



# Communication Skills Improvement Through the Teaching Factory Model

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**Abstract:** The fourth industrial revolution compels prospective workers to obtain industry demanded skills. Vocational education and training play an important role in preparing workers. Most training institutions are lagging behind in terms of predicting and training future skills that will be demanded by employers. Employability skills enable employees to properly execute their assigned tasks and duties at work place. Communication skills are a sub-type of employability skills. This article focused on improving vocational students' communication skills through the teaching factory model. The concurrent triangulation study design was used. The sample was made up of 60 Agricultural Processing students enrolled in vocational schools in West Java. Six indicators were used to measure communication skills. There were at least twenty units of competence as a reference for measurement. Communication skills improvement was observed following the implementation of the teaching factory model. Between 83% and 94% of the students showed immense communication skills improvement. Optimization in student involvement, learning environment conditioning, and tutoring contributed to the improvement of students' communication skills (employability skills).

**Keywords:** Communication skills, employability skills, teaching factory, work-based learning

## 1. Introduction

The technological advancement brought about by the fourth industrial revolution should be paralleled with quality of human resources development. The birth of the Asia Pacific Economic Corporation (APEC) in 2010 by developed countries and the integration of developing countries in 2020 is coming up with a lot of opportunities for skilled labor. Deeper economic integration is beneficial in that new jobs will be created and approximately 600 million potential employees in ASEAN trading bloc could be hired (ILO, 2016). Member countries should strive at equipping prospective employees with market demanded skills. As per Global Innovation Index records, Indonesia is ranked 87th out of 126 countries. The statistics indicate that Indonesia's national competitiveness is still low compared to other ASEAN countries. Vocational schools are critical educational institutions mandated with the production of skilled labor which can easily be absorbed by the dynamic labor markets.

Skilled labor is productive and minimizes production costs. Modern workers should be multi-skilled and should be adaptive to different work environment and conditions. Employability skills enables anyone who possesses them execute any task or duties as assigned. In Indonesia, vocational trainees are equipped with relevant skills demanded by the local job markets. Prospective workers must not only possess the hard skills needed when joining the workforce or industry, but should also possess employability skills (Rasul, et al. 2013, Arfandi, 2013; and Buntat, et al. 2015). Prospective vocational graduates should possess three basic employability skills which enable them to survive at the work place namely communication skills (Yusof, et al. 2012; Buntat, et al. 2013; Suleman, 2016; Lapiņa & Ščeuļovs,

2014; Rasul, et al. 2013; and Arfandi, 2013), problem solving skills (Yusof, et al. 2012; Lapina, & Ščeuļovs, 2014; Rasul, et al. 2013; Ismail, et al. 2015; Arfandi, 2013; Suarta, et al. 2015) and cooperative skills (Yusof, et al. 2012; Buntat, et al. 2013; Suleman, 2016; Rasul, et al. 2013; and Arfandi, 2013).

Communication skills is not only limited to speaking and participating in conversations, discussions and meetings but stretches to the ability to read and interpret written information, communicate thoughts or ideas or information or messages in written form and listen to and respond to messages either verbal or non-verbal such as gestures or body language (Rasul, et.al., 2013). Communication skills are also reflected by the ability to communicate in a foreign language, listen to others, communicate well-thought ideas, express agreement or disagreement well, and understand spoken and written language (Lapina dan Ščeuļovs, 2014).

The communication aspect of the employability skills is defined by various indicators. The defining indicators for each aspect was adapted from employability skills assessment in studies by Rasul, et al (2013) and Hanafi, I (2014). Measuring indicators of the communication aspect is shown in Table 1.

<b>Aspect</b>	<b>Indicators</b>
Communication	Reading Writing Calculatin Listening Speaking

Hanafi, I., (2014) expressed employability skills indicators in the form of an analytic rubric which was tailored to the needs of the study. Employability skills indicators description for communication ability aspect is shown in Table 2.

<b>Indicator</b>	<b>Description</b>
Reading	Positioning, understanding, and interpreting written information to perform daily
Writing	Conveying opinions, ideas, information and news in written form
Calculating	Showing a good calculation base using practical approach to resolve technical issues at work
Listening	Accepting, following, interpreting and replying information verbally or with appropriate body language
Speaking	Delivering verbal messages appropriate to the work situation; participating actively in discussions or convey ideas and opinions in working
Serving customers	Giving service and communicating to consumers with empathy to give satisfaction that meets the consumer expectations

Source : Hanafi, I., (2014)

Teaching strategies become important in developing employability skills as illustrated in Table 3.

