

Measurement of Employability Skills on Teaching Factory Learning

S Subekti^{1,*} and A Ana²

¹Culinary Education Study Program, Fakultas Pendidikan Teknologi dan Kejuruan, Universitas Pendidikan Indonesia, Jalan Dr. Setiabudhi No 207 Bandung 40154.

²Home Economic, Technology and Vocational Education, Universitas Pendidikan Indonesia, Jalan Dr. Setiabudhi No 207 Bandung 40154.

*sri_subekti@upi.edu

Abstract. Vocational High Schools as one of the educational institutions that has the responsibility in preparing skilled labors has a challenge to improve the quality of human resources as a candidate for skilled labors, to compete and survive in a changing climate of work. BPS noted an increase in the number of non-worker population (BAK) in 2015-2017 on vocational graduates as many as 564,272 people. The ability to adapt and maintain jobs in a variety of conditions is called employability skills. This study purpose to measure the development of employability skills of communication skills, problem-solving skills and teamwork skills on the implementation of teaching factory learning in SMK Negeri 1 Cibadak, THPH Skills Program on bakery competency. This research uses mixed method, with concurrent triangulation mix methods research design. Data collection techniques used interviews and questionnaires. The result shows that there are increasing students' employability skills in communication skills, problem solving skills, and teamwork skills in teaching factory learning. Principles of learning that apply learning by doing student centering and learning arrangements such as situations and conditions in the workplace have an impact on improving student employability skills.

1. Introduction

One indicator of the era of globalization is the emergence of free trade, starting from ASEAN free trade (AFTA) in 2003, followed by Asia Pacific free trade in 2010 for developed countries and 2020 for developing countries, and the ASEAN Economic Community (AEC) in end of 2015. This raises some concerns about ASEAN professional workers who will enter the Indonesian labor market, while the competitiveness of Indonesian workers is still low compared to other ASEAN countries. In 2017, Global Innovation Index (GII) recorded Indonesia ranked 87th out of 143 countries, lower than Singapore, Malaysia, Thailand and Vietnam.

In addition, the condition of Indonesian citizens aged 15 years and over who are not labor force (BAK) on SMK graduates in 2015-2017, has increased from 3,294,510 people to 4,158,782 people. While the number of BAK in the population that has never gone to school has decreased from 3,987,167 people to 3,158,028 people [1]. SMK as one of the educational institutions that has the responsibility in preparing skilled labors has a challenge to improve the quality of human resources as a candidate for skilled labors, to compete and survive in a changing climate of work. Work climate



change is caused by the rapid development of technology, so that the prepared labor must have the ability to adjust to the conditions of the labor market and the ability to maintain its work.

The ability to adapt and maintain jobs in a variety of conditions is called employability skills. United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2012, establishes employability skills as a skill that a person possesses to retain his work. International Labor Organization (ILO) by 2016, defines employability skills as a skill, knowledge and competence that can improve the ability of workers to secure and retain jobs, demonstrate performance skills, overcome changes, and secure other jobs when stopped or dismissed and easily enter the labor market at another period of its life cycle.

The work skills required by vocational graduates in Indonesia should be adjusted to the needs of the job market on the job skills of prospective workers. Some studies have shown that an important aspect of measuring employability skills required by students to fill the needs of the industrial job market and the ability to persevere for achievement in the workplace is the ability of communication skills [2-7], problem solving skills [2, 5-9] and teamwork skills [2-4, 6, 7]

Demand for qualified labors who have employability skills in accordance with the needs of the job market should be responded quickly by SMK, because it has implications for the preparation of the quality of qualified graduates of SMK. The effort to anticipate the mismatch between labor market demand and the preparation of labor from SMK graduates is by developing SMK curriculum and implementing learning approach using work oriented learning model [10]. Work-Based Learning (WBL) is a learning model used to gain experience through work. This allows students to adapt to the work environment and workplace reality, so that students can make the best career choices for the future [11]. One of WBL implementation is teaching factory learning.

