Development of ICT Training Models for Teachers

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Development of ICT Training Models for Teachers
Based on *ICT CFT* (ICT- Competency Framework for Teacher)

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Abstract : The purpose of this article is to develop a model of ICT-based teacher training for teachers based on the ICT-CFT model issued by UNESCO containing aspects of ICT competency which is the framework that teachers must possess. The ICT training model that will be developed is aimed at improving the competence of teachers in ICT (Information and Communication Technology) field covering six aspects of ICT-based professional work, namely: (i) understanding of ICT in education; (ii) understanding of curriculum and assessment; iii) mastering pedagogy, (iv) mastering ICT, (v) understanding organization and administration, and (vi) learning of the teaching profession. This ICT training model will use the ADDIE development model which consists of Analyze, Design, Development, Implementation and Evaluation. The expected outcome is a training model that comes with the product of a theory and practice learning module as well as evaluation during training and post-training monitoring. For implementation, cooperation with relevant stakeholders such as the education office or interested school may also be provided by non-formal education providers such as courses and training institutions. For the development can also be applied in the form of an online course so that it can reach a limited space and time.

Keywords : Training Models, ICT-CFT, Teacher

I. INTRODUCTION

Teachers are the most decisive component of the overall education system, which should receive central, first and foremost attention. This one figure will always be in the strategic spotlight when it comes to education, because teachers are always associated with any component of the education system, teachers play a leading role in educational development. The quality of education and learning outcomes will lie in how educators perform their duties professionally.

Professional teachers should equip themselves with the necessary knowledge and skills and continually update to keep up with the needs of the students and the development of the times. The problem is whether teachers are ready to accept the changes offered by the progress and development of information technology, what competencies required teachers so as to utilize information technology in learning and learning process.

UNESCO in collaboration with CISCO, Intel, and Microsoft, and educational experts conducted intensive consultations to identify their teachers' ICT competencies in order to master the materials and classes effectively and efficiently. To implement these aspects of ICT-based professional work, the above are done through three ICT-CFT (ICT Competency Framework for Teachers Project) approaches issued by UNESCO on teaching based on human capability in mastering technological development, namely: 1. technology literacy, 2. Deepening of knowledge, and 3. Creation of knowledge. (Munir, 2014).

In a study conducted by Zaidatun Tasir, et al (2012) entitled Relationship Between Teacher's ICT Competency, Confidence Level and Satisfaction Toward ICT Training Programs: A Case Study Among Postgraduate Students, presented that there is a relationship between teacher's ICT competence with

confidence in managing Learning, and the relationship between teachers' ICT skills and the satisfaction acquired in ICT training. This indicates that the competency level of teacher's ICT is influenced by the ICT competency development model that followed and the teacher's ICT ability can improve teachers' self confidence in the management of learning.

There are six aspects of ICT-based professional work: (i) understanding of ICT in education, (ii) understanding of curriculum and assessment (iii) mastering pedagogy (iv) mastering ICT (v) understanding of organization and administration, and (vi) professional learning Teacher (Munir: 2014). ICT training models for teachers so far have largely not addressed all aspects of ICT competence, this may be due to training providers who do not yet know the ICT competency framework that teachers should have in accordance with their needs, sometimes teachers are also constrained by so that the training materials only end up in the training venue only, after the teachers return to school there is no monitoring and evaluation process so they forget the result of the training that has been followed.

A research entitled Developing ICT Competency for Thai Teachers Through Blended Training was conducted by Chaiya Akarawang, et al originating from Mahasarakham University Thailand in 2016, which aims to improve the competence of ICT teachers. 337 teachers were surveyed through a questionnaire to identify training issues and training needs. Then implement a "Blended Learning" training model that combines classroom training, offline training and online. The results show that the model can improve the score in the cognitive tests and attitudes and competence of teacher ICT also increased well.