<b>Employability Skills</b>	<b>Teaching Strategy</b>
Communication	Writing and presenting the verbal report Rules of Demonstrati Working in Group

Source: DEST (2006)

Vocational Agribusiness and Agrotechnology expertise are priority areas in Indonesia. This is because agribusiness has vast potential and it is evenly distributed in most regions of Indonesia. Agricultural Produce Processing Agribusiness (APHP) is one of the expertise competence under Vocational Agribusiness and Agrotechnology expertise. This expertise competency is aimed at creating graduates who have relevant competencies as stipulated by the Indonesian National Work Competency Standards (SKKNI). One of the key competencies students must have is bread

processing. Bread processing competency is categorized under the food industry and agricultural product processing technology elective in the SKKNI. There are five competency units that students must have in their bread processing competency, namely, participating effectively in the bread factory, mixing the dough ingredients, operating the dough forming process, carrying out the final development process and baking the bread, and carrying out the production process. Student competencies can be optimally developed if vocational schools appropriately choose and implement suitable learning models and approaches that are able to support the achievement of competency demands of the world of work.

The teaching factory model is the interface of vocational education and industry. The application of the teaching factory learning model links and matches vocational education to job market needs (Directorate of Vocational Development, 2017). The implementation of the teaching factory model is aimed at harmonizing training with industry needs (Chryssolouris, Mavrikios, & Rentzos, 2016). The teaching factory model is capable of improving students' hard and soft skills in terms of work-based learning (Martawijaya, 2012). Teaching factory enables students to reach industry standard competencies in the form of psychomotor skills, cognitive skills, and affective skills. The teaching factory is invaluable to vocational education and training because it enhances the competitiveness of vocational graduates (PSMK, 2015).

This study focused on improving students' communication skills through teaching factory model. The teaching factory enables the transfer of knowledge from industry to vocational schools through technology. The teaching factory model increases students' employability skills whilst studying in vocational schools.

## 2. Research Method

The concurrent triangulation design was used. Quantitative and qualitative data is collected at one go and data is then compared to identify the existence of differences, combinations, or convergence. The simultaneous data collection is done in order to compare and integrate the findings side by side in the discussion. This research used the mixed methods. Qualitative data was used to describe the implementation of teaching factory model whilst quantitative data was used to establish possible increment in students' communication skills through the teaching factory model.

The study population comprised bread production students in West Java under the Agricultural Produce Processing Agribusiness expertise competency who were exposed to the teaching factory model. Participants were purposively sampled. The sample comprised 60 students from SMKN 1 Cibadak, SMKN 1 Pacet, and SMKN 2 Subang who were studying the bread production using the teaching factory model. Additionally, the respective bread production teachers were also part of the study. Qualitative data was collected using semi-structured interviews. Quantitative data relating to the impact of the teaching factory model on students' communication skills was collected through performance assessments.

## 3. Result and Discussion

Measurements of the communication aspects of employability skills were carried out in three stages, namely, stage 1, at the beginning of the learning process, stage 2, in the middle of the learning, and stage 3, at the end of the learning process. Measurements were made using a performance assessment with indicators in the form of a 1-4 Likert scale. Each score has different measurement criteria related to the competency unit assessed. The purpose of using the same performance assessment at each stage was to determine the increase or decrease in the acquiring of employability skills by the students during the learning process.

### 3.1 Communication Skills Measurement

Measurements of the communication aspects of employability skills consisted of six indicators, namely reading, writing, counting, listening, speaking, and serving customers. The following are the results of the communication skills measurement at SMKN 1 Cibadak, at SMKN 1 Pacet, and at SMKN 2 Subang.

#### 3.1.1 SMKN 1 Cibadak

Overall, an increasing trend (excellent category) in the mastering of communication skills was established in all the three stages as shown in figure 1. In all the three stages reading, speaking, and customer serving were excellently mastered from stage 1 up to stage 3 as shown by high percentages. The mastering of communication skills in terms of the measuring indicators plummeted in stage 2 but subsequently surged in stage 3. The results the communication skills measurement at SMKN 1 Cibadak is shown in Figure 1.