This study purpose to measure the development of employability skills of communication skills, problem-solving skills and teamwork skills on the implementation of teaching factory learning in SMK Negeri 1 Cibadak, Agricultural Processing Technology (TPHP) skills program on bakery Competency.

2. Methods

2.1. Research design

The research design used is a mixed triangulation concurrent method, which is qualitative and quantitative data collected in one time, then the data obtained compared to know the existence of convergence, difference, and / or combination. The process of mixing the data is done at the stage of interpretation and discussion. Mixing of data is done by integrating or comparing the results side by side in the discussion.

2.2. Participants, population, and sample

Participants in this study were productive teachers on teaching factory learning, management of teaching factory, and students who participated in teaching factory learning activities. The population of this research is Skills Program in SMK Negeri 1 Cibadak which has implemented teaching factory learning model. The sample of this research is TPHP skills program on bakery competency. The sample is determined by purposive sampling technique, which is sample determination technique specially based on research objectives. Respondents in this study are students who are implementing teaching factory learning.

2.3. Data collection

Qualitative data obtained by interview with manager of teaching factory, while the quantitative data obtained with a questionnaire filled by productive teachers in teaching factory. The approach used for quantitative data collection is quasi experimental with single-group experimental design of interrupted time-series design.

2.4. *Research instruments*

The research instrument used is a questionnaire. The employability skills aspects measured are described in the indicators. The determination of the indicators was adapted from the employability skills assessment [6] and employability skills assessment [10]. The employability skills indicators are described [10] and then elaborated in the form of analytic rubrics used as a guide to employability skills measurement of students and adjusted to research needs. The rubric developed in the study consisted of 75 items covering all indicators measured of communication skills, problem solving skills and teamwork skills with criteria for measuring score 4 for highest score, and score 1 for lowest score. Preparation of items in accordance with Indonesian National Work Competency Standards (SKKNI) no. KEP. 45 / MEN II / 2009 on Food and Beverage Industry Sector for selected competence, curriculum structure of specialization group (C2) basic of skill program for agricultural and fishery processing, and skill package (C3) production of vegetable product and stage of teaching factory implementation.

2.5. *Data analysis research*

Analysis of research data used is descriptive statistical analysis. Qualitative and quantitative data were analyzed by descriptive statistical analysis technique.

3. Results and Discussion

3.1. *Description teaching factory at SMK Negeri 1 Cibadak*

SMK Negeri 1 Cibadak is one of the formal educational institutions of vocational secondary education in agriculture in West Java. TPHP is one of the skills program at SMK Negeri 1 Cibadak which has implemented teaching factory in learning process. Teaching factory learning is designed and implemented in accordance with real work standards, so that the learning process setting is like the situation and conditions at work. Teaching factory learning's orientation is industry, so that the resulting product is an industry-standard products. It is implemented in habituation in applying the principle of occupational Health and Safety (K3) during learning, and works in accordance with standard operational procedure (SOP) that has been set at each stage of the process.

Implementation of teaching factory learning is student-centered, in student work groups and product groups. Student involvement in teaching factory learning starts from grade 10 to grade 12, with different learning loads, and different roles. Grade 10 students served as helper, grade 11 served as producer, and grade 12 served as manager. Some of the products in teaching factory are bread, yogurt, fresh drinks, chips, and fruit juice, with the main product being produced is bread.

The minimum production target of bread in one day is 15 kg of raw material, with 10 kg of raw material for production of sweet bread, and 5 kg of raw material for white bread production. In the implementation of the production process, students work in groups with a maximum of six students. If failure is found in the production process, the student as the producer is responsible, because it can be ascertained that the production error occurs due to lack of accuracy in implementing the SOP, both the personnel SOP, the material quality manual, the certainty of the formula, and the mode of operation of the equipment. In this case, as a preventive effort, the optimization of the manager in ensuring the readiness of students before the production process.

In addition of the production process, students are involved in the product marketing process. Products marketed still use the traditional practice of door to door with the target market is the students SMK Negeri 1 Cibadak and the surrounding community. In addition, there are several partners SMK Negeri 1 Cibadak in marketing are Berkah department store and alumni association SMK Negeri 1 Cibadak (Agrika) which has its own market. The number of products marketed by agrika in one day as many as 1500 pcs of bread.

