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Computer and Network Engineering Expertise Competency Test Program Evaluation at Islamic Vocational School 1 Blitar

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ABSTRACT

Competency test is an assessment to measure the competence of students at a certain level according to the competence of skills possessed by SMK. This study uses the DEM (Discrepancy Evaluation Model) research model with a qualitative research type that was carried out during the implementation of the Expertise Competency Test (UKK) of the Computer and Network Engineering (TKJ) Expertise Program at Islamic Vocational School 1 Blitar. The sources of data in this study were TKJ teachers, TKJ Field Coordinators, the implementing committee, internal assessors, external assessors, and students. Methods of data collection using observation, questionnaires, interviews, and documentation. Data processing techniques are carried out qualitatively according to what is happening in the field. The results of the evaluation of the implementation of the Expertise Competency Test of the Computer and Network Engineering Expertise Program at SMK Islam 1 Blitar are as follows: (1) the design development stage has been very well carried out, (2) the installation stage is included in the very appropriate category and is suitable for use as a skill competency test. , (3) the overall process stage is in accordance with the UKK scheme designed by the school, (4) the overall product stage is also very in line with the UKK terminal objectives to be implemented. (5) The cost analysis stage can be obtained that the costs incurred by the school are issued based on the needs of the test by considering the infrastructure owned by the school and are still suitable for use in the test.

I. INTRODUCTION

Human resources are required to be able to overcome challenges and take advantage of opportunities, especially in today's world of work. Indonesia's competitiveness with other countries in various fields, especially in the field of technology development is determined by the quality of the human resources produced. One of the state's efforts to produce quality human resources in the progress of the country is through vocational education [1]–[3].

One of the government's efforts to reduce unemployment for SMK graduates is through the Certification program. Based on government regulation number 23 of 2004 concerning BPS, National Professional Certification Agency (BNSP) is indispensable as an institution that has the authority and becomes a reference in the implementation of national work competency certification that is recognized by all parties. The Professional Certification Institute was formed to prepare competitive Indonesian workers to face global job market competition. In addition, the existence of the BNSP will facilitate cooperation with similar institutions in other countries in order to build mutual recognition of the competence of workers in each country.

Islamic Vocational School 1 Blitar is one of the vocational schools that has a vision of realizing Islamic Vocational School 1 Blitar to be a school capable of producing technicians who are professional, faithful, devoted to Allah SWT and have noble character. This school has five majors. One of the expertise programs possessed is Computer and Network Engineering. As a graduation requirement, the Computer and Network

Engineering Expertise Program at the Islamic Vocational School 1 Blitar must carry out UKK implemented by Professional Certification Institute (LSP) in schools. This program is implemented in order to improve the quality of graduates who are skilled in their fields and as a provision to compete with other vocational high school graduates.

In its implementation, the strategy adopted by BNSP in socializing and implementing a certification system in the business/industrial world is through a program to accelerate the recognition of competency certification in companies/industry in collaboration with LSPs licensed by BNSP [4]. The establishment of LSP in SMK is an effort to strengthen vocational education which is mandated in accordance with Presidential Instruction No. 9 of 2016 in order to improve the quality and competitiveness of Indonesian human resources.

Competency testing is closely related to efforts to improve the quality of student learning [5]–[7] in line with the national education goals stated in the national education system law that has been set by the government. One of the uses of UKK is to measure the achievement of student competencies at a certain level according to the level of expertise taken at the SMK [8], [9].

Based on the background of the problem, several problems can be formulated as follows: (1) How is the UKK implementation process (2) How is the UKK implementation level, especially in the field of Computer and Network Engineering expertise at Islamic Vocational School 1 Blitar has been carried out in accordance with the procedures established by the directorate of development SMK or not (3) How is the UKK implementation in the field of Computer and Network Engineering at SMK Islam 1 Blitar according to what has been planned by the school (4) How are the results of the UKK implementation carried out by students when viewed from the data on the implementation of the skill competency test in previous years.

Based on the formulation of the problem that has been described, the objectives of this research are: (1) Helping schools to evaluate the implementation of UKK, especially in the area of TKJ expertise at SMK Islam 1 Blitar, (2) Knowing the level of implementation of UKK by school LSPs with the contents of Presidential Instruction No. 9 (3) Knowing the level of effectiveness of UKK implementation for students, especially in the field of TKJ expertise at Islamic Vocational School 1 Blitar (4) Knowing the results of UKK implementation based on the data that has been collected.

