

The Implementation of Educational Technologists' Competencies in Improving Learning Quality

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Abstract—Quality of education is the answer for the demand of a change as the result of the development of science and technology. This research is intended to examine the benefits of the application of educational technology competencies in improving the quality of education in schools. By using survey method, research was carried out in the provinces of Central Java, East Java, and Bali with a sample is the Principal or Vice Principal and teachers from the Junior High School (SMP)/Madrasah Tsanawiyah (MTs), Senior High School (SMA)/Madrasah Aaliyah (MA), and Vocational High School (SMK) education units. The results of the study show how the application of educational competencies convincingly very useful in achieving the quality of education in schools. Educational technology competencies needed by schools in the framework of educational quality achievement within the scope of education assistance and development of learning resources, quality assurance of learning, capacity building of teachers and education staff, and facilitation of teachers in improving the quality of learning and professional development.

Keywords—competencies, technology, learning, education, quality, school

I. INTRODUCTION

In the context of national education policies and systems in Indonesia, professions engaged in the development and applied field of educational technology are formally declared as a learning technology developers about the Functional Position of Learning Technology Developers [1]. This shows that the work field of education technology to contribute to the achievement of education quality has gained legal certainty and so as its acknowledgment through the fulfillment of its rights by the state. The Developer of Learning Technology, hereinafter referred to as PTP, is one functional office that has the scope of duties, responsibilities, and authority occupied by the state civil apparatus with the rights and obligations fully given by the authorized official [2].

Referring to the definition that educational technology is a study and ethical practice of facilitating and improving performance by creating, using, and managing appropriate technological processes and resources, educational technologists can contribute theoretically and practically in improving the quality of learning widely [3]. Theoretically, conceptual education technologists can conduct studies to

produce a variety of new knowledge and practices that are tested through scientific research [4].

In the other hand, practically, educational technologists can conduct practices ethically in the design and production of various media/learning models needed in an effort to improve the quality of learning in schools and in various educational and training institutions [5]. The application of educational technology increases the effectiveness of the teachers/lecturers in transferring their knowledge, increases the readiness of the teachers/lecturers in conducting learning activities, and improves the lifelong learning process for themselves [6]. The field of work within the scope of the functioning of educational technologists in schools can be focused on four main activities, namely (1) the development and management of learning resources, (2) quality assurance of learning, (3) capacity building of teachers and other education personnel, and (4) teachers' facilitation in improving the performance of learning and professionalism. Technically, this work field can be managed and distributed horizontally and vertically in harmony with the stratification of Learning Technology Developers position [3].

II. LITERATURE REVIEW

A. The Development and Management of Learning Resources

Development and management of school learning resources including the functions of creating, using, and managing various learning resources to facilitate learning and improve the quality of learning. This is in accordance with the definition of AECT 2008 education technology, and is in line with the scope of the learning technology development and professional development activities [2]. In the context of developing various sources and technologies for the learning facilitation and improvement of the quality of learning, educational technologists can be free to create and innovate various learning products in the form of hardware and software, including various models of media/specific learning applications in accordance with type/path/level of education.

Learning resources are very necessary in the implementation of the learning process. This is because the learning process will only take place if there is an interaction

between students with learning resources and educators. In other words without learning resources, learning cannot be carried out optimally. This is because interactions in learning are not only limited to students and educators. What is really needed from educators is the role in providing motivation, direction, guidance, counseling, and facilities during the learning process. Learning resources play a role in providing various information and knowledge needed in developing various desired competencies in certain fields of study. Therefore, a variety of learning resources, including teaching materials, learning media, make a positive contribution in improving the quality of education and learning.

While in the context of school learning resources management, educational technologists can carry out various activities relating to the use of various model/media/application products based on Information and Communication Technology (ICT) for the benefit of learning. The scope of the task of developing and managing learning resources that are urgent to be handled professionally is those related to ICT, such as the e-learning school web. This field requires professional handling which is not enough to be given/entrusted to the teachers merely as an additional task [7].

B. Quality Assurance of Learning

The objectives to be achieved through the education quality assurance system are the development of a formal, non-formal and/or informal education quality culture; clear and proportional division of tasks and responsibilities in the guarantee of formal and/or non-formal education cover in educational units or programs in certain regional units; there is a quality reference in the quality assurance of formal and/or non-formal education nationally; nationally mapped the quality of formal and non-formal education broken down by region and education unit; the establishment of formal and non-formal education quality information systems based on reliable, integrated and connected information and communication technology that connects education units to the government. The education quality assurance paradigm developed is education for all that is inclusive and does not discriminate students on the basis of any background; lifelong learning centered on students who treat, facilitate, and encourage students to become independent learners who are creative, innovative, and entrepreneurial; and education for development, development and/or education for sustainable development.