Implementation of evaluation in teaching factory teaching is done by conducting competency test which is associated with Profession Certification Institution (LSP). In this case the assessment is done directly to each student to measure the ability to produce bread independently. The implementation of

teaching factory in SMK Negeri 1 Cibadak is not only implemented to improve the cognitive, psychomotoric and affective ability but employability skills include the ability of teamwork, problem solving and communication to become dominant during the learning process because students are required to do learning with the principle of learning by doing.

3.2. Measurement of employability skills of communication skills

Measurement of communication skills consists of six indicators, are reading skill, writing skill, counting skill, listening skill, speaking skill, and serving customer skill. Result of employability skills' measurement of communication skills in SMK Negeri 1 Cibadak TPHP skills Program Bakery Competency, is shown in figure 1.

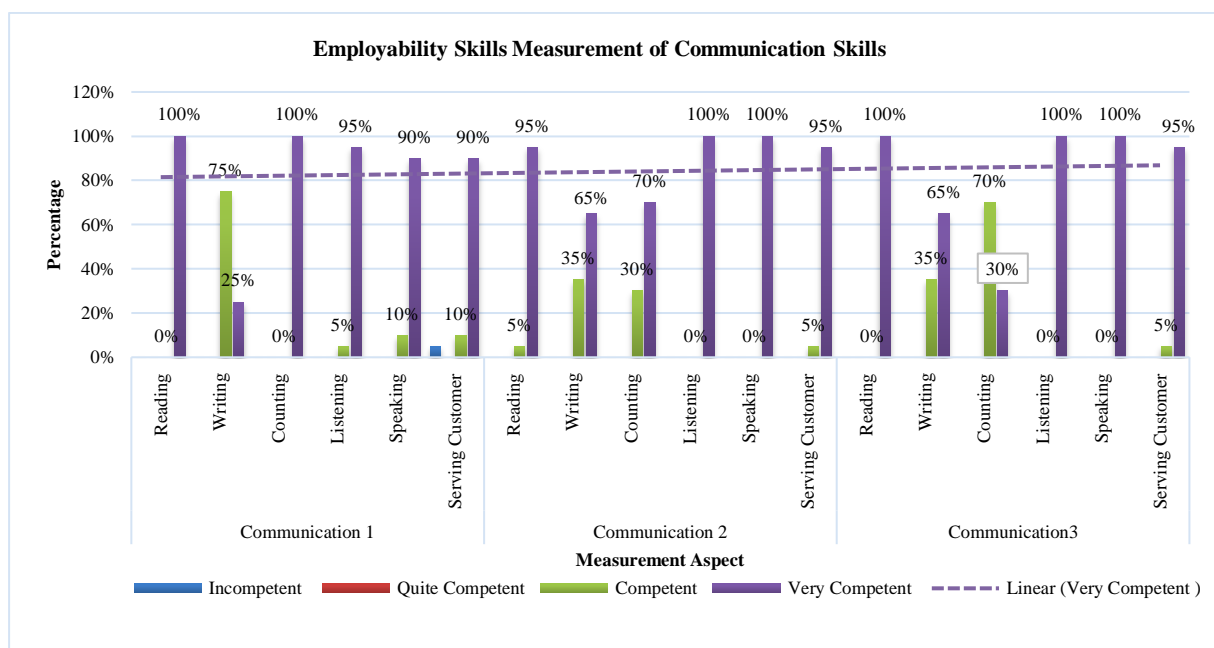


Figure 1. Employability skills measurement of communication skills.

Reading skill is measured by the ability of students in placing, understanding, and interpreting written information to perform daily tasks. Writing skill is measured from the ability of students in conveying opinions, ideas, information, and news in written form. Counting skill is measured by the ability of students to demonstrate a good calculation base by using a practical approach to solving technical problems at work. Listening skill is measured by the ability of students to receive, follow, interpret and reply information verbally or with appropriate body language. Speaking skill is measured by the ability of students to convey verbal messages appropriate to the work situation, participate actively in discussions or convey ideas and ideas within the workgroup. Serving customers is measured by the ability of students in doing service and communicate to consumers with empathy to give satisfaction in accordance with customer expectations.

