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Unesa's Role in Managing and Improving the Quality of Vocational Education Graduates in East Java in the Disrupted Era

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Abstract. East Java currently has 1,996 Vocational Schools with 220,958 graduates. However, of the total graduates only 64.11 percent can be accepted in the industry. This shows that of the total Vocational Schools in East Java, 40 percent of the quality of graduates is not standardized. The total skilled workforce in East Java, both from SMK graduates, Mini Vocational Schools, BLK (vocational training bodies) and Polytechnics as many as 234,088 people. For this reason the East Java Provincial Government is targeting 2019 the composition of vocational education 70 percent of SMKs and 30 percent of high schools are completed. Meanwhile, job vacancies available in East Java reach 390 thousand to 400 thousand and only 234 thousand can be fulfilled, resulting in a shortage of more than 100 thousand skilled workers. The analysis shows the importance of an in-depth study so that interest in choosing studies in vocational education in East Java increases, the implementation of the KKNI (Indonesian National Qualifications Framework) is better, improving the quality of facilities and facilities with five Vocational programs in one laboratory. innovation, provision of employability skills according to the skills needed in the era of industrial revolution 4.0, the introduction of the apprenticeship system is more relevant to the needs of the business world / industry, vocational education teacher qualifications, and internationalization of vocational education and training aimed at providing students with knowledge, skills and competencies needed in the international labor market.

Keywords: vocational education, quality of graduates, facilities and infrastructure, internships, and employability skills.

1. Introduction

Based on data from the Central bureau of Statistics the unemployment rate of graduates of Vocational high Schools (SMK) are the highest compared with the graduates of education. The unemployment rate of vocational graduates in August 2018 reach of 11.25%. The unemployment rate is higher than the February 2018 amounted to 8.92 percent but lower than the position in August, 2017 amounting to 11,41. The unemployment rate of vocational graduates is higher than graduates with the level of education yan equivalent, i.e. Upper Secondary School (SMA) or other graduates as shown in the chart below. Unemployment rate by level of education of the university in August 2018 amounted to 5.89%, a graduate Diploma (6,02%), high school graduates (7,95%), junior high school graduates (4.8 percent), and primary school graduates (2,43%).

There are two challenges faced by Indonesia in the face of the Industrial Revolution the Fourth and the ASEAN Economic Community (AEC) among others. The first challenge is the advent of the industrial

revolution the four that now begin to take place. There are no factors driving changes in world civilization as powerful as the industrial revolution that generates technological progress. Due to advances in technology, the world is changing so fast. The second challenge is globalization, particularly the entry into force of the ASEAN Economic community (AEC) starting from the end of the year 2015 which allows increased mobility and competition of labor freely among ASEAN member countries. Various changes in social-economic development in Indonesia until 2030 should be placed in the context of regional (ASEAN) and globally.

The world has entered the era of the economy based on knowledge (knowledge based society and economy) of open (digital) and rests on free competition. In that era, the type of work someone changed quickly in accordance with the needs of the labor market and labor supply which is increasingly globalized and knowledge and increasingly sophisticated technology. The work was originally done manually by relying on human labor has been replaced by a machine and information technology. Some of the types of jobs that exist today, slowly will disappear in the next 10 years. An estimated 35% of the basic skills in the world of work will change in the year 2020, and nearly 2 billion workers at risk of job loss. Therefore, education and training should be done by giving a lot of options skills in accordance with the interests of learners and the development needs of the labor market so that it enables lifelong learning (life-long learning).

In accordance with the law 20/2003 on National Education System Article 15 [1], the existence of a Vocational school designed to prepare its graduates to work in a specific field. This suggests that secondary vocational education is intended to produce graduates who are work-ready, whether working independently or working in a particular industry. SMK required to be able to produce graduates as expected by the school, the community, and the business/industrial world. Labor required is the labor to have occupational competence in accordance with the field, having the ability of adaptation, and high competitiveness. In the period 2009-2014 has been built around 3,000 SMK new and up to the beginning of the year 2016, the number of vocational schools in Indonesia already reach 13.167 school (3.349 SMK and 9.818 Private SMK).

Education and vocational training on the level of secondary and higher education need to equip graduates with a range of skills that are more general, namely life skills and a career, ability to learn and innovate, as well as proficiency utilizing information, media, and technology. Life skills and career (life and career skills) components, namely (1) flexibility and adaptability, (2) have the initiative and can be self-regulating, (3) social interaction and inter-cultural, (4) productivity and accountability manage the project and produce the product, and (5) leadership and responsibility.

Currently Java has a 1996 to SMK with a number of graduates 220.958, But of the whole graduates only 64,11 percent that can be accepted in the industry, this indicates that from the total of CMS that exist in east Java, 40% quality of graduates is not yet standardized. Required in-depth study so that the interest in choosing studies in vocational education in east Java is increased, the implementation of KKNI (Indonesian National Qualifications Framework) which is better, improving the quality of infrastructure and facilities with a program of five vocational one laboratory., learning given leads to creativity and innovation, the provision of the provision of employability skills according to the skills required in the era of the industrial revolution 4.0, the introduction of the system of apprenticeship is relevant to the needs of the business/industrial world, increasing qualifications of teachers vocational education, and the internationalization of vocational education and training aims at providing the students with the knowledge, skills and competencies needed in the labor market is international.

