

The 21st Century Ideal Skills for Vocational High Schools

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Abstract— This paper presents 21st Century Skills that are ideal for Vocational High Schools (SMK) in Indonesia using library research methods or approaches. Data collection is carried out by studying, exploring a number of books, documents and journals (both in printed and electronic form) as well as other sources of data and / or other information that relevant to research or studies. The aim is to define 21st Century Skills that are ideal for Vocational High Schools (SMK) in Indonesia. Seeing the various urgencies of SMKs in facing the era of the industrial revolution 4.0 which is developing at this time, it is very necessary to support the development of soft skills that need to be provided for vocational students. Hence, ideal soft skills are needed to help the development of SMK in the future. The result in general soft skills that are predicted to be able to answer the guidance of modernization are 21st Century skills, specifically the 21st Century skills that are closest to the aim of Vocational High Schools and Vocational Education in Indonesia are Life Career Skills. The development of hard skills can be known through the results and real processes of working to train students' tactical and technical abilities, while the development of soft skills is needed in order to make children be able to be professional and develop to complete all the work they do.

Keywords: *The 21st Century Skills, Vocational High School, Life Career Skills*

I. INTRODUCTION

Indonesia's economic order is now changing towards free trade through the ASEAN Economic Community (MEA), marked by the increasing opportunities for cooperation between countries. One side of this change is an opportunity, but on the other hand these changes cause increasingly fierce competition between countries, especially related to labor. The orientation of the workforce is no longer only competing in the country but should have global competitiveness. Therefore the government must respond seriously to preparing competent and quality Human Resources (HR), in order to be able to meet the demands of the labor market, primarily on a domestic scale, before facing an increasingly open labor market with foreign countries. The need to improve the quality of human resources is the responsibility of all parties, especially Vocational High School (SMK) educational institutions which concentrated in producing graduates of mid-level qualifications. Vocational Schools have a strategic position as a vocational school that become the choice

of many Indonesians who are generally middle-to-lower class communities, because Vocational Schools are considered as a solution so that their children immediately get a job and live independently.

The data findings of the Central Statistics Agency (BPS) in February 2019 recorded based on the level of education, the Open Unemployment Rate (TPT) for Vocational High Schools (SMK) was still the highest among other education levels, in the amount of 8.63 percent. This means that most graduates of this level of education have not been able to be employed by the available domestic labor market. It is not clear why that could happen even though graduates at this level of education should be able to work right away. This is very worrying, because SMKs which are supposed to be the solution to prepare ready-to-use human resources are currently the highest level of education contributing to unemployment in Indonesia in three years in a row.

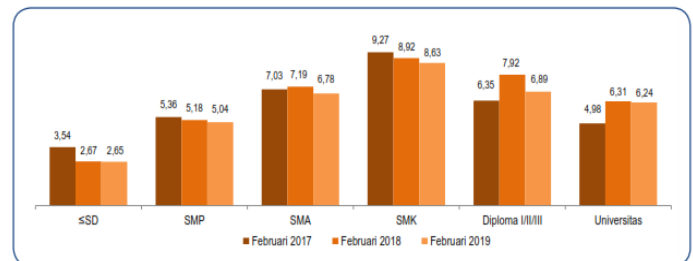


Fig. 1. Open Unemployment Rate (TPT) Based on Highest Level of Education Completed (Percentage), February 2017-February 2019

Technology transformation that is developing very fast as the impact of IT development produce the use of high-level technology in the industrial sector known as Industry 4.0. The implications of the impact of Industry 4.0 at this time are still not dominant in Indonesia, but the emergence has begun to be seen with the presence of several industries that have begun to abandon conventional technology and begin to move to use technology-based automation. The Mechanical Engineering Vocational Program as a vocational school whose work orientation is close to the field of technology use has the role of producing graduates to be competent in their field and able to anticipate all the demands of changing times. This will create a gap between SMK and DUDI (industrial business world) if both do not cooperate. Because the development of DUDI is going very fast while SMKs only go in place. Vocational High Schools need to

catch up with DUDI in providing renewable technology to hone students' hard skills, in order to demand mastery of the advanced technology mastery competencies required by DUDI, whereas to hold a new technology in Vocational Schools is not something that is cheap and easy. If this matter is not taken seriously, it can be assured that there is a miss of competence and demand driven gap between SMK and DUDI. As a result, the achievement of hard skill competencies as the basis for skilled students to work in the end will not be used by DUDI. This provisional allegation has become one of the factors causing SMKs to contribute the highest TPT in a row, because there has been a miss of competence so that SMK graduates do not have the competencies required by DUDI. Some research references mention that the Industry places more qualifications that lead to soft skills competency than hard skills to prospective workers. The reason is that the industry is easier to educate individuals with hard skills competence than character development that refers to soft skills competencies.