II. METHODS

The approach used is a qualitative approach using a discrepancy evaluation model. This study examines and describes related to the UKK Implementation Process in the TKJ Expertise program at Islamic Vocational School 1 Blitar. This research consists of 4 research stages, namely: (1) Definition Stage, (2) Installation Stage, (3) Process Stage, (4) Product Stage.

III. RESULT AND DISCUSSION

Definition Stage

At this stage the intended definitional aspects include: (a) the purpose of the UKK program, (b) objects, facilities and infrastructure, and other completeness (c) standards.

a. UKK program objectives

The purpose of implementing the Expertise Competency Test (UKK) program as stated in the UKK implementation guidelines, namely (1) measuring the competency attainment of SMK students who have completed the learning process according to the competency of the skills taken. (2) Facilitating vocational students who will complete their education to obtain competency certification. (3) Optimizing the implementation of competency certification which is oriented towards competency achievement of SMK graduates in accordance with the Indonesian National Qualifications Framework, and (4) Facilitating the work of SMKs with the business/industry world in the context of implementing Competency Tests according to the needs of the business world and the industrial world.

b. Readiness of students, staff and other equipment

Preparation for the implementation of the skill competency test at SMK Islam 1 Blitar proceeds according to a structured plan in accordance with the standards set by BNSP. Preparation for the implementation of UKK is carried out by the UKK Coordinator of Islamic Vocational School 1 Blitar through the formation of a committee, determination of the examination scheme, verification of Competency Test Places (TUK) and registration of UKK participants. This is as stated by Mr. Rudi Trianto as Coordinator of UKK TKJ at SMK Islam 1 Blitar that UKK preparation starts from holding a committee meeting, namely all TKJ teachers discuss financing, examination schemes starting from the test site, criteria for questions to be tested, internal assessors and external. Furthermore, the UKK Coordinator coordinates with the school principal to determine internal and external assessors (from institutions that have relations with SMK Islam 1 Blitar. The secretary prepares work tools starting from the procurement of Competency Test Materials (MUK) for each tested scheme. The number of UKK participants is 89 Requirements for students themselves must follow the description of activities that have been scheduled by the school including participating in the deepening of the National Examination material, UNBK Simulation, USBN, UNBK, and paying administrative costs such as tuition and other financial dependents.

Based on the results of the interviews above, it can be concluded that the data regarding school preparation in implementing UKK is fully carried out by the UKK Committee for Islamic Vocational School 1 Blitar. Where the UKK committee includes the TKJ Coordinator and all TKJ teachers at SMK Islam 1 Blitar. Starting from the coordination meeting of the entire UKK committee regarding financing, the exam scheme which includes the selection of the exam venue, question criteria, and UKK Assessors which include Internal

Assessors from the school and External Assessors from the DU/DI. The requirements of students before participating in the UKK implementation at SMK Islam 1 Blitar must follow a series of activities that have been scheduled by the school and must pay off administrative requirements, namely paying tuition fees and other financial responsibilities.

In addition to conducting interviews by several sources, the researchers also carried out a documentation process regarding the verification of the feasibility of UKK which included five elements. Researchers also obtained interviews with objects involved in the implementation of UKK at SMK Islam 1 Blitar. The five elements of verification are: 1) Main Equipment Requirements Standards, 2) Supporting Equipment Requirements Standards, 3) Place/Space Requirements Standards, 4) Internal Examiners Requirements, and 5) External Examiners Requirements.

c. Standart

Maturity standards that are expected in the implementation of UKK are 100% of students able to work on UKK questions well and satisfactory results both in theory and practice, because from class X to class XII students have been given basic network exercises. This was explained by Mr. Rudi Hartanto as the Head of Certification and as an Assessor with the conclusion that the UKK results at SMK Islam 1 Blitar, especially in the field of Computer and Network Engineering, students must be able to master the competencies tested 100% which consist of theoretical and practical questions with an average score. Minimum 75 with predicate C.

Installation Stage

a. Standard setting review

1) Main Equipment Requirements Standard

The process of collecting data to determine the feasibility of the main equipment to carry out the Computer and Network Engineering Skills Competency Test of SMK Islam 1 Blitar was obtained by using the observation method on the main equipment which includes aspects of tool specifications, number of tools, and equipment condition.