3.3. Measurement of employability skills of problem solving skills

Measurement of problem solving skill consists of five indicators, are implementation of safety principle, facility management skill, decision making skill, knowing how to learn skill, and problem solving skill. Result of employability skills' measurement of problem solving skills in SMK Negeri 1 Cibadak TPHP Skills Program Bakery Competency, is shown in figure 2.

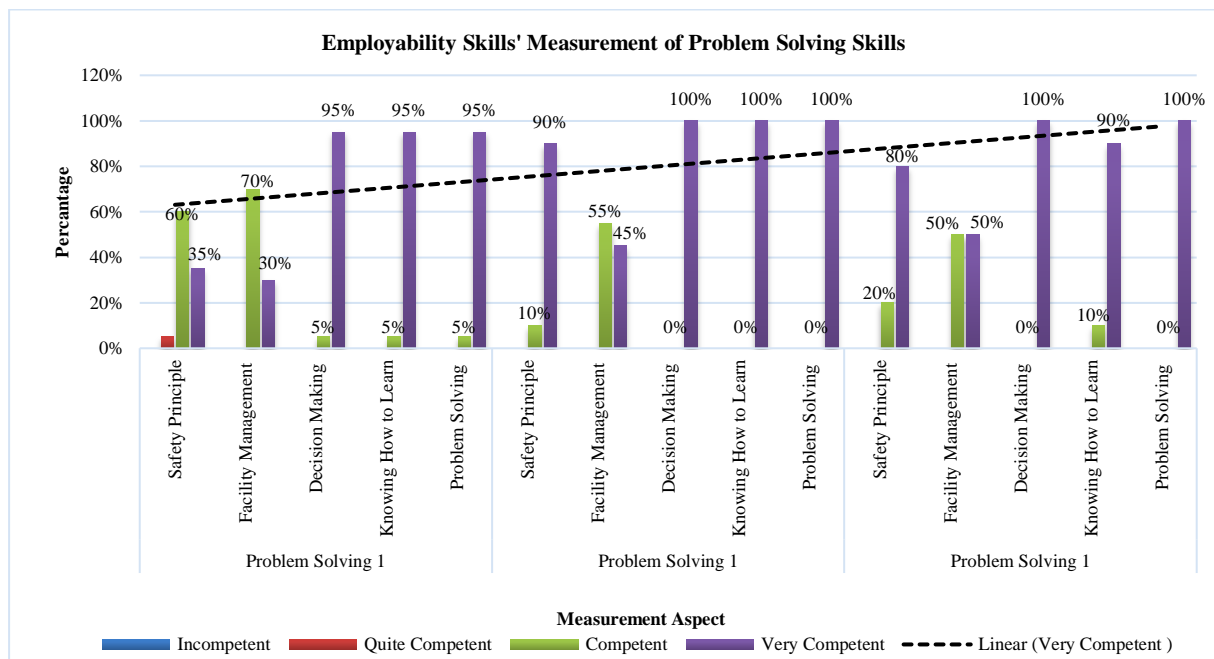


Figure 2. Employability skills measurement of problem solving skills.

Implementation of the safety principle is measured from the students' awareness of the procedures and practices of occupational safety and personal or group health, and can perform well the rules of work. Facility management skill is avoided from the students' ability to store, organize, and distribute materials, components, equipment, or final product results in order to be used properly. Making decisions skills is measured by the students' ability to set goals, make choices, calculate risks, assess, and make best choices. Knowing how to learn is measured by the students' ability to use appropriate analytical techniques and implement knowledge, and skills in ordinary situations or unfamiliar new situations. Problem solving skill is measured by the students' ability to understand the problem, identify possible different reasons, complete, and execute action plans to address, assess, and monitor progress, and improve work plans based on field data.