Soft Skill competency development in SMK refers to the objectives that have a relationship with the achievement of graduates' competencies in Vocational Schools, which is related to motor learning stimuli and with regard to the maturity of personal character formation that leads to work orientation (career). SMK graduates are expected to master the competency qualifications in order to enter the available labor market. 21st Century skills provide a reliable projection of skills to occupy certain types of employment sectors, so they can follow competencies in the future. 21st century skills are globally motivated by the development of patterns of thought, technology and culture that are growing towards the future. Through 21st Century Skills that are used as a global standard, various skills predictions are believed to guide the mapping of the concept of competency expertise needed by the world of work in the future. Seeing the urgency of the background above the author began to study various studies on 21st Century Skills in Indonesia, apparently there have not been many studies that define 21st Century Skills ideal for Vocational High Schools (SMK) in the Mechanical Engineering expertise program.

II. VOCATIONAL EDUCATION

Law No. 21 of UU No. 20 of 2003 [6] that vocational education is a level of secondary education that prepares students primarily to work in certain fields. Some definitions according to experts and researchers are described as supporting basic vocational education in Indonesia. Clarke & Winch [1] defines that vocational education is education that prepares young children and adolescents to enter the workforce, they study the relationship with technical and practical problems. Meanwhile, Zakaria, Soenarto and Marpanaji [11] explained that vocational education is education that directs students to work with various training sessions in the workplace. Wenrich (1974) also emphasized that

vocational education is part of the education system that prepares a person to be able to work and pursue a career in his field of work. Finally, it can be concluded that vocational education is a level of education process for adolescent children directed to be able to be skilled in certain fields of work and be ready for a career.

The purpose of establishing vocational education is regulated in Government Regulation (PP) No. 29 of 1990 which states that vocational education prioritizes the preparation of students to enter employment and develop professional attitudes. Furthermore Kepmendikud No. 0490 / U / 1990 describes the purpose of vocational education, namely to prepare students to establish reciprocal relationships with the social, cultural, and surrounding environment, increase the ability of students to be able to develop themselves in line with the development of science, technology and the arts, and prepare students to enter the workforce. Meanwhile Sofyan [8] also explained that the purpose of vocational education is to prepare graduates to have expertise in certain fields that can support the work that will be occupied by vocational education graduates. Referring to several definitions and objectives that have been studied, the writer draws the conclusion that vocational education is one of the levels of senior secondary education in Indonesia which conceptualizes students to have skills in accordance with their respective fields focusing on targeting graduates to be ready to work and ready for a career.

Vocational education is proven to have a role in the development of a country, such as developed countries in Germany. According to Gatot Hari Priowiryanto, (in Kompas, 20 April 2002) stated "Germany is a resilient industrial country because it is supported by skilled graduates of vocational schools. About 80% of secondary schools in Germany are vocational schools, the remaining 20% are public schools. "Reflecting on developed countries in Germany, the Indonesian government should firmly pay attention to the nation's economic development through increased investment in the world of vocational education, so the people's economy can grow by having Human Resources that truly respond to the challenges of the globalization era.

A. Curriculum Structure Of Vocational School

Referring to the 2006 edition of the SMK curriculum, the SMK curriculum is built using: [1] academic approaches; [2] life skills; [3] competency-based curriculum approach; [4] broad-based curriculum approach and basic; and [5] a production-based curriculum approach. The expectations are: [1] SMK graduates are able to work independently (self-employed) or fill existing job openings; [2] the expertise of vocational graduates in accordance with the demands of the workforce; and [3] SMK graduates are able to accommodate and anticipate the development of science and technology. Therefore the

SMK curriculum is divided into three program parts, namely [1] normative programs, [2] adaptive programs and [3] productive programs.