The main equipment feasibility consists of nine points of equipment as stated on the main equipment feasibility observation sheet filled out by the researcher based on the standards determined by the 2018/2019 DPSMK. Through these nine points of equipment, there are 4 alternative answers with the lowest score being nine and the highest score being 36. The level of Quality/Conformity of the main equipment obtained a maximum value of 106 and a minimum value of 9. To show the percentage of feasibility of the main equipment can be seen at Table 1.

TABLE I. MAIN EQUIPMENT FEASIBILITY SPECIFICATION

	Category	Amount	
		Frequency	(%)
1	Very Not Feasible	0	0
2	Less Feasible	0	0
3	Feasible	6	5,66
4	Very Feasible	100	94,34

Based on the table of feasibility specifications for the main equipment, when viewed from the appropriate category, 6% of the main equipment used for UKK is feasible and has a very feasible category of 94% with a total frequency of 106. It can be concluded that the standard the feasibility of the main equipment is very feasible to be used as competency test equipment at Islamic Vocational School 1 Blitar.

2) Support Equipment Requirements Standard

The process of collecting data to determine the level of feasibility of supporting equipment to conduct a competency test of Computer and Network Engineering expertise at SMK Islam 1 Blitar was obtained by using the observation method of supporting equipment which includes several aspects, namely: 1) tool specifications, 2) number of tools and 3) equipment condition. which consists of 4 points of equipment filled in by the researcher after observing the feasibility of supporting equipment. To show the percentage of the feasibility of supporting equipment can be seen in Table 2.

TABLE II. SUPPORT EQUIPMENT FEASIBILITY SPECIFICATION

	Category	Amount	
		Frequency	(%)
1	Very Not Feasible	0	0
2	Less Feasible	0	0
3	Feasible	6	13,04
4	Very Feasible	40	86,95

Based on the Table 2, it shows that the specifications of supporting equipment ranging from tools, number and condition of the tools when viewed from the four categories that have been determined have a category fit for use at 13% and very feasible for use at 87% with a total frequency of 12 scores. It can be concluded that the standard requirements for supporting equipment are very feasible to be used in the skill competency test at SMK Islam 1 Blitar.

3) Feasibility Specifications of Place/Space

The results of the observation of the place/room to conduct the Computer and Network Engineering Skills Competency Test of SMK Islam 1 Blitar which includes aspects of the level of suitability of the place/space consisting of 4 points of equipment filled in by the researcher after observing the feasibility of the place/space. Through these 4 points, there are 4 alternative answers with the lowest score of 4 and the highest score of 16. Based on the results of the feasibility analysis of

the main equipment, a maximum score of 16 and a minimum score of 4. The results of observations are shown in Table 3.

TABLE III. SPACE/PLACE FEASIBILITY SPECIFICATION

	Category	Amount	
		Frequency	(%)
1	Very Not Feasible	0	0
2	Less Feasible	0	0
3	Feasible	1	6,25
4	Very Feasible	15	93,75

Based on Table 3, the standard of place/space requirements gets a score of 1 for the appropriate category and a score of 3 for the very feasible category with each eligibility percentage of 6% feasible and 94% in the very feasible category. The area of the room used has met the standard requirements with a decent category, the ventilation and air installation in the room is also quite good with a very decent category, and the work bench provided in the exam room is sufficient for a number of examinees. With this, it can be said that 94% of the places/spaces used for UKK are very suitable for use.

4) Internal Assessor

The process of collecting data to determine the feasibility level of internal assessors as examiners of the competency test for Computer Engineering and Networking at SMK Islam 1 Blitar was obtained using the standard observation method of requirements carried out by researchers which included aspects of the level of conformity of internal assessors consisting of 3 points the requirements of the examiner team with 4 The alternative answer with the lowest score is 3 and the maximum score is 12. The results from the observation of the requirements of the internal examiner that has been carried out by the researcher is shown in Table 4.

