

Development Assessment Instruments in Indonesian Qualifications Framework (KKNI) Expertise Courses

Rina Febriana, Tuti Iriani, Agung Premono

Faculty of Engineering
Universitas Negeri Jakarta
Jakarta, Indonesia
rinafebriana@unj.ac.id

Abstract—This study aims to develop an assessment instrument in the subject area of expertise based on the Indonesian National Qualification Framework (KKNI). The development of tools includes the ability to work, mastery of knowledge, specialized skills and managerial skills of students at level 5 qualification level. The type of research used by Research and Development (R & D) with ADDIE (Analysis, Design, Development, Implementation, and Evaluation) models. Model validation had on conceptual models and hypothetical models. The results of limited trials obtained a score of 3.4 with the meaning below the model can be appropriately applied. The results of the field trial received a score of 3.38 which include in the excellent category, and the product was considered sufficient for use. This study tested the dimensions of knowledge and Special Skills.

Keywords—assessment; instrument; KKNI

I. INTRODUCTION

To achieve the competencies expected in the industrial world, testing on productive subjects becomes very important to do. The first step that needs to do next is to identify skills based on industry needs. It intended that the competence possessed by students is by the expectations of the workforce. Testing on productive subjects is generally not integrated with competency tests; this results in low student knowledge and skills. To be able to improve students' knowledge and skills, it is necessary to develop assessment instruments on productive subjects that integrated with KKNI-based competency tests.

Based on the results of Yowanita's research on evaluating the competency test of vocational students, it concluded that the evaluation of students' competency tests from aspects of context, input, process, and output was very relevant to the purpose of competency testing [1]. Suherman also stressed the need to see the relevance of the subject areas of expertise and productive subject matter with competency test standards. This research aims to produce a description of the significance of the subject of knowledge, productive subject matter with competency test standards [2].

The assessment on the subject of expertise that integrated with KKNI-based competency testing becomes a matter that needs to develop because it can help the achievement of student competencies at a certain level and students get legal recognition through competency certification tests. However,

the assessment on the subject of expertise carried out has not used instruments that integrated with KKNI-based competency tests. The main contributions of this paper are the development of an assessment instrument in the field of expertise that is combined with KKNI-based competency tests to improve student competencies which include workability, mastery of knowledge and managerial abilities of students at level 5 qualification (Diploma 3 Program).

A. Competency

1) *Competency based on KKNI*: Instrument development is carried out through this analysis and observation in the industrial world. The study carried out is by identifying competencies based on industry needs. This competency identification is carried out by conducting preliminary research in the industrial world as a place for students' Job Training (PKL).

The results of the analysis showed that the identified competencies divided into two major groups of competencies which consisted of technical skills and employability skills. The development of this instrument aims to produce an assessment instrument that integrated with KKNI-based competency tests which will produce instrument prototypes at level 5 qualification (Diploma 3 Program) and instrument usage guidelines. In addition to identifying competencies, preliminary studies also conducted by looking for reference theories and research articles.

Hary conducted a study of the abilities and attitudes of vocational students towards the application of models and tools of competency test models and international certification of student computer networks by integrating cognitive competency tests and psychomotor competencies, concluded even though they had referred to the SKKNI but had not incorporated the KKNI prerequisites at a certain level [3].

By the opinion of Fletcher that the need for educational institutions to issue certificates as a form of recognition of the competencies that have achieved [4]. Based on this opinion, cooperation with the work world as a user is necessary, one of them is in assessing competency assessment.

Presidential Regulation of the Republic of Indonesia No. 8 of 2012 concerning the Indonesian National Qualification Framework (KKNI), stated that "Diploma 3 graduates are the

lowest equivalent to level 5", with graduate competencies as follows:

- Able to complete work with a wide range of scope, choose the appropriate method from a variety of choices that have been or are not standardized by analyzing data, and able to demonstrate performance with measurable quality and quantity.
- Mastering the theoretical concepts of specific fields of knowledge in general, as well as being able to formulate procedural problem-solving.
- Able to manage work groups and compile written reports comprehensively.
- Responsible for the work itself and can be given responsibility for the achievement of the results of group work.

Furthermore, it can be confirmed based on Presidential Regulation No. 8/2012 concerning the Indonesian National Qualification Framework (KKNI) for Diploma 3 study programs follows the description of the KKNI level at level 5 as follows:

TABLE I. FORMATTING SECTIONS, SUBSECTIONS AND SUBSUBSECTIONS

No	Field	Description of KKNI Level 5
1	Work Skills	Able to complete a wide range of work, choose the appropriate method from a variety of choices that have been or have not been standardized by analyzing data, and able to demonstrate performance with measurable quality and quantity.
2	Knowledge	Mastering theoretical concepts in specific fields of knowledge in general, and able to formulate procedural problem-solving.
3	Managerial	Able to manage work groups and compile written reports comprehensively.
4	Attitude / character / personality	Responsible for own work and can be given responsibility for achieving group work results.

