Development Of Electronic Assessment System Of Teachers Professional Competence At Faculty Of Education, Pelita Harapan University

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Abstract

This study aims to develop an electronic assessment system of teacher professional competence at the Faculty of Education, Pelita Harapan University in the School Field Introduction (SFI) Program. The research method used is the method of educational research and development. This electronic assessment system of teacher professional competence has three forms of assessment, namely on-screen testing, e-portfolio, and e-report. Field Supervisors (FS) and Teacher Supervisors (TS) as assessors are trained on how to use this assessment system, especially e-portfolios and e-reports. The assessment system and the training of FS and TS uses the Moodle. The results of data analysis based on formative evaluation stated that (1) The electronic assessment system was appropriate, effective, and relevant to use, (2) FS and TS had a fairly good understanding of the electronic assessment system, (3) FS and TS were able to use the electronic assessment system, as evidenced by their improved learning outcomes before and after using this assessment system during training, (4) FS and TS have a positive response to the implementation of this electronic assessment system. The findings from this study resulted in recommendations, for FS and TS, they can be more familiar with the electronic assessment system, especially during the Covid-19 pandemic which demands learning from home.

Index Terms— E-portfolio, e-report, teacher professional competence, Moodle, electronic assessment.

INTRODUCTION

For Indonesia, entering the era of the ASEAN Community opens wider job access for workers with superior competence to get jobs in ASEAN countries. Therefore, educational institutions, especially universities, are required to prepare better quality graduates who are able to capture ASEAN free market opportunities. To produce professional quality, teachers must be prepared starting from the Bachelor of Education Program. The preparation of student teacher is further regulated in the Regulation of the Minister of Research, Technology and Higher Education Number 55 of 2017 concerning Teacher Education Standards. Providing experience as early as possible to student teachers through the School Field Introduction (SFI) program will be able to strengthen the professional competence of

teachers in student teacher (Dirjen Belmawa, 2017)

The assessment aspect is an important component in the context of strengthening the professional competence of teachers through teaching practices in schools. That cannot be separated from the learning process in the field. Assessment of teaching practice plays an important role in determining students' readiness to teach and achieve the expected graduate standards (Aspden, 2017). Field practice plays an important role in teacher education programs. This providing authentic opportunities for students, working together, and supervised by experienced teachers to gain an understanding of the realities and complexities of teaching. Based on this, the assessment of student teacher competence during teaching practice is problematic because making judgments about complex performance such as teaching is a sophisticated process (Haig, Ell, & Mackisack, 2013). Therefore, to assess the professional competence of teachers

through student teaching practice in the school need an effective and efficient assessment system. Assessors have a very important role in the learning process. Therefore, the assessor's ability to plan and carry out quality assessment tasks, interpret evidence and results appropriate to the purpose and type of assessment, and involve students as active participants in their own learning assessment, can become a subject of research that deserves consideration (Looney, et al., 2017). Mellati dan Khademi (2018) stated that for the most part, teachers were found not to be good assessors of the quality of their own assessment activities as well as the abilities of their students. Therefore, the study of teachers' understanding of assessment is a critical issue in the field of assessment research (Opre, 2015). Here, the quality of the assessor becomes important because it will determine the achievement of learning objectives. Assessors must be equipped and prepared with knowledge and skills, especially in assessing involving technology.

The Faculty of Education, Pelita Harapan University is a Teacher Education Institution. That is organizes SFI in collaboration with partner schools whose locations are spread across almost all area of Indonesia. There are two types of assessment that are used to assess the professional competence of teacher in SFI. Those assessment are assessment of teaching practice performance of students and assessment of the portfolio. Based on the results of interviews with Field Supervisor (FS), Teachers Supervisor (TS), and the Head of Field Experience Program, it can be said that the implementation of SFI with the assessment system used today still needs to be developed and studied more deeply because it has not achieved its maximum goals. There are several obstacles in the assessment aspect which result in the assessment objectives not being as expected. These obstacles are 1) distance and time, 2) the frequency of FS visits to schools. 3) obstacles in analyzing evidence of portfolio assessment, among others, because the portfolio is only documentation, paper-based, and there are no assessment guidelines for FS and TS.
Based on this problem, a solution regarding a student assessment system in SFI that is more effective and efficient is needed by FS and TS. As assessors, FS and TS need to be equipped with assessment guidelines that lead to

electronic assessments. The advantages of electronic assessment can be seen from its main characteristics, including monitoring student progress through periodic assessments, direct feedback, and supporting flexible and adaptive learning (Hettiarachchi, Huertas, & Mor, 2015). The implications of developing technology have given rise to a lot of research on assessments using technology or electronic-based assessments. Education systems are increasingly being asked to implement new technology-based assessment systems that result in efficiencies, meet changing stakeholder expectations, or meet new assessment goals (Koomen & Zoanetti, 2016). These assessment systems require a coordinated organizational effort to implement and can take time, skills, and other resources. This is in accordance with the context of the SFI assessment. Therefore, based on the existing problems, it is necessary to conduct research on the electronic assessment system model of teacher professional competence, especially providing learning materials for FS dan TS.