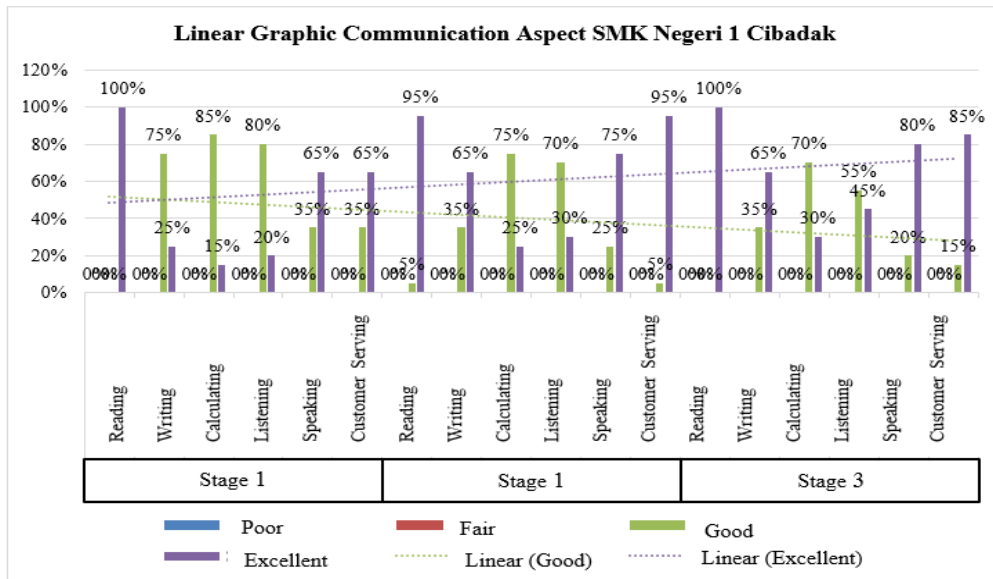


Fig. 1 - Communication skills measurement at SMKN 1 Cibadak

### 3.1.2 SMKN 1 Pacet

Overall, the mastering of communication skills showed an increasing trend in the good category and approximately constant in the excellent category from stage 1 up to stage 3 at SMKN 1 Pacet. In the good category, speaking and customer serving were outstanding. However, reading was excellently mastered as revealed by the high percentages in all the 3 stages. Furthermore, writing was also fairly mastered in all the three stages. The results of student' of communication skills measurement at SMKN 1 Pacet are illustrated in Figure 2.

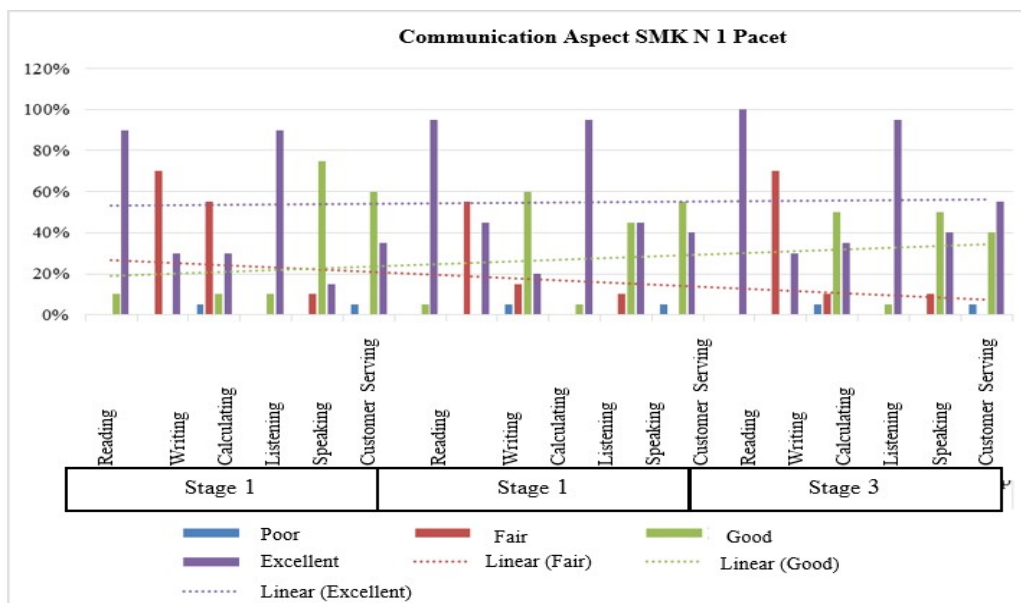


Fig. 2 - Communication skills measurement at SMKN 1 Pacet

### 3.1.3 SMKN 2 Subang

The results of students' communication skills measurement at SMKN 2 Subang are shown in Figure 3. Overall, an increasing trend was realized in the good category. All measuring indicators of communication skills were very high in all the 3 stages. However, there was decreasing trend in both the fair and excellent category. Communication skills measuring indicators of counting, speaking and customer serving were relatively high in all the 3 stages in the good category. However, there were spectacular drop of writing and listening in stage 2 and 3 in the good category.