B. Courses in the Field of Expertise

The subject area of expertise is a course aimed at developing the ability of students in mastering the skill in the field of study / related fields of science. The subject area of expertise in the structure of the study program curriculum has a higher number of credits compared to other subjects.

Graduates' achievement is measured based on the Graduates Learning Outcomes (CPL) that have established in the curriculum. The CPL includes aspects of attitude, general skills, knowledge, and unique skills.

Attitude is right and cultured behaviour as a result of internalization and actualization of values and norms reflected in spiritual and social life through the learning process, student work experience, research, and community service related to learning. General skills are general work abilities that must be possessed by each graduate to ensure the equality of graduates' abilities according to the level of the program and type of higher education

Knowledge is the mastery of concepts, theories, methods, and philosophy of a particular field of science systematically obtained through reasoning in the learning process, student work experience, research and community service related to learning. The details of knowledge divided into factual, conceptual, procedural, and metacognitive dimensions. Unique skills are special work abilities that each graduate must have in the scientific field of the study program [5].

C. Workplace Competency Requirements

Understanding competencies, in this case, view competence as a learning outcome from an education perspective that includes three aspects, namely knowledge, skills, and works attitudes. As inherent individual characteristics, power is a part and personality of individuals who are relative and stable and can be seen and measured by the behaviour of the individual concerned, at work or in various situations.

Jordan, Carlile, and Stack distinguish between competence and competency [6]. Power is the ability to do a set of tasks that require the integration of knowledge, skills, and attitudes, while competency is the ability to perform roles effectively in a context.

In addition to the demands of necessary skills and skills in the field of study, the world of work requires the employability skills of prospective workers. Employability skills are the ability to manage attitudes and work behaviour skills as expected by the industry (the world of work). Competence in the world of work interpreted as a personal aspect [7]. These particular aspects include the nature, motives, system of values, attitudes, knowledge, and skills.

Wagiran's research on the urgency of aspects of graduate competencies needed in the industrial world shows that competency aspects that are considered necessary are: honesty, work ethic, responsibility, discipline, applying the principles of occupational safety and health, initiative and creativity [8]. This finding is in line with the study conducted by Muchlas Samani who found the primary sequence of competencies needed by the industry which included: Honesty, Discipline, Responsibility, Cooperation, Solving problems, and mastery of the work field [9]. In line with this, the latest research conducted by Andreas shows that the main competencies expected by the industry include the sequence: Honesty, Discipline, Communication, Cooperation, and Mastery of Study Areas [9].

Widiyanto's research concludes that Du / Di competence needs include: knowledge, skills, skills, attitude, and others such as experience [10]. Besides the findings in the field can be specified as follows: (1) knowledge which includes: knowledge in accordance with the area, academic value, general education, business knowledge, (2) skills that include: ability, skill, dexterity, creativity, (3) behaviour (attitude) consists of: ethics, motives, integrity (self-confidence), communication, and (4) others that are included: experience, other additional abilities, and hobby [10].

II. METHOD

Instrument development procedures based on research and development models ADDIE (Analysis, Design, Development, Implementation, and Evaluation). In this analysis phase, identification of the indicators of each learning achievement is carried out. Determination of assessment indicators is prepared using operational verbs that can be measured and observed. The design stage is carried out by compiling indexes into sub-indicators and adjusted to the parameters of each course's Learning Outcomes (CPMK) and description elements of the KKNI.

The development phase is carried out by efforts to compile a set of assessment instrument guidelines. At the implementation stage, tests were carried out in the field of expertise in the application of advanced instruments. Hold the evaluation done by measuring the effectiveness of the assessment instrument in the subject area of expertise through summative evaluation by taking samples in the subject areas of expertise.

Research is still ongoing at the implementation stage of aspects of specialized knowledge and skills. In the element of culture is explained based on four dimensions of learning namely factual, conceptual, procedural, and metacognitive dimensions. The table below is an instrument development from the aspect of knowledge by using operational verbs that can be measured and observed.

