

E-LEv: Solution for Early Childhood Education Teachers in Industrial Revolution Era 4.0

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Abstract—Early Childhood Education (ECE) learning evaluation refers to the evaluation of early aged-children's developmental achievement. This is pivotal to measure developmental achievement during and after the learning activity is conducted. From the previous study shown that teacher faced various problems to do assessment and evaluation. Accordingly, this study aimed to explore the ECE teachers' need to find solutions for the problems. The data were collected using a questionnaire distributed randomly in Indonesia through google form. The data were analyzed in accordance with the Miles and Huberman analysis model. The data were presented descriptively to clear up the finding of the study. The study found that (a) the majority of teachers had made attempts to improve their evaluation and assessment skill through various activities; (b) had not gained what they wanted from the activities; and (c) need an assessment application that helps them evaluate the learning process. The conclusion is the teachers need an assessment application that adapts the fourth industrial revolution, an electronic assessment and evaluation application to solve their problems to do assessment and evaluation with the better way.

Keywords—ECE teacher; learning evaluation; industrial revolution 4.0, solution; electronic assessment and evaluation application

I. INTRODUCTION

Developmental achievement assessment on early aged-child should be conducted to collect information pertaining to the child's developmental achievement before or after an intervention is done as learning feedback. Besides, assessment is aimed at providing a decision regarding a child's education, physical, and mental development [1]. Whereas learning evaluation on the early-aged child is done to measure a learning process and the success of integrative holistic service [2] that is based on the assessment result [3]. Thus, the teacher's competence in conducting evaluation and assessment plays a crucial role so that the learning evaluation can be done accurately and thoroughly. However, previous studies show that the teacher's assessing and evaluating skill was low, although some of them have joined competence improvement program [4, 5].

This is in contrast with the teacher's competence studied in Lincoln, Nebraska. It was found that the teachers have comprehended the procedure of constructing instrument,

administration, scoring, and its interpretation. It was the competence in communicating the result of the assessment that becomes the problem faced by the teachers there [6]. It is different from what happens in Indonesia.

The empirical fact proves that the learning assessment and evaluation in ECE are still sub-optimal; it was due to various problems faced by the ECE teacher. This fact is supported by the result of the preliminary study conducted by the researchers. The preliminary study found various problems such as teachers who perceive that learning assessment and evaluation in Indonesia is time-consuming. While, the teachers are responsible for a vast amount of duties. Besides, teachers' understanding and skill in conducting a proper assessment and evaluation are still below the standard. Accordingly, teachers' limited assessing skill, manual assessment, and evaluation process, and time-consuming learning administration complicate the ECE teachers. Meanwhile, the teacher should always be available to treat the students.

This era, the fourth industrial revolution, is an era where an individual finds ease if he could adapt to the development. The use of Information technology for ECE teacher will ease their works [7]. Myriad problems regarding early-aged children learning evaluation should be able to adapt to the fourth industrial revolution. Accordingly, the present study intends to explore the ECE teachers' need to gain a solution that is capable of answering their problems regarding a proper learning evaluation and adapting the development of the fourth industrial revolution era.

II. METHOD

The present study employed a qualitative descriptive approach. It was aimed at exploring the ECE teacher's need to discover a proper solution for their problems regarding early-aged children learning evaluation. The subject of the study was the ECE teachers in the entire Indonesian territory. The primary data of the study were collected using a questionnaire and distributed through social media assisted by Google form. There were seventy-four teachers who responded to the questionnaire. The limitation of this study lies in its inability to confirm the respondents' answer directly; accordingly, the researchers interpreted all of the answers themselves.

The questionnaire result was analyzed qualitatively using the analysis model proposed by Miles & Huberman [7], The

information that does not support the focus of the study or was not fit to the question were reduced. The data were analyzed qualitatively and presented narratively.

III. RESULTS AND DISCUSSION

After the questionnaire was distributed and was responded by seventy-four ECE teachers in Indonesia, the information was processed to correspond with the focus of the present study. The results are presented as follow.

A. Attempts in Improving ECE Teacher's Learning Evaluation Skill in Indonesia

The result of the study showed that 97.3% of 74 respondents stated that they had made attempts to improve their learning evaluation skill, whereas 2.7% stated that they never made any attempts to improve their learning evaluation skill. This condition supports the previous study finding that the training participated by the ECE teachers do not significantly improve their assessment and evaluation skill [5]. Consequently, a reflective evaluation of the training should be done and become the feedback for improvement for the next training.

The following is the diagram depicting the number of respondents who had participated in the training on the improvement of learning evaluation skill.



Fig. 1. Number of teachers who made attempts to improve their learning evaluation skill

The form of attempts made by the respondents in improving their skill was varied. Some of them joined workshop, training, internship, formal lecturing, and so forth. 30.7% of the respondents joined the workshop to improve their skill; 40% of them joined a training program to improve their evaluation skill. Only 2.7% of them joined an internship program, while 24% joined formal lecturing to improve their evaluation skill. The rest of the 2.7% made attempts other than workshop, training, internship, and formal lecturing [8]. Attempts in improving the learning evaluation skill, as a part of a teacher's pedagogical competence, are not only held by the related education and culture official but also is held by a professional organization or university [9], [10].

