Prof. Dr. Ir. Muhammad Anis, Mnet (Rector and Professor of UI), Prof. Dr. Ir. Kadarsah Suryadi, DEA (ITB Chancellor) and several other prominent figures (Purnomo. 2020).

The integration of MOOC into the educational environment in Indonesia has become a significant challenge at this time (Hadavand et al., 2019; Inmaculada Maiz Olazabalaga et al., 2016). The challenge faced is how to make the learning and teaching experiences at MOOC as good as or even better than the general learning method. Because the education system contained in the MOOC is not very different from the existing conventional education, besides being used to meet all the needs of students formally, the MOOC is also used by agencies in increasing competence for education (Fredette, 2013; McAndrew & Scanlon, 2013).

As practitioners or educators under the Ministry of Education, Culture, Research and Technology (Kemendikbud-Ristek), early childhood education teachers, who concentrate on MOOC training, of course, need to facilitate the nation's generation with pedagogic skills through open online courses that anyone can access. Therefore, with the MOOC training held by PP PAUD and Dikmas Central Java, it will provide space for educators to receive freedom of training and to improve their ability and creativity in making teaching materials without leaving other obligations, so that it is more practical, efficient and economical, with the facilities provided by the MOOC platform that can be used for free. The use of MOOCs in learning can meet all the needs of learners (students) AND improve the competence of learners (Fredette, 2013; McAndrew and Scanlon, 2013). PP PAUD and Dikmas Central Java, one of the organizations in the field of education that has done a lot in the world of education, especially in improving the pedagogic competence of early childhood education teachers in Central Java and even contributed greatly to the education and training of early childhood education teachers throughout Indonesia .

In addition, with the varying levels of knowledge and expertise of researchers, as well as the range of viewpoints of MOOC students, MOOC content is adapted to learning using MOOC. However, in a broad sense, MOOC is used to meet all the needs of students and

institutions, both online and offline formal and non-formal in increasing competency (Fredette, 2013; McAndrew and Scanlon, 2013)

Thus, it is necessary to increase the competence of educators in making teaching materials through learning videos. This part of improving the competence of educators' abilities in making videos for educators is an effort to increase progress in education and change the way of learning in the 4.0 era where an educator is required to be proficient in using information technology (IT), especially in Central Java's Centre for the Development of Early Childhood Education and Community Education (PP PAUD and DIKMAS). This study aimed to determine the process of planning, organising, implementing and evaluating the MOOCs that took place at PP PAUD and Dikmas Central Java during the COVID-19 pandemic.

2. METHOD

This type of research is quantitative research with a descriptive approach to describe or provide an overview of the object under study through data or samples that have been collected. This research was conducted in the scope of Central Java Province. The population of this research is All participants of education and training supervisors of MOOC at PP PAUD and Dikmas Central Java, totalling 80 people. The subjects studied were Early Childhood Education teachers and education and training supervisors of MOOCs at PP PAUD and Dikmas Central Java, totaling 52 people. The sampling technique was carried out by Simple Random Sampling method. The research instruments consist of documents, questionnaire sheets and interview guidelines that experts have validated. The questionnaire was arranged based on a 5-point Likert scale. The data analysis technique used descriptive statistical analysis in the form of mean (M), standard deviation (SD) and percentage for the results of the questionnaire and verbal analysis for the effects of interviews and documents. The following is the instrument grid used in this study:

Aspects of Management	Questionnaire statement
Planning Process	<ol style="list-style-type: none">1. The objectives of the MOOC development have been clearly stated on the PP PAUD and Dikmas Central Java websites2. MOOC can be accessed easily by you using a PC, Laptop or smartphone.3. The references or guidelines provided in the MOOC are beneficial for you in accessing the MOOC.4. The display of the MOOC is attractive and interactive to the user.5. MOOC content has not been developed under the scope of PP PAUD and Dikmas Central Java.

Aspects of Management	Questionnaire statement
Analysis Of The Organising Process	<ol style="list-style-type: none"> 1. MOOC supports the delivery of courses and course materials. 2. Searching the subject matter presented in the MOOC is easy to do. 3. The material contained in the MOOC is under the essential competencies and core competencies of PAUD. 4. The material contained in the MOOC is discussed in detail and in-depth regarding the core competencies and essential competencies of PAUD. 5. The material contained in the MOOC is not focused on the essential competencies and core competencies of PAUD.
Analysis Of The Implementation Process	<ol style="list-style-type: none"> 1. The training materials contained in the MOOC are presented in an interesting way and discussed in-depth. 2. There is no helpdesk / online help centre that can help you when you have difficulties in MOOC training activities. 3. The training materials contained in the MOOCs are presented in a sustainable and sustainable manner. 4. The number of training materials contained in the MOOC website for PP PAUD and Dikmas Central Java is still limited. 5. The training materials contained in the MOOC can provide benefits in terms of knowledge and skills for you as PAUD educators. 6. The training materials contained in the MOOC are difficult for you to access during training. 7. The quality of the video presented is not optimal.
Analysis Of The MOOC Evaluation Process	<ol style="list-style-type: none"> 1. There is a need for post-training assistance and monitoring through MOOC at PP PAUD and Dikmas Central Java. 2. The training materials I attended were under the training schedule and objectives. 3. PP PAUD and Dikmas Central Java carry out a need for further MOOC training activities.