Quality assurance of education is carried out on the basis of the principle of sustainability; planned and systematic, with a clear and measurable time frame and targets for achieving quality in formal and non-formal education quality assurance; respect the autonomy of formal and non-formal education units; facilitating informal learning of sustainable communities. Quality assurance system of applied educational technology based learning is a real contribution to the field of educational technology in improving the quality of learning in schools. Educational technology is present to facilitate learning and improve learning services. Through a structured and systemic learning quality assurance process, schools can ensure that the learning given to students have a certain quality. Learning takes place in schools that are controlled by teacher is a well-planned learning process, implemented correctly and well, monitored and programmatically evaluated [8].

C. Capacity Building of Teachers and Other Education Personnel

Teacher quality is an important part of the teaching-learning process. Teacher quality has an influence on the quality of education. The influence of teachers on their students is expected to be able to improve the quality of graduation, both in personal qualities, morals, knowledge capable of skills. Quality standards as professional teachers are indicated by educator certificates. Obtaining a certificate as a professional teacher must go through a series of teacher competency tests.

In order to improve the quality of effective teacher teaching staff, use several strategies. One of them is by increasing the education budget allocation. This is expected to be able to be used to facilitate the improvement of teacher quality. The program that can be carried out is fully maximized to develop the ability of teachers who will be able to shape the character and civilization of the nation which is dignified in the intellectual life of the nation.

As we all know, Indonesia is still at the bottom of the world in the field of education. Therefore, efforts are needed to improve the quality of the teaching staff so that education in Indonesia is of higher quality. This effort must also be accompanied by competence, recruitment and management of relevant human resource development.

The field of work of educational technologists in developing the capacity of teachers and school education personnel, substantively includes a variety of activities to support the duty of Learning Technology Developers, such as instructors/ instructors/trainers/tutors/facilitators in the field of learning technology, and mentors/assistants in developing learning technology [9]. But more than just as a teacher or mentor, educational technologists can become developers of models for increasing the capacity of school human resources. Educational technologists can initiatively carry out the analysis of training needs, design training models, produce training teaching materials, carry out training programs, conduct monitoring and evaluation, and carry out follow-up programs. If these activities are carried out by educational technologists, those activities are not only such kind of professional support but it can be categorized as a main functional duty of Learning Technology Development in schools [8].

D. Teachers' Facilitation in Improving Performance of Learning and Professionalism

To facilitate teachers in improving their learning performance and professionalism, educational technologists can carry out mentoring activities in the production of learning media and other learning tools, such as textbooks and worksheets for students. Operationally the activities that can be carried out are collaborative project work, for example, teachers have ideas according to their field of expertise (subjects) to put a material into interesting media and textbooks that are comprehensible by students. In this matter, educational technologists can collaborate in turning the ideas into a certain media products. In this scope of work, a partnership model between teachers and educational technologists can be built, where teachers develop various ideas on how to teach students meaningfully, educational technologists can contribute in designing and producing learning devices according to what the teacher's desire [10].

Regarding to the potential implementation of educational technologists in their contribution to improve the quality of education in schools, research was conducted to assess the assessment of school management about the benefits of implementing the competencies of educational technologists in schools. The study aims to examine the benefits for the implementation of school functions in providing learning services to students, if the functions of developing and managing school learning resources, learning quality assurance systems in schools, development and management of capacity building for teachers and education personnel, and teacher facilitation in improving the quality of learning and professionalism carried out by educational technologists, not by teachers as their additional duty.

III. METHOD

Survey research was carried out in the provinces of Central Java, East Java, and Bali with a sample of Principals and Vice Principals of SMP/MTs (Junior High Schools), SMA/MA (Senior High Schools), and Vocational Schools. The research sample was 49 people consisting of 5 Principals of SMP/MTs, 1 Principal of SMA/MA, 2 principals of Vocational Schools, 16 SMP/MTs teachers, 12 SMA/MA teachers, and 13 Vocational High School teachers.

Data collection is done by measuring techniques through a Likert-Scale instrument. The validity of the instruments used ranged from 0.679 to 0.842 with a reliability index of 0.981. Data analysis was carried out descriptively to see how much the value of benefits felt by the school management personnel and teachers if the functions of development and management of learning resources, learning quality assurance systems, development and management of capacity building for teachers and school education staffs, and facilitation of teachers in improving the quality of learning and professionalism carried out by educational technologists [11]. The value of the benefits of implementing the educational technologists competencies in schools in this study are further classified into very small, small, large, and very large categories.