3.4. Measurement of employability skills of teamwork skills

The measurement of teamwork skills consists of four indicators, are participation as members, teaching friends, leading group friends, and working with different cultures. Result of employability skills' measurement of teamwork skills in SMK Negeri 1 Cibadak TPHP skills Program Bakery Competency, is shown in figure 3.

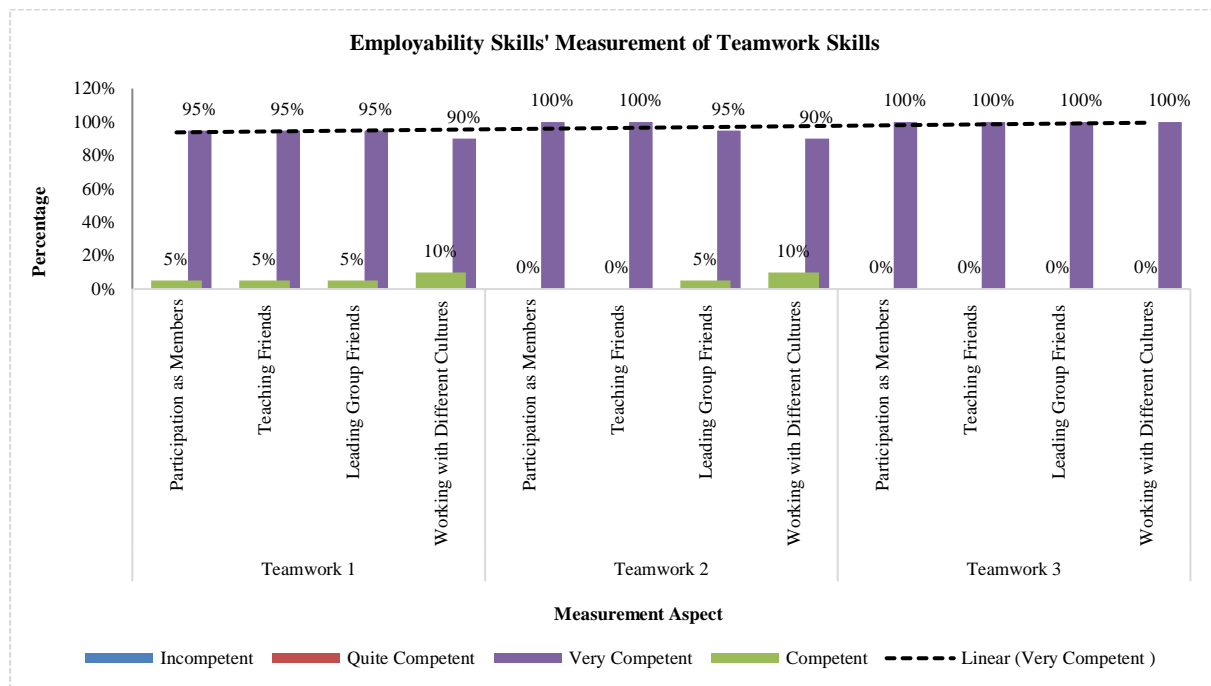


Figure 3. Employability skills measurement of teamwork skills.

Measurement of participation as member's indicator is measured by the ability of student's cooperation with friends in groups and to contribute in the form of ideas, proposals or business. The ability to teach a friend is measured by the ability of students to help others learn the necessary knowledge and skills, identify training needs and provide job information to help friends or groups. The ability to lead is measured by the ability of students to convey thoughts, feelings, and ideas to give support, confidence, trust or motivation to individuals or groups, responsible for job regulations based on guidelines and authority given. The ability to work with different cultures is measured by the collaborative ability of students with fellow men or women or with various tribes, social, and educational backgrounds.

4. Conclusions

Implementation of teaching factory learning in SMK Negeri 1 Cibadak can improve students' employability skills on aspects of communication skills, problem solving skills, and teamwork skills. Learning process that is dominated by learning by doing principle, centered on students or students active learning, with conditioned learning setting like situation and condition at work location have implication on existence of employability skills development of students.

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