The instrument before use has been validated first by experts in the management field. To calculate the percentage using the percentage of agreements formula (Grinnel, 1988) as follows.

$$\text{Percentage of Agreements (R)} = \frac{\text{Agreements}}{\text{Agreement} + \text{Diasagreement} + \text{doubtful}} \times 100\%$$

Description: R = Percentage

Agreements = Number of respondents who agreed

Disagreement = The number of respondents who stated Disagree

Doubtfull = The number of respondents who stated Doubtful

3. RESULT AND DISCUSSION

In this results and discussion section, we describe a needs assessment based on the situation of the analysis of the planning process, analysis of the organising process, analysis of the implementation process and analysis of the MOOC evaluation process that took place at PP PAUD and Dikmas Central Java during the COVID-19 pandemic. This questionnaire aims to dig deeper into the MOOCs that PP PAUD and Dikmas Central Java have developed. Table 1 provides an overview of the respondents who filled it out.

Table 1. Questionnaire respondents

Gender	Participant	Tutor	Frequency	Percentage
Man	2	3	5	9.62
Woman	41	6	47	90.38
Total			52	100

Based on Table 1, male respondents were 5, with a percentage of 9.62%, while females were 47, with a percentage of 90.38%. In the second questionnaire, 82.7% and 17.3% of the respondents were training participants in MOOCs at PP PAUD and Dikmas Central Java. The following section provides an explanation regarding the analysis of the planning process, analysis of the organising process, analysis of the implementation process and analysis of the MOOC evaluation process at PP PAUD and Dikmas Central Java during the COVID-19 pandemic.

Analysis of the MOOC planning process that took place in PP PAUD and Dikmas Central Java

The results of the MOOC planning process analysis in PP PAUD and Dikmas Central Java teacher questionnaires are provided in Table 2.

Table 2. Analysis results of the MOOC planning process

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
The objectives of the MOOC development have been clearly stated on the PP PAUD and Dikmas Central Java websites	0	0	0	21	31	239	91.9
MOOC can be accessed easily by you using a PC, Laptop or smartphone.	0	0	2	16	34	240	92.3

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
The references or guidelines provided in the MOOC are beneficial for you in accessing the MOOC.	0	1	0	26	25	231	88.8
The display of the MOOC is attractive and interactive to the user.	0	0	0	35	17	225	86.6
MOOC content has not been developed under the scope of PP PAUD and Dikmas Central Java.	0	0	1	26	25	232	89.2

From the questionnaire results on the planning aspect, researchers found that respondents' perceptions of the MOOC content developed were still not in accordance with the scope of PP PAUD and Dikmas Central Java. With regard to respondents' perceptions of the incompatibility of MOOC content developed by PP PAUD and Dikmas Central Java, 50% of the respondents answered agree and 48.1% answered strongly agree.

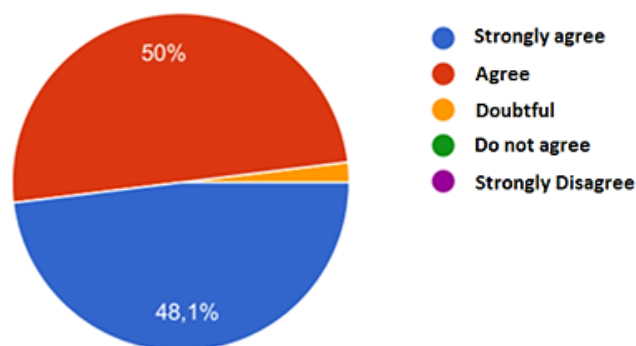


Figure 1. Respondents' perception of the inappropriateness of MOOC content developed by PP PAUD and Dikmas Central Java

Analysis of the process of organising/compiling MOOCs that took place in PP PAUD and Dikmas Central Java

The results of the analysis of the process of organising/compiling the MOOC that took place in PP PAUD and Dikmas Central Java teacher questionnaires are provided in Table 3.