IV. RESULTS AND DISCUSSION

The results of the benefit value analysis can be expected from assigning educational technologists in schools to carry out the functions of developing and managing school learning resources, learning quality assurance systems in schools, developing and managing teacher capacity building and school education staff, and facilitating teachers in improving the quality of learning and professionalism summarized in Table 1.

From the Table 1 it can be seen that the value of benefits can be expected by schools in improving the quality of educational services to students, if the educational technologist competencies implemented at school reach high score with a percentage achievement of 87.32%. It shows that schools will get a great help by the presence of educational personnel who specifically carry out tasks in the field of development and management of learning resources, quality assurance of learning, development of teacher capacity and school education staff, and teacher facilitation in improving the quality of learning and professionalism. Those four strategic fields of work in achieving quality education in schools, so far are treated as an additional work only that is assigned to the management, especially Vice Principals and

certain teachers, and no acknowledgment (recognition) for that in their career improvement. Teachers who have the competencies (expertise), and working in one or all of those four work fields get no direct civil effects in their career as a teacher. Doing those duties gain no credit recognition points for promotions and teacher positions for them.

TABLE I. BENEFITS VALUE OF IMPLEMENTING PTP FUNCTIONAL POSITIONS IN SCHOOLS

| No | Scope of work/ work field | Minimum score | Maximum score | Achievement score mean | % |
|----|--|------------------|------------------|---------------------------|--------------|
| 1. | Development and management of school learning resources | 11 | 44 | 38.78 | 88.13 |
| 2. | Learning quality assurance in school | 10 | 40 | 33.96 | 84.90 |
| 3. | Development of human resource capacity of school | 6 | 24 | 20.71 | 86.31 |
| 4. | Facilitation of teachers in improving learning quality and performance | 8 | 32 | 28.80 | 89.99 |
| | Total | 35 | 140 | 122.31 | 87.32 |

The implementation of the educational technologist's competence in schools can be expected to contribute significantly to the achievement of quality education in schools. The contribution can be explained as follows.

A. Function of Developing and Managing School Learning Resources

Learning can be interpreted as a result of associating experiences, not just memorizing meaningful words. Furthermore, learning in general is always associated with certain fields of interest, for example social science, religion, computers, physics and others. Through learning students or students are expected to be able to expand and develop their intelligence. Therefore, the task of educators is how to create an atmosphere of learning that can develop all the intelligence that exists in each individual student. Learning is a change in capability that lasts for a period of time through a process of trying various possibilities. Learning is not just remembering a number of facts but learning is a thought process, namely the process of developing the potential of the whole brain, both the right brain and the left brain. This means that the purpose of learning activities is a change in behavior, both concerning knowledge, skills, attitudes, even covering all personal aspects.

Utilization of learning resources, educators and education personnel have an important role in planning and managing learning resources. This is done so that active interaction occurs between students, educators and learning resources. It also important to be done to provide a learning experience that is appropriate to the learning styles of students. So, they can remember, understand, apply, analyze and synthesize factual,

conceptual, procedural, and metacognitive knowledge according to their level and learning objectives.

The Learning Resource Center (LRC) is an integral part of the learning system. This means that the existence of the LRC in each institution (school/college) is very important in achieving the competencies that have been formulated from each subject or subject. Without the empowerment of adequate learning resources and concrete experience of each subject studied by students, the form of competency of the subject will never be obtained optimally. What is the role of the LRC in achieving each goal or competency of each subject? Technically the LRC can be a laboratory for all subjects. Whether it's for direct use by students or through teacher intermediaries. Used directly by students, meaning students can study individually or in groups at the LRC, through media programs specifically designed to achieve the objectives or competencies of certain subjects. Through teacher intermediaries, it means the teacher prepares all of his teaching needs at the LRC before appearing in front of the class. Improving the quality of learning done by teachers, both in the media used and their presentation techniques, will have an impact on student learning outcomes. Furthermore, the LRC and its functions will work together to improve the overall quality of human resources, especially those involved in the development of instructional systems (teachers, lecturers, facilitators, and learning managers). With the increase in the quality of human resources, it means that the quality of education in every institution, both school and tertiary, is increasing.

The results of the study show that with special staff who will carry out the development and management functions of learning resources in schools, the benefits effect for the implementation of the function of learning services to students is very high (average score of 38.78 or 87.13%). A number of functions can be performed by educational technologists in supporting the achievement of quality education in schools with regard to the development and management of learning resources, including analysis of learning media needs, textbooks, materials and tools for practical learning/laboratories, internet networks to support learning, management of school information technology devices, learning resources, school web information systems, and school e-learning development and management. This will be a great help for the school management and teachers in utilizing the development of science and technology, especially in the field of communication and information, as much as possible as a source of learning in a more precise, functional, and valuable manner [7], [10].