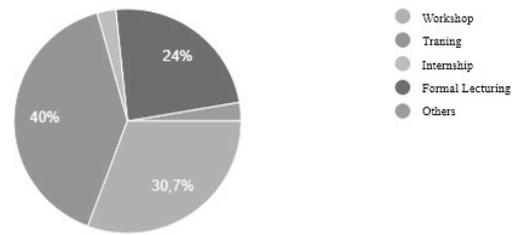


Fig. 2. Number of teachers who participated in various attempts to improve their learning evaluation skill

Improving the skill in assessment and evaluation not only needed by teacher but also teacher candidate who were taking course in university [11]. The teacher candidate need to have knowledge and skill about assessment and evaluation, in order to make them well prepared in their future work. Beside that, they also have to understand about the trends of early childhood assessment. The trends of assessment in early childhood education which important to understand is almost all states-mandated standardized testing for school accountability has been eliminated for children below grade 3 [12].

B. Points that Had Not Been Achieved from the ECE Teacher's Skill Improvement Program

Many ECE teachers have made attempts to improve their evaluation and assessment skill. However, they admitted that they had not found a solution to overcome their problems and difficulties regarding learning evaluation and assessment. These problems were found and explored in this study. Based on the analysis, there are four main problems faced by ECE teachers, although they have attempted to improve their skill. This finding was drawn from the respondents' most frequent answer.

First, they had not gained an effective, efficient, and helpful formulation or application for their evaluation and assessment. This indicated that the ECE teachers need an application that meets the proper procedure of assessment, which is efficient, applicable, and effective for them. By this application, they would have more time to focus on the students and to observe their development. It would be easier for the teacher to implement authentic assessment, considering that this type of assessment is the most suggested [1], [13], [14].

Second, the ECE teachers had not gained the same perception and understanding of the ECE learning evaluation and assessment.

One of the respondents' statement when answering an item regarding what they had not gained from training is "Formula that is capable of summing the assessment so that we do not need to write the same things in different paper, and is capable of giving same perceptions among teachers when inputting the assessment" [15]. This answer indicated that the assessment result analysis and processing using the standardized format, which is done manually, is not effective since it consumes a huge amount of papers and time. In addition, various versions on ECE instrument and assessment technique makes teachers hold different perception in assessing children' development.

Accordingly, they found it difficult and needed a formulation that eases their works in assessing and evaluating the learning process.

Third, the ECE teachers had not gained an understanding of the procedure of constructing an instrument and its use in detail. The procedure of constructing an assessment and evaluation instrument is different in each type. Performance assessment, portofolio, self evaluation [16], and so on are assessment technique which are usually used in early childhood education in Indonesia.

Fourth, practical skill in performing learning evaluation. Based on the finding, the ECE teacher supposed to have an ability to develop an instrument and use it following the needs. However, the level of ECE teachers ability and educational background is diverse. Their duties in handling the children complicate them to have enough time and ability to develop a proper instrument. Consequently, they need a training and assistance in using d assessment instrument properly [17, 18]. Particularly, it will be better for them when they have assistance to develop the instrument so that they only need to learn how to use it.

C. ECE Teachers' Need Regarding Learning Evaluation

The finding of the study revealed the ECE need for assistance in learning evaluation and the magnitude of the need. Such a need is the main concern which requires a solution. The following table exhibits the Indonesian ECE teachers' need in percentage.

TABLE I. TYPES OF ECE TEACHERS NEED REGARDING LEARNING EVALUATION

No.	Types of Need	Percentage	Accumulated Percentage
1.	Digital assessment application	73 %	73 %
2.	Training on Learning Evaluation and Assessment Skill	13,5 %	87 %
3.	Assessment Accompaniment	10,8 %	97 %
4.	Application, Training, and Accompaniment on Learning Evaluation	1,4 %	99 %
5.	Invalid Data	1,4%	100%

The table above shows that the largest percentage of ECE teachers' need is related to the digital assessment application (e-assessment & e-evaluation) by 73%. This finding is consistent with the respondents' answer on open-question, stating that they had not obtained an easy, effective, and efficient assessment application. For ECE teacher, such an application helps them doing the time-consuming assessment and evaluation process. Besides, the application can reduce excessive paper use. IT use requires only a few amounts of paper for writing down the keywords representing the child's development during the learning process.

IV. CONCLUSION

Basically, the ECE teachers' need regarding learning evaluation is the solution for their problems, namely, assessment application that is adapt to the fourth industrial revolution development. Accordingly, in practice, the training in using the application is required so that the learning evaluation can be done in accordance with the standard. There is a need for developing an IT-based assessment and evaluation application that supports and ease the ECE teachers in performing assessment and evaluation process, like E-Learning Evaluation (E-LEv).

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