I. LITERATUR REVIEW

a. Teacher's professional competence

The professional competence of an expert is a set of abilities, qualities, and personality traits of an individual. That is include the amount of knowledge and experience required to carry out any professional activity. A professional is said to be competent when he acts responsibly and effectively in accordance with the given performance standards (Izvorska, 2016). In addition, professional competence is seen as a generic ability, integrated, and internalized in professional fields, work, roles, organizational contexts, and specific task situations to provide sustainable performance. For example, problem solving abilities, realizing innovation, and creating transformation (Mulder, 2014). On the other hand, the term professional competence refers to someone who is able to apply professional concepts in work life, with high demands, where mastery of work situations is highly dependent on the interaction of knowledge, skills, attitudes, and motivations of a person (Kunter et al., 2013). A teacher with professional competence has characteristics such as having special knowledge, a culture of sharing, having a strong and independent

service ethic (Bourke et al., 2017). The characteristics of a professional teacher are committed to students, able to make decisions, practice reflection, and have professional knowledge (Santrock, 2008). Based on this, it can be said that the professional competence of teachers is the ability to apply knowledge, attitudes, and skills in an integrated and internalized way. Particularly, in working life, commitment to students, decision making and in responsible reflection practices.

The scope of teacher professional competence based on a theoretical review essentially includes four things: material mastery competence, pedagogic competence, social competence, and personality competence. These four things describe the professional competence of teachers who are holistic and can be divided into two major aspects, namely intellectual ability; competence in mastery of material and pedagogics and the behavior ability; social and personal competence. Assessment of teacher professional competence through the teaching practice of student teacher in the field is using performance-based authentic assessment. This form of authentic assessment aims to assess, at the same time improve, and integrate learners' knowledge and skills into their own way (Vu & Dall' Alba, 2014). Authentic assessment has become a key strategy in higher education to provide learners with engaging and meaningful learning experiences in preparation for real-world work environments (Santos & Manuel, 2017).

b. Electronic Assessment (e-assessment)
The use of electronic-based assessment systems continues to increase in higher education. There is a shift in concepts and ways of assessing that move from face-to-face assessments to digital-based assessments caused by technological developments. Basically, assessment can drive learning practices anywhere. Therefore, the presence of technology can play a significant role in this process. The use of appropriate and purposeful technology can add value to assessment activities.

Electronic assessment can be symbolized as an end-to-end electronic assessment process using Information and Communication Technology (ICT) for the management of the end-to-end assessment process from many perspectives,

such learners, tutors, and educational institutions (*Joint Information Systems Committee* (JISC), 2007). Electronic assessment involves the use of web-based methods that allow for systematic inference and assessment of the skills, knowledge and abilities of learners (Hettiarachchi et al., 2015). Alruwais, Wills, & Wald, (2018) confirm that most studies agree that electronic assessment is an assessment in which all assessment procedures from beginning to end are carried out electronically. So, it can be concluded that electronic assessment is the process of assessing the knowledge and skills of students using ICT for all assessment procedures ranging from design, implementation, recording responses and providing feedback that can be seen from the perspectives of students, teachers, lecturers, and tutors.

In the context of teaching and distance learning, the most important goal for assessing learning outcomes is to provide feedback to students and instructors. Feedback is one of the most powerful influences on learning and achievement (Arifin, Wibawa, & Syahrial, 2019). So, feedback is a very important element in electronic assessment. The varied and efficient application of electronic assessment and innovation reaffirms its potential as a booster in learning processes and outcomes (Fontanillas, Carbonell, & Catasús, 2016). The innovation process for electronic assessment can be exploratory and technology-driven, or driven by new educational demands and learning practices (Ras, Whitelock, & Kalz, 2016). The success of the implementation of an electronic assessment system is influenced by three factors; human, technical and institutional, but the characteristics of the system itself are very important to note (Isaias, Miranda, & Pífano, 2017). Electronic assessment is highly recommended in online learning during this covid-19 pandemic.

Developing an assessment system is important. Because that is reflects the core goals of education, and which rewards students for developing their skills and attributes that will be of long-term benefit to both them and society. There are three users who play a major role in electronic assessment, namely, teachers, students, and administrators (Ristov, et al., 2013). In this study, the users of this electronic assessment system are FS, TS, and students, as

well as administrators. Based on this, electronic assessment is an option to accommodate the needs of FS and TS assessment practices for the purpose of assessing the professional competence of student teachers in Faculty of Education, Pelita Harapan University.