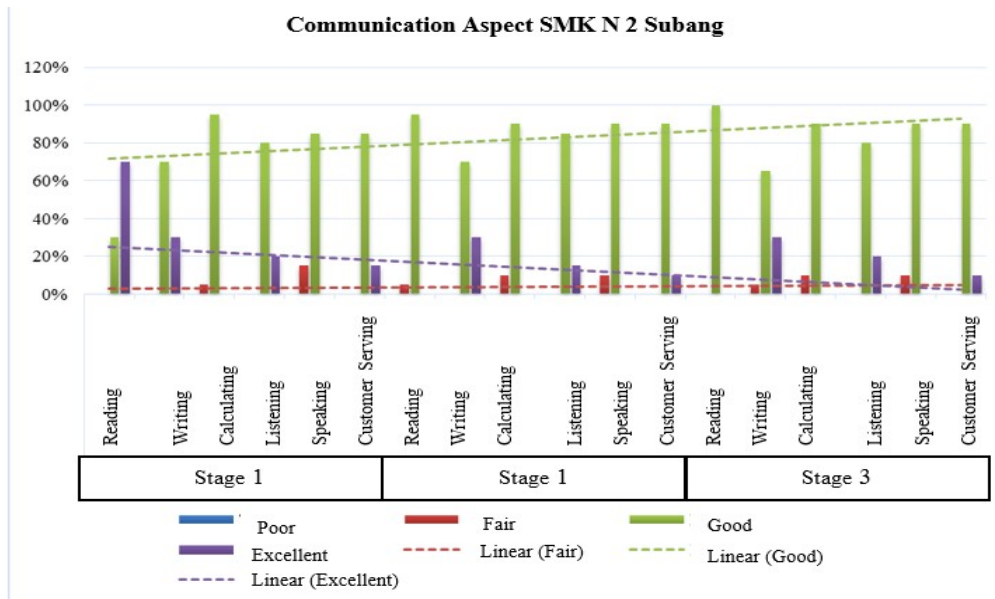


Fig. 3 - Communication skills measurement at SMK N 2 Subang

### 3.2 Improved Communication Skills

Based on the findings, students acquired more communication skills after being exposed to the teaching factory model in stage 1 and 2 in all the schools. The effectiveness of developing communication skills (employability skills) and work attitudes depends on their development in learning during the learning process (Sunardi, et al. 2016). Employability skills and work attitudes are competencies students must have and can be built and developed during the learning process (Sunardi, et al. 2016). Student active learning and hands on experience in terms of real procedures and job standards, provided students with opportunities to learn in the context of a real work environment. It was found that when students learn work using the teaching factory model, they can swiftly master communication skills in the learning process. This is in consistent with literature which stipulates that employability skills can be developed by providing academic assignments, work practices, industry-based learning, and learning that is integrated with work (Sunardi, et al. 2016).

In practice, the involvement of students in the learning process in each school is different, tailor-made to existing facilities and infrastructure, contextualized to the prevailing block system, and the learning system that has been set. Students at SMKN 1 Cibadak were seriously engaged in the bread production process. Provision of raw materials, and testing the quality of raw materials were carried out by chefs or laboratory assistants in the teaching factory model context. With regards to product quality testing students were excluded, because it is the responsibility of chefs and instructors who should ensure that the product complies with the specific standard. The marketing process and product distribution are carried out by students after the product quality testing process. SMKN 1 Cibadak has a wide market segment and already has teaching factory partners. The evaluation process was carried out in the form of performance tests and individual competency tests.

In contrast to SMKN 1 Cibadak, SMKN 1 Pacet and SMKN 2 Subang had their students involved in the management and identification of quality raw materials. The production process and product quality testing were carried out by students. A striking difference related to the bread production process was the production target. SMKN 1 Cibadak's target ranged between 15 kg and 25 kg of raw material in one production day, SMKN 1 Pacet's target ranged between 3kg and 5 kg of raw material in one production day, and SMKN 2 Subang's target ranged 200 pieces in one production day. Product quality testing of SMKN 1 Pacet consisted of organoleptic test and water content test.

There were at least five learning points, namely, motivation to learn that is shown with enthusiasm and a sense of responsibility towards learning, enjoyable class activities, assessment activities through learning experience, feedback during the learning process, and interaction between students and educators (Gurney, 2007). A well-managed learning process can help improve students' employability skills (Moalosi, et al, 2012).

