The measurement of specific life skill based on National Qualification Competency Certification Scheme in the field of Building Construction Drawing

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Abstract. This paper aims to measure specific life skill of students attending Building Modelling Design and Building Information program (DPIB) based on the National Qualification Competency Certification Scheme in the field of Building Construction Drawing. This research utilized descriptive quantitative method. The sampling was drawn from eleventh grade students of Vocational High School 1 Cilaku Cianjur using purposive sampling method. The measurement criteria are adjusted with competence test requirement referring to standards set by National Board of Professional Certification (BNSP). Data collection process was done by using competence test simulation. The findings of this research indicate that: (1) the specific life skill level was classified as fair, as indicated by the achievement percentage of 80%. The site drawing was the component with the highest level of achievement between three components (site, section and elevation drawing); (2) the work readiness level was classified as good, as indicated by the achievement percentage of 82%. The highest level of measurement was in the flexibility and self-view. The high level of students’ specific life skill in accordance to the national competence standard indicates that students have met the competence standard needed by the world of work. They are competent to be drafters in building construction drawing field of expertise. However, further study is needed to examine the mismatch between the supply of workers with such competence and the availability of employment in the building construction’s world of work.

1. Introduction
Vocational High School is expected to become a solution for problems in Industrial Revolution 4.0 also globalization era, which is the need for trained and skilled labor. According to Ministry of Education and Culture [1] and data from ILO [2], it is expected that demand of skilled labor in ASEAN countries on 2010-2025 will raise around 41% or 14 million of people and caused a gap between them. Therefore, an acceleration program played by vocational education and training (VET) is needed. Provision of trained and skilled labor is done by improving the quality of VET that already available.

Preparing good quality human resources and suitable with the demands of labor market, competence certification plays important role to support those who will get into the world of work. According to Law of the Republic of Indonesia Number 18 of 1999 concerning Construction Services [3], in the execution of construction service works as planner, practitioner, and supervisor requires certificate of
competence. For vocational high school students especially in building construction drawing field, the
requirements had been regulated in National Qualification Competency Certification Scheme [4].

From early observation in Vocational High School 1 Cilaku Cianjur, the graduates from Building
Construction Drawing and/or Building Modelling Design and Building Information program compared
to other expertise program graduates such as Electrical Power Installation, Machinery, and Automotive,
have a smaller number of those who works right away on their areas of expertise.

Work readiness can be interpreted as a condition that shows harmony between physical and mental
maturity also experiences so individuals have the ability to do certain activity related with works [5].
Kartono explained that work readiness factor especially for vocational high school students consists of
internal and external factor. Internal factor involves intelligence (academic ability), skill, talent, interest,
motivation, personality, goals and purpose in working. External factor involves family, learning, and
socializing environment. From the factors, academic ability and skill are included in life skill [6].

In the document of Life Skills Education in Schools it is explained that life skills are abilities for
adaptive and positive behaviour, that enable individuals to deal effectively with the demands and
challenges of everyday life [7]. Life skills consisted of general life skill and specific life skill. General
life skills involve personal skill, social skill, and thinking skill. Meanwhile specific life skills involve
academic and vocational skill.

2. Method
This research utilized descriptive quantitative method. Independent variables of this research are specific
life skill level, while the dependent variables are students’ work readiness. The sampling was drawn
from eleventh grade students of Vocational High School 1 Cilaku Cianjur using purposive sampling
method. The measurement criteria is adjusted with competence test requirement referring to standards
set by National Board of Professional Certification (BNSP) and competence test assessment rubric from
Ministry of Education and Culture. According to the National Qualification Competency Certification
Scheme in the field of Building Construction Drawing, there are 19 units of competence that have to be
achieved by students up until the 6th semester. But because of the limited time, this research could only
have limited to 3 out of 9 architectural drawing competence units which consisted of: (1) site; (2)
elevation; and (3) section drawing. The assessment will be done on skills aspect by looking at 3
components, which is preparation, implementation, and results. Meanwhile work readiness variables is
measured using closed questionnaire technique with 41 items referring to Work Readiness Inventory
from Brady, consisted of 6 aspects: (1) responsibility; (2) flexibility; (3) skills; (4)
communication/interpersonal relating; (5) self-view; and (6) health and safety. IBM SPSS Statistics 23
program is used in data processing to test the items’ validity and reliability.

3. Results and discussions
The validity of competence test simulation instrument, which is used to measure students’ specific life
skill, is tested beforehand by expert, who is a teacher also an assessor in Vocational High School 1
Cilaku Cianjur and considered feasible to use. Based on the results of competence test simulation, it is
known that the lowest score is 77, highest score is 83, ideal mean is 79, and standard deviation is 1.92.
From the sample of 12 students there are 2 students (16,7%) that have a tendency for specific life skill
in the very competent category and 10 students (83,3%) have a tendency in the competent category as
shown in Figure 1.