II. RESEARCH METHODS

The research method used in this study is developmental research in the field of education (Educational Research and Development) using a qualitative approach which produces the final product that are model of electronic assessment system of teacher professional competence at Faculty of Education, Pelita Harapan University, learning materials for FS and TS, and online training guide. The research method used is the educational research and development method from Gall, Gall, & Borg, (2015) 8th edition, namely the Steps of System Approach Model of Educational Research and Development which adopts the Systematic

Design of Instruction model from Dick, Carey, & Carey, (2012).

The steps of research and development of an electronic assessment system model in this study include analyzing the need to identify instructional goals, conducting instructional analysis, analyzing behavior & characteristics of students (FS and TS), writing performance objectives, develop assessment tools on the ability of FS and TS to use an electronic assessment system, develop learning strategies for FS and TS in conducting electronic assessments, develop learning materials for FS and TS on electronic assessment in the form of guidelines, designing and implementing formative evaluations of learning materials for FS and TS on electronic assessment, as well as revising learning materials for FS and TS on electronic assessments. The steps of research and development of an electronic assessment system model can be seen in the figure 1.
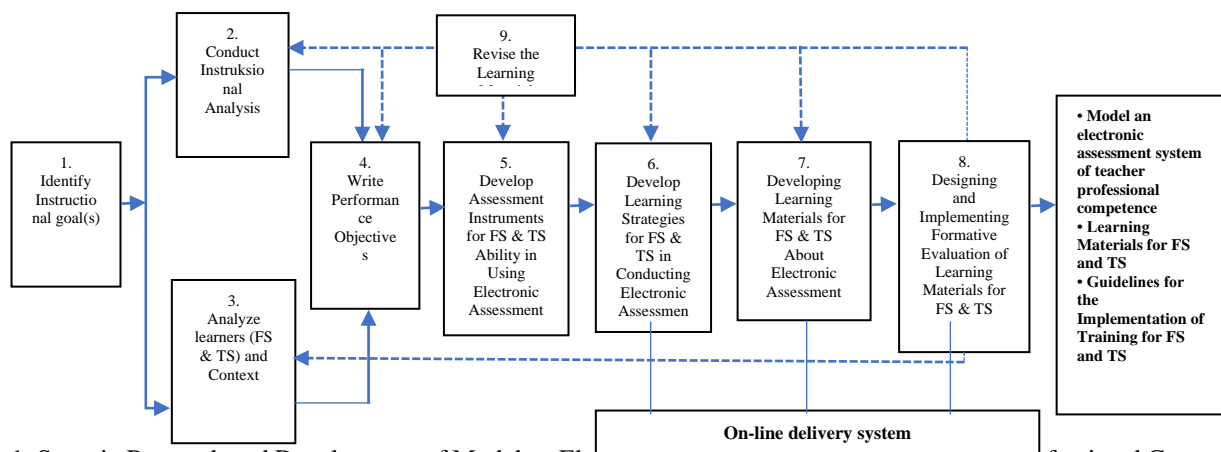

Fig 1. Steps in Research and Development of Model an Electronic Assessment System of Teacher Professional Competence

RESULT AND DISCUSSION

The development of an electronic assessment system model of teacher professional competence resulted in a physical model that are electronic assessment system in the SFI program, assessment handbooks, and online

training guide. This model is designed in a web-based form in one platform, namely LMS Moodle. It contains on-screen testing, e-portfolio, and e-report that will be used by FS, TS, and students. The electronic assessment system model can be seen in figure 2
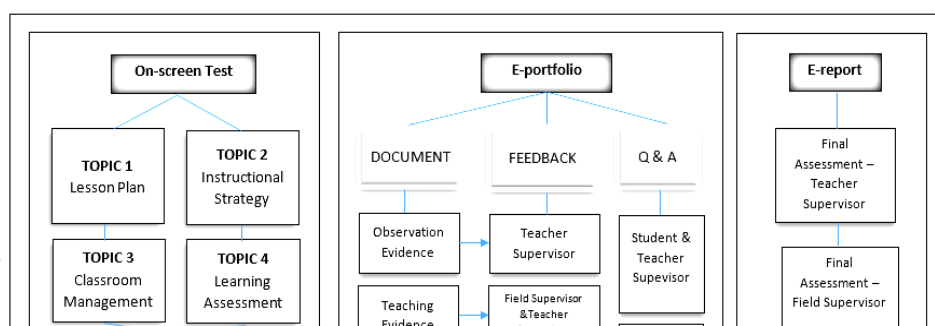
Fig 2. Design model of electronic assessment system of teacher professional competence

Based on the results of the formative evaluation of one-to-one expert, one-to-one student, small group, and field trial, it is stated that the research product produced is accountable, qualified, feasible, and relevant to be used in the SFI program. Figure 3, show the result of the field trial evaluation as a final evaluation. There are five aspects of assessment namely level of clarity, attention, relevance, confidence, and satisfaction. The level of satisfaction has the highest score 4.59. This approved that FS and TS satisfy involve in the training.