III. RESULT AND DISCUSSION

A. Courses in the Field of Expertise

At this stage, the instrument and product validation were carried out in the form of a conceptual model through expert judgment. Instrument validation aims to see whether the instrument developed in this study is feasible to use and can measure what should be measured. The following instrument models developed:

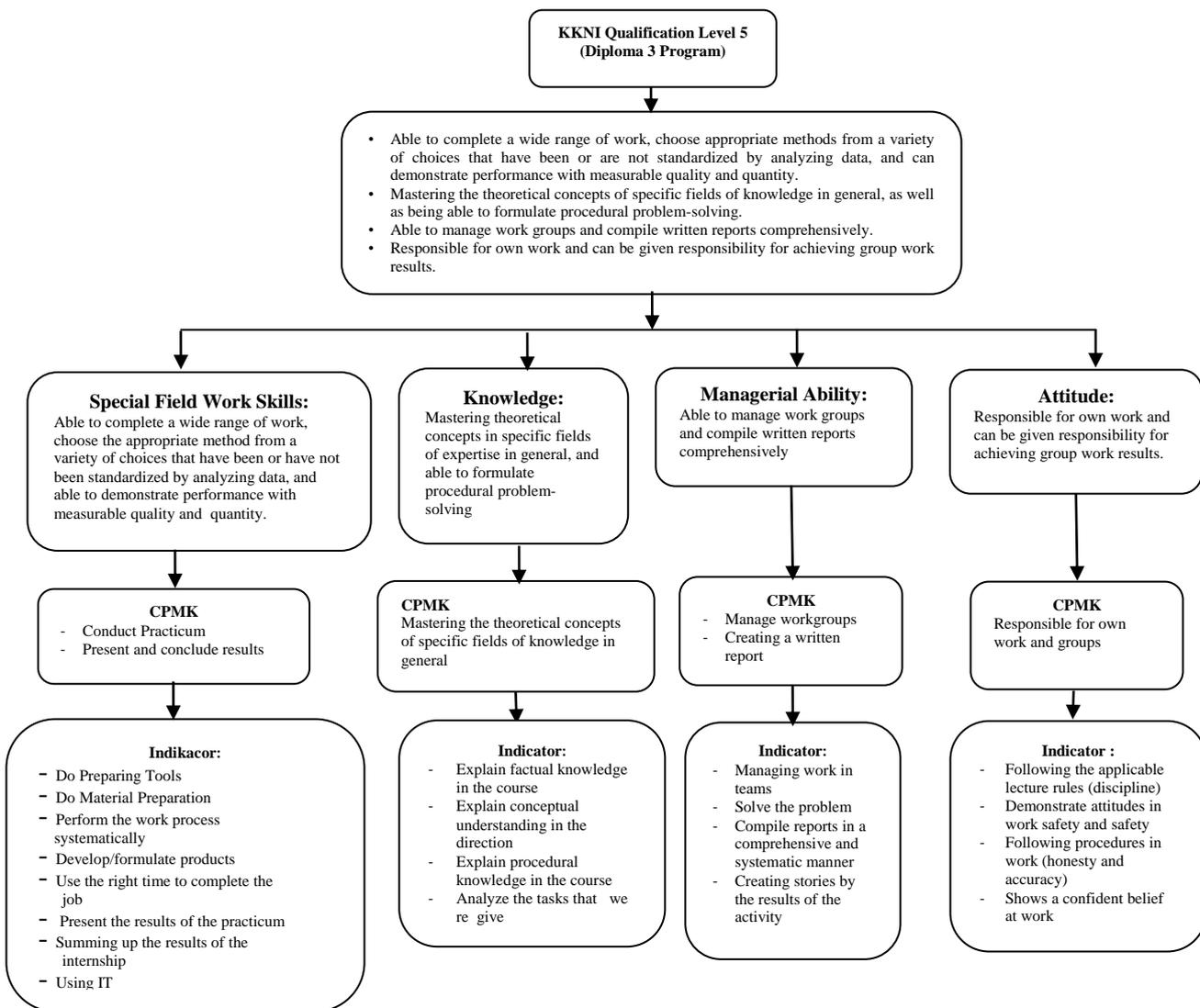


Fig. 1. Instrument development hypotetic model at the KKNI-based Expertise Courses.

A summary of the results of the validator's assessment of the conceptual component model identification can be seen in the Table below:

TABLE II. MODEL COMPONENT VALIDATION

No	The assessed component	Validator		
		1	2	3
I. Supporting theories				
	1. Development of assessment instruments in accordance with supporting conceptual theories	4	3	4
	2. The development of assessment instruments includes all learning achievements in KKNi (attitudes, managerial skills, mastery of knowledge, and work ability).	4	4	4
II. Principles of Development				
	1. Development procedures are clearly described	3	2	4
	2. The stages of development are described systematically.	4	2	3
	3. Learning outcome in accordance with KKNi qualifications	4	3	4
	4. The assessment indicators are relevant to the elements of the KKNi	4	3	4
	5. The development goals are clearly described	3	2	3
III. General Assessment of Development of Assessment Component Model Components				
	Information : A. Can be used without revision B. Can be used with small revisions C. Can be used with major revisions D. Not yet usable	B	B	B
	Overall value	71/3=23,7		
	Average value	3,4		

The data obtained from the validation results were analyzed to have meaning, the data collected were grouped according to the classification of the questionnaire as follows:

TABLE III. CLASSIFICATION OF EXPERT JUDGMENT ASSESSMENT

Score	Information
4 – 5	Verry Good
3 – 3,9	Good
2 – 2,9	Enough
1 – 1,9	Less
0 – 0,9	Verry Less
Source: Kurniasih and Setiawan (2013)	

Based on the results of the above calculations, the results of the overall average score achieved were in the excellent category with a rating of 3.4.