TABLE IV. INTERNAL EXAMINER REQUIREMENTS SPECIFICATION

Category	Amount	
	Frequency	(%)
Very Not Proper	0	0
Less Proper	0	0
Proper	0	0
Very Proper	12	100

Based on Table 4, the standard requirements for internal examiners are 100% in accordance with the standards that have been set. Internal examiners have studied at least S1 in the field of electrical and computer, have teaching experience in practice for more than 5 years, and have experience as examiners for more than 3 years. This is because the internal examiner is a TKJ teacher at Islamic Vocational School 1 Blitar who has taught for more than 5 years so that it can be categorized as very in accordance with the standards that have been set as internal examiners for UKK implementation at Islamic Vocational School 1 Blitar.

5) External Assessor

The process of collecting data to determine the feasibility level of external assessors was obtained using the standard observation method of requirements carried out by researchers which included aspects of the level of conformity of external assessors consisting of 4 points for the requirements of the examiner team with 4 alternative answers with the lowest score of 4 and the maximum score of 16. The following is a table of requirements for the external test team.

TABLE V. EXTERNAL EXAMINER REQUIREMENTS SPECIFICATION

Category	Amount	
	Frequency	(%)
Very Not Proper	0	0
Less Proper	0	0
Proper	3	20
Very Proper	12	80

Based on Table 5, the standard requirements for external examiners as much as 20% are said to be appropriate and 80% are said to be very in accordance with the standards that have been set. Based on the overall results in the tables and graphs, external examiners can be said to be in accordance with the standard. this is because the external examiner has taken a minimum education of S1 in the field of electrical and computer and has a certificate as an assessor. As well as experience as a tester at least 3 years.

b) Technical Implementation of UKK in the TKJ major at Islamic Vocational School 1 Blitar

The implementation of the Expertise Competency Test at the Islamic Vocational School 1 Blitar was carried out after the computer-based National Examination. In the TKJ department of Islamic Vocational High School 1 Blitar, the implementation began in April which was attended by 89 students who had registered as UNBK participants at Islamic Vocational High School 1 Blitar.

The implementation of UKK in the TKJ major is held in several stages that must be passed by the examinees. There are 3 stages that must be passed by the examinees. The first test for participants is a theory test, after carrying out the theory test, participants must take an interview exam by an assessor and the last is a practical exam.

The technical implementation of UKK is carried out every day consisting of 10 UKK participants and 3 assessors consisting of 2 internal assessors who are TKJ teachers at Islamic Vocational School 1 Blitar and 1 external assessor from DU/DI who has collaborated with Islamic Vocational School 1 Blitar. The exam is held from 07.00 WIB - 16.00 WIB and consists of 3 stages, namely theory test, interview test and practice. For participants who do not pass the practice test, they are given the opportunity to remedy or repeat on a predetermined day.

Based on the results of interviews from four sources as well as the results of the documentation of UKK activities at Islamic Vocational School 1 Blitar, it was concluded that the technical implementation of the Expertise Competency Test at the Computer and Network Engineering Department at Islamic Vocational School 1 Blitar there were 3 stages of tests that must be followed by examinees, namely the first theory or written test. which is done with a predetermined time, the second is an interview test which is conducted independently in front of UKK assessors, and the third is a practice test.

Process Stage

The implementation of UKK at SMK Islam 1 Blitar is carried out in an orderly manner in accordance with UKK procedures that have been set by DPSMK. In addition to conducting observations and interviews, researchers also documented the UKK implementation process which lasted for 10 days. The documentation of the activity is shown as in Fig. 1, Fig. 2, Fig. 3, and Fig. 4.

Fig. 1. Documentation of UKK Written Exam

Fig. 2. Interview Test by External Assessor

Fig. 3. Interview Test by Internal Assessor

Fig. 4. Implementation of the UKK practice test for Islamic Vocational High School 1 Blitar

Based on the results of the ongoing UKK implementation documentation, it can be concluded that the UKK implementation process at Islamic Vocational School 1 Blitar consists of 3 stages, namely participants taking a theory/written test, interview test and practical test. The time allocation provided is 8 hours, which is attended by 89 students. This Skills Competency Test lasts for 10 days.