The normative program is a group of education and training that is useful in forming students into whole individuals, who have the norms of life as individual creatures and social creatures of community members both as Indonesian citizens and as citizens of the world. Training courses in normative groups apply equally to all skills programs. Adaptive program is a group of education and training that is useful for forming students as individuals to have a broad and strong knowledge base to be able to adapt to changes in the social environment, work environment and be able to develop themselves in accordance with the development of science, technology and art. Adaptive programs consist of groups of training courses that apply equally to all expertise programs and training courses that only apply to certain expertise programs according to the needs of each expertise program. The productive program is a group of training courses that is useful to equip students to master work competencies in accordance with the Indonesian National Work Competency Standards (SKKNI). Productive programs serves the demands of the labor market, because it is more determined by the business / industry or professional associations. Productive programs are taught specifically according to the needs of each expertise program.

The curriculum is implemented in curricular and extracurricular activities. Curricular activities are activities carried out in accordance with the curriculum structure, aimed at developing students' competencies in accordance with their fields of expertise. Curricular activities are carried out through structured learning activities in accordance with the curriculum structure. Extracurricular activities are training activities outside the hours listed in the curriculum structure. This activity is intended to develop talent and ask and to strengthen the formation of the personality of students.

The learning competency approach adheres to the principle of complete learning (mastery learning), to be able to master attitudes, knowledge and skills to be able to work according to their field of competence. To be able to study thoroughly, learning principles are developed with: [1] learning by doing (learning through real activities that provide meaningful learning experiences) developed into production-based learning; and [2] individualized learning (learning with attention to the uniqueness of each individual) which is carried out with a modular system. Qualification of level 2 graduates possessed by SMKs according to attachment PP No. 8 of 2012 is described as follows: [1] Able to carry out a specific task, using tools, and information, and work procedures that are commonly done, as well as showing performance with measurable quality, under direct supervision of his supervisor; [2] Possess basic operational knowledge and factual knowledge of specific work fields, so they are able to choose available solutions to common

problems, and [3] Responsible for one's own work and can be given the responsibility of guiding others.

B. Soft Skills Urgency Of Vocational School Of Graduates' Quality

The paradigm shift in the process of vocational learning from supply driven to demand driven makes educational institutions responsible for the quality of graduation including how to get a job after they graduate. Education not only supplies jobs but also produces production that is needed by the community and employment. Therefore educational institutions including vocational high schools must evaluate their graduation in order to get feedback in implementing the learning program. Looking at the quality aspects of program holders, the question that needs to be answered is how much the compatibility of the competencies provided by the vocational high school industrial groups with employment needs, especially by the manufacturing industry. The relevant statement Wagiran [10] shows that there is a competency gap between what is provided by Vocational Schools and the actual needs of the industrial sector. The biggest gap is in the vocational high school graduation competency when viewed from what is needed by large industries followed by small industries, medium industries, and entrepreneurs; and generally vocational high school graduations are weak in soft skills. Therefore, the industry needs to place the soft skill aspect as the main target given in order to prepare vocational high school graduates to work in the first job.

In general, in terms of two aspects of competence, namely hard skills and soft skills, it is seen that soft skills are a priority target for DUDI to review prospective workers compared to aspects of hard skills. Because the development of an industry in the future is also accompanied by the development of modern and renewable technology, so it requires the industry (DUDI) to require human resources to be able to easily adapt to something new (in this case machine technology). The statement was reinforced by Wagiran [10] in his research that the reason the industry chose soft skills as a consideration of the priority qualifications of prospective workers is because if it provides training in hard skills skills it is easier than developing character. Therefore, the development of a balance between hard skills and soft skills is in line with the role of education as an effort to provide knowledge and skills and provide value, so as to shape individual self-esteem. Individual self-esteem contains individual competence, which is represented by five things, namely: motivation, nature, self-concept, knowledge, and skills [3].

Research by Olazaran [5] regarding the importance of soft skills in meeting the qualifications of industrial HR needs explains that employees and technicians need to be qualified to have new production knowledge, 'synthetic' (adapt to new combinations or adaptations of existing elements), in where innovations are usually incremental and occur as a result of interactions ('interactive learning') with

specific customers and suppliers Wagiran [10]. The accumulation result of research above makes the world of education including vocational high schools need to prepare graduates not only ready to work but also ready to get career success wherever they work. Then for Human Resources practitioners, they have left the hard skill approach. There is no point in having good hard skills, but bad in soft skills. This can be seen from the job vacancies qualifications needed by most developing industries nowadays, soft skills dominating as a qualification requirement for their prospective workers.