It cannot be denied that competency development models in the form of training in ICT fields often rely more on theory, while ICT's require more practice presentations and practical sustainability through regular monitoring and evaluation processes, therefore a training model is needed Improve ICT competency covering aspects of ICT competence as a whole and can improve the competence of teacher's ICT on an ongoing basis. The above matters are so that innovation is needed to develop a model of ICT (Information and Communication Technology) training for teachers in accordance with ICT-CFT (ICT-Competency Framework for Teacher).

II. DISCUSSION
2.1 Teacher Competence

Teachers are professional educators with the primary task of educating, teaching, guiding, directing, training, assessing, and evaluating learners in early childhood education, formal education, basic education, and secondary education (UU.14 / 2005 article 1;). In carrying out its duties in the present, professionalism becomes a demand and becomes an integral part of the profession of teachers in performing their duties educators. In the Government Regulation of the Republic of Indonesia Number 74 Year 2008 on Teachers, it is explained that: "competence is a set of knowledge, skills, and behavior that must be possessed, experienced, and mastered by teachers or lecturers in performing professional duties.

According to Mulyasa (2009: 17) the essence of teacher competency standards is to get good and professional teachers, who have the competence to carry out the functions and objectives of the school in particular, as well as the goals of education in general, according to the needs of society and the demands of the times.

Teachers in the era of information and communication technology today is not just a teaching (transfer of knowledge) but must be a manager of learning, it means every teacher is expected to create learning conditions that challenge creativity and student activities, motivate students, using multimedia, multimetode, And multiple sources in order to achieve the expected learning objectives (Rusman, 2011).

A professional teacher should have at least four basic competencies, based on Law Number 14 Year 2005 on Teachers and Lecturers, in Article 10 paragraph (1) stating that the basic competencies that a teacher must have as referred to in Article 3 include pedagogic competence, Competence of personality, social competence and professional competence possessed through professional education. Teacher competency standards include core competencies that can be developed into PAUD / TK / RA teacher competencies, elementary / junior high school teachers and subject teachers in SD / MI, SMP / MTs, SMA / MA, and SMK / MAK.

1. Pedagogic competence is the ability of understanding of learners, design and implementation of learning, evaluation of learning outcomes, and development of learners to actualize the potentials they have

2. Professional competence is the mastery of learning materials in a broad and deep, covering the mastery of curriculum material subjects in schools and scientific substances that overshadow the material, and mastery of the structure and methodology of science

3. Personality competence is a personal ability that reflects a steady, stable, mature, wise and authoritative personality, a role model for learners, and noble character.

4. Social Competence is the ability of teachers to communicate and get along effectively with learners, education personnel, parents / guardians of learners, and the community around

If a teacher has had 4 such competencies, then a teacher may be called a professional teacher. In the development of professional teachers also have to master information technology. Therefore it has become a necessity that every primary and secondary educational institution in Indonesia, teacher professionalism must be developed and started from teaching and learning activities in everyday either in class or in teacher organization. In line with the various demands of professionalism, social change and the development of ICT, the quality culture is a paradigm that can be used as a foothold in the achievement of educational goals. In the implementation can be started from the governance of learning processes and education in schools.

2.2 Information and Communication Technology (ICT)

Information and Communication Technology, is a large umbrella terminology that includes all technical equipment for processing and conveying information. ICT covers two aspects: information technology and communication technology. Information technology includes all things related to the process, use as a tool, manipulation, and information management.

While communication technology is anything related to the use of tools to process and transfer data from one device to another. Therefore, information technology and communication technology are two inseparable concepts. So, Information and Communication Technology contains a broad understanding that all activities related to

processing, manipulation, management, transfer of information antar media.

The term ICT emerged after a mix of computer technology (both hardware and software) with communications technology in the mid-20th century. The combination of the two technologies is growing rapidly beyond other technology areas. Until the beginning of the 21st century, ICT continues to experience various changes and has not seen its saturation point (https://en.wikipedia.org).

2.3 ICT-CFT Framework for Teacher Competencies

The use of ICT in education provides new teacher professional roles, new pedagogy and new approaches to teacher education. The successful integration of ICT in the classroom will depend on the teacher's ability to: (i) structure the learning environment in a new way, that is to combine ICT with new pedagogy, and (ii) develop an active social class that encourages cooperative interaction, collaborative and work learning group. This requires a different set of classroom management skills than usual. (Munir, 2014).