The difference in the implementation of learning in the three surveyed schools affected the improvement of students communication skills (employability skills). The learning process has a significant influence on improving student employability skills, so that employability skills emerge as a result of a good learning process (Wu, 2005; Harvey, 2001). In contrast to the results of stage 1-2, the increase in students' communication skills (employability skills) in stage 2-3 was only seen only at SMKN 1 Pacet, while the increase in students' communication skills (employability skills) at SMKN 1 Cibadak and at SMKN 2 Subang is was insignificant.

Students involvement during the learning process when the program was born at SMKN 1 Pacet was higher than at SMKN 1 Cibadak, and at SMKN 2 Subang. Active participation of students in learning can improve learning outcomes

and develop employability skills (Sunardi, et al. 2016). The involvement of students in work based learning is directly proportional to the student's accumulation of communication skills (employability skills). Work experience, work practices, cooperative learning that is integrated with work, and provision of academic assignments can develop employability skills in learners (Smith, et al. 2013).

The learning process using the teaching factory model at SMKN 1 Pacet was based on procedures and real job standards implemented from the naturalization of occupational health and safety, personal hygiene standards, the use of complete personal protective equipment, the process of identifying raw material quality, production processes, product testing, marketing, to product distribution . Standardized testing of personnel hygiene, examination of complete personal protective equipment use, process of identifying material quality was not seen in the implementation of the teaching factory model in the other two schools. Optimizing the role of peer tutors during the learning process took place, thus, influencing the course of the learning process. The role of peer tutors was not only limited to assisting students in completing technical activities, but also describing personal competencies that should be possessed by students who were participating in an incubation program. This incubation program integrated several tasks, namely fermentation, oven heat use, good manufacturing practice (GMP) application, occupational health and safety application, sanitation and product quality analysis. This integration is done to build and shape the character of class X students so as to prepare them for teaching factory learning in class XI.

The learning process and student involvement contributed significantly to the improvement of students' communication (employability) skills. Student participation, learning environment, and tutoring, are effective learning factors that can improve communication (employability) skills in learners (Wu, 2005; Harvey, 2001). As long as learning takes place, there are factors that interact with each other that can affect the improvement of student competencies (Wu, 2005; Robinson & Millan, 2006; Ogbeide, 2006). In relation to this, the implementation of work based learning in the form of teaching factory model at APHP Vocational Schools and efforts to improve the quality of hands on based learning, with procedures and real job standards, can improve students' communication (employability) skills. Figure 4, shows communication skills attainment by students in the three surveyed vocational schools.

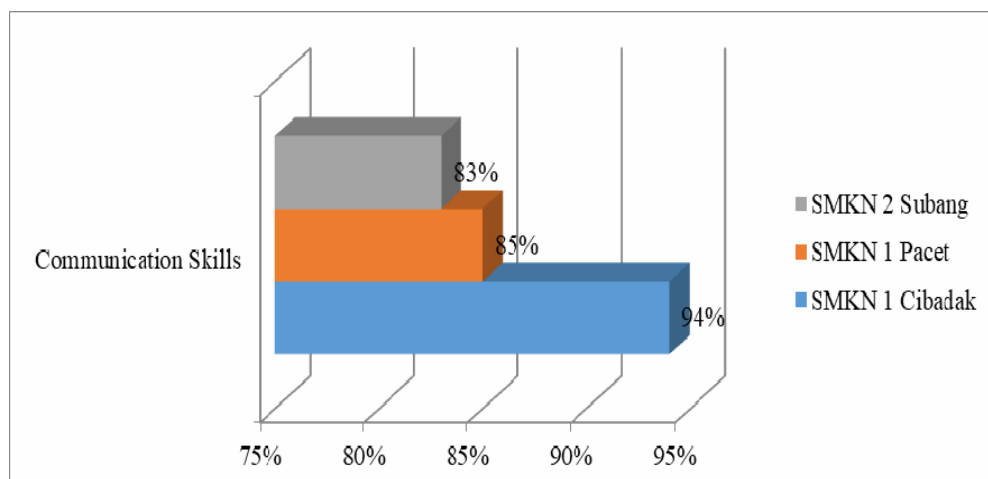


Fig. 4 - Communication skills improvement

#### 4. Conclusion

Communication skills attainment by students were measured on the basis of six indicators that include; reading, writing, counting, listening, speaking, and serving customers. At least there are 20 competency units based on SKKNI that could be a reference for measuring communication skills in the bread production learning using the teaching factory model. Optimizing student involvement, learning environment conditioning, and tutoring contribute to the improvement of students' communication (employability) skills.

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