B. The function of Learning Quality Assurance in Schools

The results of the study show that with special personnel who will carry out the tasks and functions of learning quality assurance in schools, the benefits effect for the implementation of the function of learning services to students is high (average of 33.96 or 84.90). A number of functions of the learning quality assurance process needed for quality achievement in schools that can be carried out by educational technologists, including needs analysis and development of learning quality standards, establishment of quality learning standards, development of monitoring mechanisms and instruments for achievement of learning quality standards, auditing quality of learning and reporting audit result, and development of follow-up programs. This is very necessary for schools, considering the empirical facts found that

substantively schools claim that they have carried out a learning quality assurance process, but from schools that are the subject of research, documents (archives) regarding the quality assurance system of learning undertaken are not found. In other words, in this study no written evidence was found regarding the learning quality assurance process in schools [8]. While in another study it was found that with clear quality standards, a realistic achievement mechanism, acceptable to all school elements, observed and measurable results, is a guarantee in improving the quality of learning in schools through a directed and continuous quality assurance process [12], [13].

C. The function of Developing and Managing The Capacity of Teachers and School Education Personnel

Teachers and school educational personnel are the spearhead of every policy related to education. They are required to pay great attention to the development and quality of education. However, there are still problems related to the demands and capabilities of the teaching staff. These problems include quality, competition, professionalism and the welfare of educators.

Professional ability is demonstrated by the mastery and understanding of teaching staff towards the subject matter to be taught by always updating their knowledge in accordance with the development of science and technology. Professional efforts of teachers are demonstrated by their teaching expertise, mastering methodologies, being able to use teaching materials, managing student learning activities, and constantly innovating to develop effective learning programs. Therefore, educational institutions need to provide programs in order to develop teachers and school educational personnel. The programs are carried out through coaching and development that is intended to direct the teaching staff to be able to do the best work possible by increasing the professionalism of their work.

The results of the study show that with the special staff who perform the function of developing the capacity of teachers and school education staff, the benefits that can be expected for the implementation of the learning service functions of students is very high (average score of 20.71 or 86.31). A number of functions of the development and management of capacity building for teachers and school education personnel that can be carried out by educational technologists including needs analysis, program development, and management of training programs to improve the competence of teachers and education staff. The field of work of educational technologists in developing the capacity of teachers and education personnel in schools substantially covers a variety of activities to support the task of Learning Technology Developers, such as instructors, assistants, trainers, tutors, or facilitators in the field of learning technology, mentors/assistants in the development of learning technology [9]. But more than just as a teacher or mentor, educational technologists can become developers of models for improving the capacity of human resources in schools [14], [10].

D. The Function of Facilitating Teachers in Improving The Quality of Learning and Professionalism

The results showed that if there were special staff who could facilitate teachers in improving the quality of learning and professionalism, the value of benefits for efforts to achieve quality education in schools was very high (average

score of 28.80 or 89.99%). Facilitation that can be done by educational technologists in improving the quality of learning and professionalism of teachers, including needs analysis and development of educational technology models and learning media relevant to support the implementation of curriculum in schools, mentoring teachers in developing media, materials, and multimedia learning, e-learning, assessment of the feasibility of a learning media and teaching materials used by schools. With the presence of educational technologists in schools, teachers can partner and collaborate to improve the quality of learning and performance more broadly. Educational technologists can give benefits that are significant and directly felt by the Principal and Vice Principal as elements of management, and the teacher as a learning agent who directly interacts with students [10], [13].

The implementation of technology education competencies in schools is a strategic step in building a quality school education system [15]. The teacher as the key holder of the success of the education process in school, will receive the support of highly contributory resources in achieving quality education. The presence of educational technologists who act as developers and managers of learning resources, learning quality assurance, management developers increase the capacity of teachers and education staff, and teacher facilitators in improving the quality of learning and professionalism, can be expected of its real contribution in realizing quality education in schools.

V. CONCLUSION

The implementation of educational technologist's competence in schools is very useful in achieving the quality of schooling education. The competence of empirical education technologists is needed by schools in the framework of achieving educational quality through the function of developing and managing learning resources, learning quality assurance, developing the capacity of teachers and education staff, and facilitating teachers in improving the quality of learning and professionalism. School management elements and teachers believe that the presence of an educational technologist in school will provide a value of benefits and a great impact on the achievement of quality education in schools.

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