UNESCO in collaboration with CISCO, Intel, and Microsoft, and educational experts conducted intensive consultations to identify their teachers' ICT competencies in order to master the materials and classes effectively and efficiently. The results of the collaboration resulted in three books of the UNESCO framework on ICT competence for professional teachers published in 2008, namely: (i) a Policy Framework explaining the reasons, structure and approaches of ICT-Competency Framework for Teachers (ii)) A module development Competency framework that explains how three stages of educational development can be mapped to the six aspects of a teacher's work to create a framework of 18 teacher competency modules, and (iii) the

Specifically and detailed Provision Guidelines for each module in educational development

To implement these aspects of ICT-based professional work, the above are done through three ICT-CFT (ICT Competency Framework for Teachers Project) approaches issued by UNESCO on teaching based on human capability in mastering technological development, namely: 1. technology literacy, 2. Deepening of knowledge, and 3. Creation of knowledge. (Munir, 2014).

Fig. 1 UNESCO ICT-CFT Competency Framework

In this innovation will be developed a model of ICT training for teachers. Benny A. Pribadi (2014) explains that training is one of the most important components in developing human resources (HR) in a institution. Organizing a training program is expected to increase the knowledge, skills and positive attitude of the participants who are important assets in an institution or organization. Meanwhile Walter Dick (2009) in Benny A. Pribadi (2014) defines training as: "... A pre specified and planned experience that allows a person to do something that he can not do before". Training is a learning experience deliberately designed to assist learners in mastering competencies that were not previously owned.

In several studies discussing the specific training related to teacher's ICT competence, there is a significant relationship between teacher's ICT competence and ICT

training that has been followed, one of which is by Zaidatun Tazir, et al (2012) entitled "Relationship Between Teachers" ICT Competency, Confidence Level, And Satisfaction Toward ICT Training Programs: A Case Study Among Postgraduate Students ". This study discusses the relationship between teacher's ICT competence, Level of confidence and satisfaction follow ICT training program. The results of this study indicate that teacher competence, confidence level and satisfaction follow ICT training programs are positively related to each other. This study also found that teacher satisfaction on the training that has been followed is one of the important factors that can improve teacher's competence and confidence.

Other studies related to teacher's ICT competency levels were also conducted by Dave E. Marcial, et al (2015) entitled ICT Competency Level of Teacher Education Professionals in the Central Visayas Region, Philippines. This study uses the ICT-CFT standard from UNESCO to measure the level of teacher competence in a region in the Philippines and shows the result that the competency level of teachers' ICTs in the area under study is at the level of deepening knowledge and is needed to improve the competence level to achieve innovative learning process.

2.4 Innovation Model and Stages of Innovation Development

The training program basically contains learning activities that are deliberately designed and developed to create a learning process within the participants. Through the learning process is expected to program participants will have the ability that includes knowledge (skills), skills (skills) and attitude (attitude) required in a task or job.

The idea of innovation is a development innovation, because it takes a model that will

be used as a reference in the process of implementing this idea. There are several models or approaches to the design of learning systems that can be used to design and develop learning programs. One model or approach that can be implemented to design and develop an effective and efficient training program is the ADDIE model. This model is simple and can be done gradually or systematically to realize a comprehensive training program. (Benny A.Pribadi: 2014). The term approach used refers to a model or pattern in which it reflects or describes a number of steps and procedures that are systematic to be used to achieve the desired goal. The ADDIE model matches its name, contains the following steps Analyze, Designing, Development, Implementation, and Evaluation.

The activity stages in the ADDIE model are essentially related to each other. Therefore, this model needs to be done gradually and also thoroughly. In relation to the idea of developing a model of ICT-training for ICT-CFT-based teachers, the development steps according to the ADDIE model are described as follows:

2.4.1 Analysis

In this case as some candidate ICT training participants need to know the competence of ICT that has been owned by the teacher, whether it is in accordance with ICT-CFT standards or ICT competency framework or not, what problems are commonly encountered by teachers in the use of ICT both in learning and in improving teacher professionalism and what competencies are most needed by teachers, so that the designed training program will be completely in accordance with the needs of teachers.