III. THE 21ST CENTURY SKILLS

In general, the 21st Century Skills Framework shows that education in the 21st century is dominated by core competencies such as reading, writing and arithmetic obtained while attending education will be the basis of other competencies. Trilling and Fadel [9] clarify the 3R core subject function in the context of 21 century skills, 3R is translated into [1] life and career skills, [2] learning and innovation skills and [3] information media and technology skills.



Fig. 2. Framework Of 21st Century Learning [9]

The implementation of the 21st century skills concept is implemented in 2013 curriculum which is based on Government Regulation No. 32 of 2013, concerning Amendments to Government Regulation No. 19 of 2005 concerning National Education Standards (SNP), was developed based on internal factors and external factors. External factors are related to the current of globalization and various issues related to environmental problems, technological and information advancements, the rise of creative and cultural industries, and the development of education at the international level. While internal factors related to the condition of education are associated with educational demands that refer to 8 (eight) National Education Standards which include content standards, process standards, graduate competency standards, educator and education personnel standards, facilities and infrastructure standards, management standards, financing standards, and education assessment standards [7].

The syllabus guide to secondary education in Singapore, known as the Education and Career Guidance (ECG) Syllabus Secondary, illustrates that

students with secondary productive age in the country really need to increase the awareness of the skills, knowledge, and attitudes needed to make a successful transition from school to study and further work, it allows students to examine and identify their skills and talents and students will be encouraged to explore various educational opportunities and career paths [2].

Changes in curriculum structure, achievement of student competencies based on 21st Century Skills concepts [4]. Furthermore Murti and Madya [4] describes the 21st century education in order to operationalized it into a curriculum structure that contains compulsory subjects (groups A and B), and specialization subjects (group C). Furthermore [4] outlines compulsory subject groups (A) aimed at achieving learning competency and innovation skills and technology and information media skills, while compulsory subject groups (B) and specialization subject groups (C) are aimed at achieving competence life and career skills.

IV. METHOD OF COLLECTING DATA

This paper has been prepared using a library research method or approach, which means that it is a series of activities regarding the method of collecting library data, reading and recording and processing research material Zed [12] In library research there are four main characteristics that the writer needs to pay attention to, including: first, that the writer or researcher is dealing directly with text (nash) or numeric data, not with direct knowledge from the field. Second, library data is "ready to use" meaning that the researcher does not go directly into the field because the researcher is dealing directly with the data source in the library. Third, that library data are generally secondary sources, meaning that researchers obtain material or data from the second hand and not the original data from the first data in the field. Fourth, that library data conditions are not limited by space and time Zed [12] Based on that, the data collection in research is carried out by studying, exploring several books, documents and journals (both in printed and electronic form) and data sources and or other information that relevant to research or studies.

V. DISCUSSION

A. The 21st Century Ideal Skills Of SMK

There is a study that it is estimated that population growth in Indonesia continues to increase until 2020-2035 as many as 70% come from productive age population (15 -64 years). Therefore, the big challenge faced is how to strive in order to make the abundant productive age human resources become human resources that have the competence and skills through education, so they do not become a burden. [7].

Based on the basic references in the provision of education in Indonesia as well as several definitions relevant to the research themes outlined, the

interpretation of the objectives of Vocational Education is the level of the educational process of adolescent children directed to be able to be skilled in certain fields of work and ready for a career. Furthermore, some in-depth studies on the basis of government regulations as well as relevant research studies on vocational education, there are many repetitions mentioned repeatedly in sentences that say vocational education produces graduates who are ready to work, the sentence is closely related to being ready for a career because the meaning contained in a career is a sequence of behaviors and attitudes related to the ongoing activities of work experience in a particular place. So it can be said to be ready to work related to the mastery of competencies in a particular field of work and a career related to consistency in a process of mastery of competencies that are being worked on and developed therein.