Table 3. Analysis results of the MOOC organising/compiling

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
MOOC supports the delivery of courses and course materials.	0	0	0	28	24	232	89.2
Searching the subject matter presented in the MOOC is easy to do.	0	0	2	33	17	225	86.0
The material contained in the MOOC is under the essential competencies and core competencies of PAUD.	0	0	1	36	15	222	86.5
The material contained in the MOOC is discussed in detail and in-depth regarding the core competencies and essential competencies of PAUD.	0	0	1	36	15	222	86.5
The material contained in the MOOC is not focused on the essential competencies and core competencies of PAUD.	4	11	8	20	8	170	65.4

From the questionnaire results on the aspect of preparation, the researcher found that 65.4% of the respondents thought that the material contained in the MOOCs was not focused on the essential competencies and core competencies of PAUD. Although the discussion of the material in the MOOC has been carried out in detail and in-depth, the discussion has not focused on the core competencies and basic competencies of PAUD.

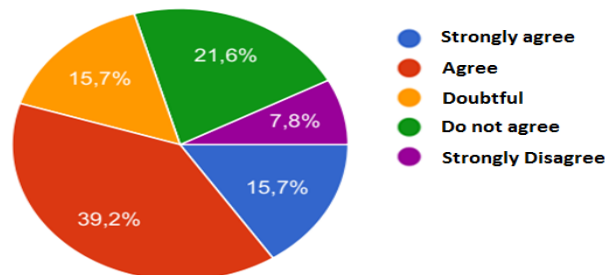


Figure 2. The discrepancy of the material contained in the MOOCs with the basic competencies and core competencies of PAUD

Analysis of the MOOC implementation process that took place in PP PAUD and Dikmas Central Java

The results of the respondents' questionnaire related to the MOOC implementation process that took place in PP PAUD and Dikmas Central Java are provided in Table 4.

Table 4. Analysis results of the MOOC implementation process

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
The training materials contained in the MOOC are presented in an interesting way and discussed in-depth.	0	0	3	33	16	221	85
There is no helpdesk / online help centre that can help you when you have difficulties in MOOC training activities.	0	0	2	36	14	220	84.6
The training materials contained in the MOOCs are presented in a sustainable and sustainable manner.	0	0	1	32	19	226	86.9
The number of training materials contained in the MOOC website for PP PAUD and Dikmas Central Java is still limited.	1	8	11	30	2	180	69.2
The training materials contained in the MOOC can provide benefits in terms of knowledge and skills for you as PAUD educators.	0	0	0	27	25	233	86.9
The training materials contained in the MOOC are difficult for you to access during training.	7	25	7	12	1	131	50.4

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
The quality of the video presented is not optimal.	4	20	14	12	2	144	55.4

From the results of the questionnaire on the implementation aspect, the researchers found that 84.6% of the respondents thought that there was no helpdesk/online help centre that helped when they had difficulties in MOOC training activities and 50.4% of the respondents believed that MOOCs were difficult to access during training.

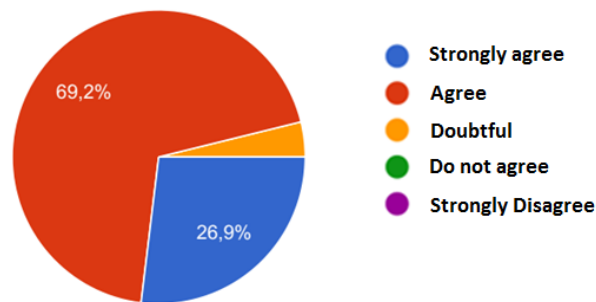


Figure 3. Difficulty accessing MOOCs during training

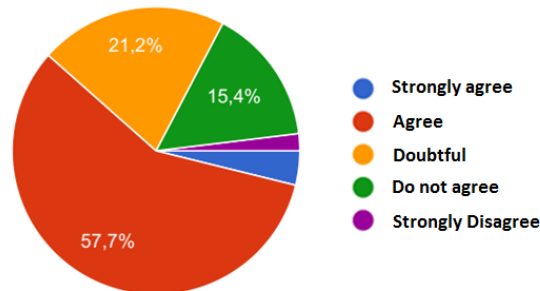


Figure 4. Difficulty accessing MOOCs during training

From the results of the questionnaire on the implementation aspect, the researchers found that 85% of the respondents thought that the training materials contained in the MOOC websites of PP PAUD and Dikmas Central Java were still limited in number and 55.4% of the respondents thought that the videos presented were also less than optimal.

Analysis of the MOOC evaluation process that took place in PP PAUD and Dikmas Central Java

The results of the MOOC evaluation process analysis that took place at PP PAUD and Dikmas Central Java teacher questionnaires are provided in Table 5.