Instruments that have validated are then tested for effectiveness by recapitulating the following results:

TABLE IV. EFFECTIVENESS TEST

Aspect	Description Aspect	Score	Average
Validity	Assessment with this instrument can achieve competence according to KKNi	69	3,45
	Parameters and elements in the instrument in accordance with KKNi description	67	3,35
	The instrument has met the learning achievement based on KKNi.	66	3,30
	The indicators developed are relevant learning achievements in KKNi	64	3,20
Validity	The results of the assessment with this instrument can be accounted	68	3,40
Reliability	If used repeatedly this assessment instrument can provide consistent result	66	3,30
	Indicators in this assessment instrument can provide consistent results if used by other areas of expertise.	71	3,55
Objectivity	The use of this assessment instrument makes it easier for lecturers to provide assessments to students	67	3,35
	The use of these assessment instruments is objective	67	3,35
	The use of these assessment instruments can train student discipline.	69	3,45
Practicality	Use of this assessment instrument can assist students in achieving learning achievement	67	3,35
	The assessment indicators in this instrument are highly measurable	67	3,35
	Giving score / score in this instrument is very easy	73	3,65
	This research instrument is easy to use	67	3,35
	Total Score	948	
Average	3,38		

An instrument of development results in the KKNi-based expertise field courses described as follows:

TABLE V. KNOWLEDGE DIMENSION

Aspect	Dimensions	Indicator
Knowledge	Factual	Identify, mention, explain the terminology, verbal and non-verbal symbols
	Conceptual	Classify, generalize, categorize, classify data based on their similarity characteristics, or based on their differences
	Procedural	Practice, sort the steps in doing something
	Metacognitive	Using principles, methods to solve a problem

Development of aspects of specific skills can describe as follows:

TABLE VI. SPESIAL SKILLS DIMENSIONS

Aspect	Dimensions	Indicator
Special Skills	Tools Preparation	Choose the appropriate equipment
	Material Preparation	Choose the appropriate material
	Work process systematically	Use appropriate work techniques
	Develop/formulate products	Modify new products
	Use of time	Use efficient time in completing the practicum
	Present the results of the practicum	Describe the stages and process of practicum
	Summing up the results of the practicum	Evaluate the results of the practicum
	Using IT	Select and use information technology to support practicum

The results of the instrument development then tested for effectiveness. Based on the above calculation results, the overall average score achieved in the good category that is with points 3.38. This suggests that these assessment instruments are effective for use.

IV. CONCLUSIONS

To develop instruments based on disciplinary subjects based on the KKNI, there must be several development steps that must be taken to produce devices that integrated with

parameters and elements in the IQF description. The results of the model development obtained show that the process of developing research and development instruments produces a conceptual model, a hypothetical model and produces devices based on the KKNI.

REFERENCES

- [1] Yowanita. D.I, "Evaluation of Competency Test of Vocational Students in Multimedia Skills", *Jurnal Pendidikan Vokasi*, vol. 4 (3), 2014.
- [2] Suherman, 'Study of the Relevance of JTM Expertise Course Material and Productive Subject Matter of Technology Vocational School with Competency Test', *Journal Portal Universitas Pendidikan Indonesia*. Bandung, 2011.
- [3] Hary. S, *Development of Competency Test and International Computer Certification Model for Vocational Students*, (Yogyakarta: Dissertation, not published), 2013.
- [4] Fletcher, S. *Competence Based Assessment Techniques*. Kogan Page, UK, 1992.
- [5] Government regulation of the Republic of Indonesia No. 19 of 2005 about education standards.
- [6] Jordan. A, Carlile. O, and Stack. A, *Approach to Learning : A Guide for teachers*. Open University Press & Mc. Graw Hill : New York, 2008.
- [7] LOMA's Competency Dictionary, 1988, in Hitt, Michael A., R. Edward Freeman and Jeffrey S. Harrison; *The Blackwell Handbook of Strategic Management*; Print Publication, 2006.
- [8] Wagiran. W, *The Importance of Developing Soft Skills in Preparing Vocational High School Graduates*, 2008.
- [9] Muchlas. S, *Menggagas Pendidikan Bermakna*, 2007.
- [10] Widiyanto, *The Role of Workers' Competence on Industrial Needs to Increase Company Competitiveness*. *Accredited Educational Journal. Eksplanasi*, vol. 6 (1), pp. 94–108, 2011.