On specific life skill variables there are three assessment components for skill aspects which are
preparation, implementation, and result. From the competence test simulation, it can be known that the
score on preparation component had achieved 100%, while implementation and result component had
achieved 80% and 95% each. Results from preparation component shows that the students had achieved
a very good level, both for drawing preparation and checking specification. Meanwhile the results from
implementation component shows that the selected students had achieved a good level. Seen from the
results of site drawing subcomponent, they are able to show all the criteria needed for assessment
indicator. But in section and elevation drawing subcomponent, most of the students have not shown the
line thickness criteria to show setback and other information such as material, building elevation, etc. So does with section drawing that is on good level, most of the students have not shown the differences between lines that is cut and not cut also legends and the other information. Based on the results component, the students had achieved a good level. Seen from the results of site and elevation drawing, they are able to show all the criteria needed for assessment indicator. But as for the section drawing, some of students’ results didn’t completed by size and notation needed.

One of the factors that caused incomplete on the elevation and section drawing is time limit because in this simulation students are only given 8 (eight) hours of time and are required to draw 1 (one) site, 2 (two) elevation, and 1 (one) section drawing. Most of the students do not have good time management, so they are too focused on perfecting the floor plan compared to completing the elevation and section drawing. In addition to the time management factor, some students had difficulty when drawing section because they lacked understanding of the details and measurements of structural elements, such as the size and shape of wooden joints in the roof construction.

The questionnaire instrument, which is used to measure students’ work readiness, is tested beforehand by using IBM SPSS Statistics 23 to test its validity and reliability. The results show that the instrument is feasible. Based on the results of 36 items questionnaire, it is known that the lowest score is 99, highest score is 137, ideal mean is 119, and standard deviation is 9.94. From the sample of 12 students there are 2 students (16.7%) that have a tendency for work readiness in the very good category, 4 students (33.3%) have a tendency in the good category, 3 students (25%) have a tendency in the fair category, 1 students (8.3%) have a tendency in the poor category and 2 students (16.7%) have a tendency in the very poor category as shown in Figure 2 below.

Figure 1. Data Categorization of Students’ Specific Life Skill (Source: Research, 2019).

Figure 2. Data Categorization of Students’ Work Readiness (Source: Research, 2019).

In the Work Readiness Inventory journal, work readiness consists of 6 (six) components, namely (1) responsibility, (2) flexibility, (3) skills, (4) communication, (5) self-view, and (6) health and safety [5]. From the results of the questionnaire it can be seen that the skills indicator has the highest percentage of 88%. While the indicator with the second highest percentage is self-view with 85%, then health and safety indicators by 84%, communication indicators by 82%, indicators of responsibility 80%, and indicators of flexibility by 78%. In the skills indicator there are several aspects that are focused on construction drawing skills, either manually or digitally using software in accordance with the National Competency Standards in the Field of Building Drawing. In addition to abilities and skills, there are indicators of physical, mental and emotional maturity that are no less important to note and are scattered into several different indicators, namely responsibility, flexibility, and self-view. The health and safety indicators are also discussed about the ability to control stress and work fatigue which is a temporary physical condition.
4. Conclusion
Based on the research results, the following conclusions are: (1) the level of specific life skills of 12 students who became research respondents through a competency test simulation was classified into fair category. Particularly in the site drawing component, students are able to display all work criteria very well; and (2) the level of work readiness of 12 students who became research respondents through the results of the questionnaire was classified into good categories. The highest aspects that students have achieved in work readiness are skills and self-view. The high level of students’ specific life skill in accordance to the national competence standard indicates that students have met the competence standard needed by the world of work. They are competent to be drafters in building construction drawing field of expertise. However, further study is needed to examine the mismatch between the supply of workers with such competence and the availability of employment in the building construction’s world of work.

References
[1] Homans G C 1958 Social behaviour as exchange American Journal of Psychology 63 597-606
[2] Fitriyanto A 2006 Ketidakpastian Memasuki Dunia Kerja Karena Pendidikan Jakarta: Rineka Cipta
[3] Masole L and Gideon van Dyk 2019 Factors Influencing Work Readiness of Graduates: An Exploratory Study Journal of Psychology in Africa 26(1) 70-73
[4] Badan Nasional Sertifikasi Profesi 2016 Skema Sertifikasi Kompetensi Kualifikasi Nasional Sertifikat Level II Bidang Gambar Bangunan Jakarta: Kemdikbud
[5] Betz N E 2004 Contributions of self-efficacy theory to career counseling: A personal perspective Career Development Quarterly 52 340-353
[6] Gardner H, Csikszentmihalyi M and Damon W 2001 Good Work (New York: Basic Books)
[7] Moorhouse A and Caltabiano M I 2007 Resilience and unemployment: Exploring risk and protective influences for the outcome variables of depression and assertive job searching Journal of Employment Counseling 44 115-125