Table 5. Analysis results of the MOOC evaluation process

Questionnaire statement	Strongly disagree	Do not agree	Doubtful	Agree	Strongly agree	Total score	Item percentage (%)
There is a need for post-training assistance and monitoring through MOOC at PP PAUD and Dikmas Central Java.	0	0	4	32	16	220	84.6
The training materials I attended were under the training schedule and objectives.	0	0	0	38	14	222	85.4
PP PAUD and Dikmas Central Java carry out a need for further MOOC training activities.	0	0	0	23	29	237	91.2

From the questionnaire results on the evaluation aspect, researchers found that more than 80% of the respondents wanted post-training assistance and monitoring through MOOC at PP PAUD and Dikmas Central Java. Mentoring and post-training tracking will be able to strengthen the material that the training participants have obtained and will develop the abilities of the trainees (Alahmari & Kyei-Blankson, 2018; Goh et al., 2018; Zheng et al., 2018).

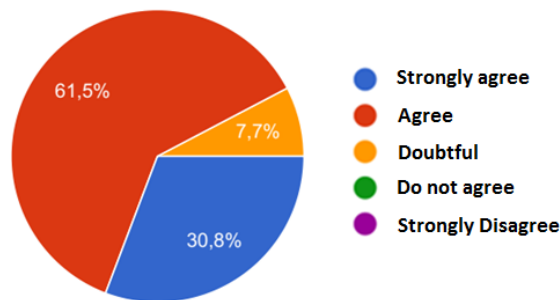


Figure 5. Theoretical model for the effect of the independent **variable** on the dependent variable

In addition, respondents also wanted a follow-up MOOC training activity carried out by PP PAUD and Dikmas Central Java.

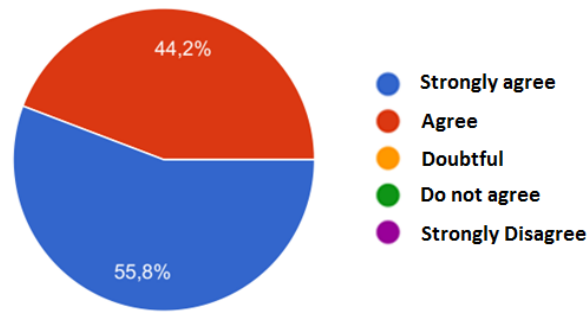


Figure 6. Participants wanting sustainable training

From the questionnaire results on the evaluation aspect, the researcher found that 55.8% of the respondents thought that further training was needed.

4. DISCUSSION

The Ministry of Education and Culture (Kemendikbud) established the Permendikbud No.68 of 2015 concerning the Organisation and Work Procedure of the Centre for the Development of Early Childhood Education and Community Education (PP-PAUD and DIKMAS) Central Java. The programme from PP PAUD and Dikmas Central Java is intended to develop and review programmes so that they can be used to serve the needs of the community. One form of IT utilisation programme in implementing PAUD and Dikmas is the massive open online courses (MOOCs). From the results of the questionnaires distributed to 52 respondents, 9 people were civil servants and 43 others were MOOC participants. The results of the questionnaire, namely MOOC at PP-PAUD and Dikmas Central Java, have been going well. This condition is known from the results of the analysis of the implementation process, where 70.2% of the respondents said that the MOOCs were implemented well. Although the implementation has been good, there are several inputs from respondents, namely (1) related to the MOOC content developed that is still not following the scope of PP PAUD and Dikmas Central Java. With regard to respondents' perceptions of the incompatibility of MOOC content developed by PP PAUD and Dikmas Central Java, 50% of the respondents answered agree and 48.1% answered strongly agree. (2) In the aspect of preparation, 65.4% of the respondents thought that the material contained in the MOOCs is not focused on the basic competencies and core competencies of PAUD, although the discussion of the material in the MOOC has been carried out in detail and in-depth. (3) 85% of the respondents thought that the training materials contained in the MOOC website were still limited at PP PAUD and Dikmas Central Java.

From the above statements, video-based training management is needed. Video in learning or training is a new way of managing learning or training content. Such content can be

used as a single learning unit or grouped into a special unit (Chiappe et al., 2007). Several research results show the same thing, namely that video tutorials can improve one's competence. According to He et al. (2012), the use of video tutorials or live tutors as a tool can improve students' competences in the classroom. According to Worlitz et al. (2016) and Suwarno et al. (2019), students who show interest in video tutorials will improve their skills. Therefore, watching instructional videos can lead to higher cognitive actions required for active learning (Stefanidis et al., 2007).

5. CONCLUSION

Based on the result and discussion analysis, we can determine that 1) the training and planning processes for the MOOCs in PP PAUD and Dikmas Central Java went well. However, the content developed still has to be readjusted to the scope of PP PAUD. 2) In the organising/compiling process, the material in MOOC has not fully focused on the essential competencies and core competencies of PP PAUD. 3) There is no post-training supervision and assistance in the implementation process; besides, the MOOCs are difficult to access during training. 4) At the evaluation stage, planned training is needed under the scope of PP PAUD. In addition, there is also a need for post-training tutors. Based on this, a video-based training management model is needed.

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