Fig 3. Result of the field trial evaluation as a final evaluation
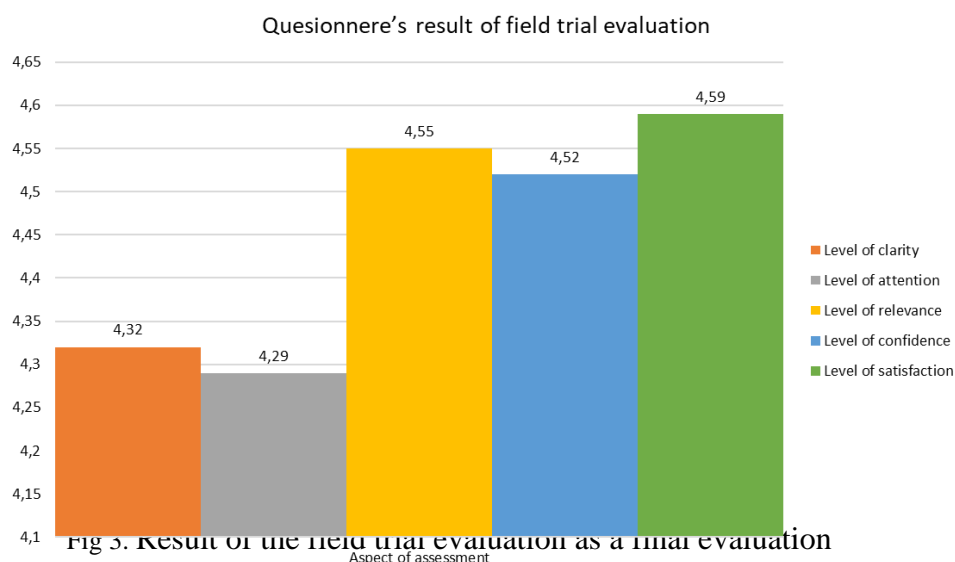
Furthermore, according to the learning outcomes in online training, the assessment of the knowledge aspect, on average, FS and TS have understood the training material. Aspects of skills, FS and TS can operate e-portfolios and e-reports. On the attitude aspect, FS and TS gave a positive response to the use of an electronic assessment system of teacher professional competence. The basic thing about training is change (Leonard & Wibawa, 2020). This proves that this online training provides a significant change for FS and TS in terms of their knowledge, skills, and attitudes. The use of electronic assessments is a challenge for FS and TS. These challenges can be in the form of how to make electronic assessments for all students, integrating electronic assessment designs with learning outcomes and student needs, as well as lack of experience to have full control over the use of electronic assessment methods, and adapting to changes in assessment practices (Appiah & van Tonder, 2018). This can be a suggestion for universities to cooperate with technology and infrastructure providers by applying technical approaches such as cloud computing, on-demand technology, resource sharing, and virtualization, especially implementing e-assessment (Indrajit, Wibawa, & Suparman, 2021).

I. CONCLUTION

The conclusions from this research and development are (1) The electronic assessment system was appropriate, effective, and relevant to use, (2) FS and TS have a fairly good understanding of the electronic assessment system, (3) FS and TS are able to use an

electronic assessment system of teacher professional competence, as evidenced by their improved learning outcomes before and after using this assessment system during training, (4) FS and TS have a positive response to the implementation of this electronic assessment system. The development of an electronic assessment system model of teacher professional competence in the SFI program at Faculty of Education, Pelita Harapan University has gone through a revision in formative evaluation and has met the criteria of good quality and is relevant for FS and TS.

Learning materials, especially regarding e-portfolios and e-reports are very helpful for FS and TS in conducting SFI assessments of student teacher. This form of assessment minimizes piles of physical files and is more practical to use because it can be accessed anywhere and anytime. It is very good and appropriate to be a means of understanding students and helping assessors to be more objective in providing assessments. Moodle can support the learning process and digital assessment efficiently and effectively because FS, TS and student teacher can easily access and view learning outcomes so that the learning process can be recorded authentically. E-portfolios and e-reports are very helpful for FS and TS in measuring teacher professional competencies more efficiently and effectively. It does not require much time to correct, can be done and sent anytime and anywhere, so that feedback can be more easily done, and can directly discuss with student teacher. In addition, it can answer problems that cannot be solved by traditional assessment. The teaching materials/guidebooks that have been prepared are very helpful for FS and TS. This system and learning materials are feasible use in the SFI program, specifically by FS and TS at school. That is based on information regarding the context of professionalism, independence, and motivation of FS and TS, and resources in the form of time, equipment, and learning environment used in the development of an electronic assessment system of teacher professional competence.

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