Production Stage

At this stage, the measurement of the objectives of the UKK SMK Islam 1 Blitar will be described in the form of important points, namely program goal achievement and program implementation.

a. Program goal achievement

The terminal objective of implementing the UKK TKJ expertise program at Islamic Vocational School 1 Blitar itself is to produce graduates who are competent in the TKJ field to be ready to work in the business and industrial world. The terminal objective of the UKK TKJ Expertise Program at SMK Islam 1 Blitar itself is to produce graduates who are competent in the TKJ field. Competency certificates are one of the competency standards for students whether they are competent or not.

b. Program implementation

In the implementation of the UKK TKJ Expertise Program, there are several factors that influence the implementation of the program, including supporting factors, inhibiting factors, and solutions.

1) Factors supporting program implementation

Several factors that support the implementation of the UKK program in the TKJ Expertise Sector include the availability of funds, the competence of teachers as program committees, and the enthusiasm of students in participating in the program.

2) Factors inhibiting program implementation

In addition to supporting factors, there are inhibiting factors in the implementation of UKK, namely the unpreparedness of several program elements, such as school facilities and infrastructure, as well as the quality of human resources, both teachers and students.

3) Solution

To overcome the inhibiting factors for the implementation of UKK as described above, the TKJ teacher has a solution to do. The solution carried out by the TKJ teacher at SMK Islam 1 Blitar is to activate the implementation of structured pre-UKK training before implementing UKK, so that there is no

failure when UKK takes place. Of course, with this, the implementation of UKK is in accordance with what has been determined, especially in terms of time.

IV. Conclusion

Based on the results of research that has been carried out on the Implementation of the Expertise Competency Test of the Computer and Network Engineering Expertise Program at SMK Islam 1 Blitar, it can be concluded that the results of the evaluation of the implementation of the competency test at SMK Islam 1 Blitar are very good and have a very decent level of feasibility. Several things related to the stages of design preparation, installation stages, process stages, and product stages have been evaluated.

The stages of designing the design include program objectives, student readiness, committees, and facilities, as well as program standards. The objectives of the Skills Competency Test program have been defined, namely to measure the achievement of student competencies, facilitate collaboration between schools and their stakeholders, and facilitate students to complete their education optimally. The readiness of the elements of the Expertise Competency Test program has been carried out well by the school, including the preparation of students in participating in the program, preparation of the committee in organizing the program, and preparation of facilities to support the course of the program. All preparations have been carried out well. The standards set in the implementation of the Expertise Competency Test can be concluded that it requires students to pass 100% with a minimum score criterion of 75 which includes mastery of theory, interviews, and vocational practice.

At the installation stage, a review is carried out on standard setting which includes 5 standard requirements for the Expert Competency Test, namely Standard requirements for main equipment, standard requirements for supporting equipment, standard for place/room requirements, standard requirements for internal examiners, and standard requirements for external examiners. The standard of eligibility for the main equipment is stated to be very feasible to be used as competency test equipment at Islamic Vocational School 1 Blitar. A total of 106 equipment was used, 6 of which were declared feasible and the rest were declared very feasible. The standard requirements for supporting equipment are also stated to be very feasible to use, where as many as 6 tools are declared feasible and 40 others are declared very feasible. The standard of eligibility for the place/space available at the school as a place for conducting the competency test is declared to meet the standard, where 1 room is in the proper category and 3 rooms are in the very appropriate category. The standard requirements for assessors, both internal and external, have met fairly good eligibility. Internal assessors have taken at least a bachelor's degree in electrical and computer engineering, have teaching experience in practice for more than 5 years, and have experience as examiners for more than 3 years. External assessors have received a minimum education of S1 in the field of electrical and computer and have a certificate as an assessor, as well as experience as an examiner for at least 3 years.

The process stage of the competency test program is stated to be very good, because there are rules and procedures for implementing standard and clear competency tests, starting from preparation, implementation, and assessment. The product stage as a result of the implementation of the skill competency test program at SMK Islam 1 Blitar has been described, namely to produce graduates who are competent in the TKJ field and have a competency certificate as a provision for graduation and work after graduation. In its implementation, there are 2 factors that affect the implementation of the program, namely: 1) Supporting factors for program implementation, and 2) inhibiting factors for program implementation. The supporting factors for the implementation of the skill competency test program are the availability of budget funds by the school, competent teachers as the implementing committee for the skill competency test program, and students who are enthusiastic about participating in the program. While the inhibiting factor for the implementation of the program is the unpreparedness of some students in participating in the program, resulting in additional time and days for students who do not pass the exam with the opportunity to take part in a repetition on a predetermined day after the activity takes place.

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