To obtain the data and information, can use some method that is: 1) observation method that is see directly how the teacher use

ICT in learning process and everyday activities, 2) Using questionnaire containing question / statement which describe competency level of teacher ICT ICT-CFT framework, 3) test teachers to determine the level of competence they have.

2.4.2 Design

The ICT training program to be designed refers to the ICT-CFT competency framework issued by UNESCO. The competency framework consists of 6 (six) aspects: (i) understanding of ICT in education, (ii) understanding of curriculum and assessment, (iii) mastering pedagogy, (iv) mastering ICT, (v) understanding organization and administration and (vi) Teaching profession. To implement these aspects, 3 (three) approaches based on human capability to master technological developments are 1) Literacy technology, 2. Deepening of knowledge, and 3. Creation of knowledge. (Munir, 2014).

The steps needed in designing a training program include: 1) establishing the general objectives or competencies of the program, 2) conducting an instructional analysis that will produce a competence structure map, 3) determining learning strategies, 4) determining the form of assessment of learning outcomes, 5) Conducting formative evaluation, 6) revising the program, 7) conducting a summative evaluation to determine the effectiveness and efficiency of training implementation. (Benny A. Pribadi , 2014)

2.4.3 Development

This stage is the stage after the design. At this stage will focus more on the development of training materials to be used. Various training materials can be used to facilitate the participants to achieve the expected competencies. Training materials can be interpreted as a means that can be used

by the trainer to deliver the content of training program materials.

Some things to consider in choosing various training materials are 1) material suitability with training materials, 2) accuracy of content or substance of training materials, 3) clarity of information and knowledge, 4) the ability of materials to motivate participants, 5) Learning activities, 6) quality condition of training materials, 7) completeness and availability of materials. (Benny A.Pribadi, 2014).

In this designed ICT training the main ingredient required is the availability of supporting hardware and software according to the ICT-CFT framework. Theoretical and practice modules and evaluation materials in hardcopy and softcopy, as well as the availability of adequate internet access as support.

2.4.4 Implementation

In implementing the organizer or the training designer must make decisions about the time, place and cost of the program implementation. In implementing ICT-CFT teacher's ICT-based teacher training program there are several plans to be undertaken:

1. Disseminate to the education office and request recommendations to implement ICT-based ICT-CFT training

2. Based on the recommendation from the education office will be socialized to the schools to introduce the training program.

3. In addition to the schools will be conducted also socialization to colleges that have a college teacher so that prospective teachers can gain additional knowledge and competence of standard ICT before graduation and this will be an added value for graduates

4. There will be an MOU with some non-formal education providers in this case a

computer course institution to serve as a training ground.

2.4.5 Evaluation

In this innovation will be done both types of evaluation are the evaluation of learning outcomes to assess the extent of training can be absorbed by participants and the increase in competence as expected. For the evaluation of the program will also be done to see if the program is effective and efficient both in terms of time and cost and the results are as expected.

For evaluation instrument the results have been prepared along with the design of materials / training media at the design stage, while for program evaluation will be done by using CIPP evaluation model that is 1) Context (evaluation toward objectives and context of training program implementation, 2) Input Used to conduct training programs), 3) Process (evaluation of procedures undertaken in conducting training programs), and 4) Product (evaluation of outcomes achieved by the implementation of training programs). This evaluation model will be done gradually and thoroughly by the evaluator.

3. CONCLUSION

Based on the previous explanation it can be drawn some conclusions are as follows:

1. The idea of this innovation is to develop an ICT training models based on ICT-CFT (ICT-Competency Framework for Teacher) issued by UNESCO. This ICT training model will use the ADDIE development model which consists of Analyze, Design, Development, Implementation and Evaluation
2. The expected benefits from the development of this training model is the achievement of teacher's ICT competence and to improve the competence of ICT teachers so as to improve competence

and performance and able to compete globally, where it can indirectly improve the quality of education.

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