The prediction of soft skills that can survive in the future as an effort to answer the guidance of the modern era is renewed through the existence of 21st century skills, this is the basis for the adjustment of skills that have been recognized by the whole world including in Indonesia. The development of hard skills can be known through the results and real processes of working to train students' tactical and technical abilities, while the development of soft skills is needed so that children are able to be professional and develop to complete all the work they face. Seeing the various urgencies of SMKs in facing the era of the industrial revolution 4.0 which is developing at this time, it is very necessary to support the development of soft skills that need to be provided for vocational students. Hence, ideal soft skills are needed to help the development of SMK in the future. The 21st Century skill that is most closely related to the purpose of Vocational High Schools and Vocational Education in Indonesia is Life Career Skills.

B. Life Career Skills

Trilling and Fadel [9] in the Framework of 21st Century Learning developed through ASCD and P21 formulate general life and career skills, namely [a] flexibility and adaptability, [b] initiatives and self-direction, [c] social and cross cultural interaction, [d] productivity and accountability, and [e] leadership and responsibility.

1) Flexibility and adaptability

It is an ability where students are able to adapt to changes and flexible in learning and doing activities in groups.

2) Initiative and self-direction

Initiatives and self-direction include skills that utilize children's curiosity and natural desire to better understand the world around them when children are interested and involved, they are more likely to direct

themselves, focus, show perseverance, and complete tasks. When children are involved in planning and organizing activities they feel a sense of belonging and achievement, building initiative and self-direction helps strengthen children's confidence. In this case, students are able to manage their goals and time, work independently and become self-direction students.

3) Social and cultural interaction

Social skills involve understanding other people's emotions, developing empathy, learning the consequences of behavior, and understanding that other people may have different thoughts than they themselves do. These skills are very important for the child's success, are important for other children's sense of choice and correction, and directly related to communication, collaboration, and adaptability. Cross-cultural skills are the understanding of similarities and differences in others. They also include the ability to appreciate and understand their own culture, and learn to understand and appreciate the culture of others in the process. In this case, students are able to interact and work effectively with diverse groups.

4) Productivity and Accountability

At this age, productivity and accountability begin with focus on attention and task completion. Children learn to set goals for planning activities such as 'I will play with puzzles' or 'I can do it'. Learning to follow instructions and rules in the game is part of learning to be responsible. Children also show productive and responsible attitudes when they play with greater independence and decreased adult guidance. In this case, students are able to manage projects and produce products.

5) Leadership and responsibility

Closely related to executive function and social skills. Executive functions are defined as self-regulation, organizational planning, starting work and critical thinking. This is shown in how a child asks for help, including other children in the game or cleaning up after playing. Taking care of yourself and others is part of the responsibility. When children take the initiative by inviting other children to help them with assignments or playing games, they demonstrate early is one of the leadership skills. In this case, students are able to lead their friends and be accountable to the wider community.

VI. CONCLUSION

Based on the basic references in the provision of education in Indonesia as well as several definitions relevant to the research themes outlined, the interpretation of the objectives of Vocational Education is the level of the educational process of adolescent children directed to be able to be skilled in certain fields of work and ready for a career.

Furthermore, some in-depth studies on the basis of government regulations as well as relevant research studies on vocational education, there are many repetitions mentioned repeatedly in sentences that say that vocational education produces graduates who are ready to work, the sentence is closely related to being ready for a career because the meaning contained in a career is a sequence of behaviors and attitudes related to the ongoing activities of work experience in a particular place. So it can be said to be ready to work related to the mastery of competencies in a particular field of work and a career related to consistency in a process of mastery of competencies that are being worked on and developed therein.

The prediction of soft skills that can survive in the future as an effort to answer the guidance of the modern era is renewed through the existence of 21st century skills, this is the basis for the adjustment of skills that have been recognized by the whole world including in Indonesia. The development of hard skills can be known through the results and real processes of working to train students' tactical and technical abilities, while the development of soft skills is needed so that children are able to be professional and develop to complete all the work they face. Seeing the various urgencies of SMKs in facing the era of the industrial revolution 4.0 which is developing at this time, it is very necessary to support the development of soft skills that need to be provided for vocational students. Hence, ideal soft skills are needed to help the development of SMK in the future. The 21st Century skill that is most closely related to the purpose of Vocational High Schools and Vocational Education in Indonesia is Life Career Skills.

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