2. Discussion

For Indonesia, these challenges need to be converted into opportunities. By empowering the younger generation are abundant and the advancement of technology, Indonesia needs to prepare a generation of

innovators to cultivate the diversity of abundant natural resources into goods/services that are worth, and create millions of new jobs. To that end, learning in the vocational school should develop the skills of the XXI Century in order to produce graduates who are “innovative, inventive, self-motivated and self-directed, creative problem solvers to confront increasingly complex global problems” (Trilling and Fadel, 2009) [2].

However, the increasing vocational teachers is not comparable with increasing the quality of teachers competent in teaching. Only 22% of vocational teachers are highly qualified teachers groups of subjects of productive areas (commonly called Teachers Productive). Master Earning is a teacher who has a certificate of competency in accordance with the department taught. Suppose a teacher who teaches welding must have a certificate stating their competence in the field of welding. Certificate of competency in accordance with the vocational this ensures that the teacher can in the teaching competence in accordance with the department of the place where he is. Certification can also guarantee that the competence of teachers in accordance with the standards prevailing in the professional circles.

The majority of vocational teachers coming from teacher group of subjects the field of normative and adaptive (also called Teacher Normative and Teacher Adaptive). Teacher Normative and Teachers Adaptive teachers who teach citizenship, mathematics, language, and other that are not relevant to vocational programs. This leads to a lack of teachers and educators who really have the competence to teach the field of expertise. If this continues, learners SMK don't really get teaching in accordance with the program competencies. In addition to the availability of teacher/instruktur, the competence of teachers is also in doubt. A lot of Master Productive are not current (up to date) in the development of technology yang dipakai in the program of expertise that affect the teaching-learning process are also influential on the competence of the learners. For example, the teacher does not know how to use the machine or the latest tools in the field of welding. As a result, can only teach how to use the machine longer. This makes the learners could not meet the needs of the world of work so that lose competitiveness with other workers.

On that basis, there needs to be regular training for teachers/instructors who teach in the field of vocational education from the world of business and industry. In addition to sharpening competence, this training is useful for teachers to keep up to date with developments in the world of business and industry in accordance with the program of expertise.

Refer to Presidential Regulation No. 8 year 2012 [3] about KKNI (Indonesian National Qualifications Framework) that the National Qualification Framework of Indonesia (KKNI), is a classification of learning outcomes that equalize outcomes the field of education formal, non-formal, informal, or work experience in order to recognize the competence of working according to the work structure in various sectors. Qualification level is the level of learning outcomes agreed nationally, are arranged based on the size of the result of education and/or training acquired through formal education, non-formal, informal, or work experience.

KKNI is a manifestation of the quality and identity of the Indonesian Nation associated with the system of education and training national that owned by Indonesia. Level 2 for high school graduates and vocational school is expected to carry out the specific tasks, using tools, and information, and work procedures that are commonly done, as well as demonstrate the performance of the quality measured, under the direct supervision of his superiors. Has operational knowledge of basics and knowledge of the factual areas of specific work, so being able to choose solutions available to the problems that commonly arise. Responsible for their own work and are given the responsibility of guiding others.

Vocational education is education for work, according to Pavlova (2009:10-14) [4] in the course of learning there are three interrelated components, namely: learning to work (learning for work), learning about the work (learning about work), and understanding the basic nature of work (understanding the nature of the work).

This means that learning is vocational, and vocational education is still oriented on the work (work based). The orientation of the education work based will experience a shift into the direction of life based along with the shift in age towards the era of knowledge.

According to [5] Staron, Jasinski, and Weatherley (2006: 44-50) some paradigm shift in education, among other things: work based learning towards a life based learning, professional development to capability development, learning berorientasi networking into learning berorientasi environment (learning ecology), students as workers shifted to the direction of the learners as a whole person, and approach strategies into the orientation. More Staron, Jasinski, and Weatherley explains the shift from work-based learning shift the direction of life based learning.

In vocational education should be understood as a sub system of national education that is geared to prepare learners are able to choose a career, enter the field of work, compete, and develop themselves successfully in the field of work is rapidly changing and evolving. In addition, in the book Skills Toward 2020 for Global Era (1997) [6] expressed the need for repositioning of vocational education. Repositioning vocational education is intended as a realignment of the concept, planning, and implementation of vocational education in order to increase the quality of human resources, which refers to the tendency (trend) needs of the labor market, both in the scope of the local, national, regional and international. Some of the goals of the repositioning of vocational education, among other things: (1) reorganize the system of Training vocational that is more flexible and permeable by applying a pattern of learning/training that is competency-based, and (2) rearranging the program the skills and learning system at vocational school by implementing Competency Based Training (CBT).

Ute Hippach-Schneider, Martina Krause, Christian Woll (2007) [7], the dual System is described as a training that was conducted in two places of learning, namely, the company and the vocational school which lasts three years. In addition to job training only requires two years of training, there is also legislation that facilitates the reduction of the period of training with the agreement of the company. The purpose of training the dual system is to provide a program that instructs the vocational training the basis of broad-based and the qualifications and competencies required of skilled workers in the world of work. Training takes place on the basis of the contract on vocational training between the training companies and young people and are trained in companies for three to four days a week and in the vocational school for two days a week.

Principles-the basic principles of the implementation of vocational education that developed Charles Prosser [8] in the year 1925 as the theory of vocational education/vocational education include:

- (a) vocational Education will be efficient if the environment in which students are trained is a replica of the environment where the later is considered in accordance with the working environment (work environment).
- (b) in Accordance with the needs of industry standards in the implementation of vocational education.
- (c) in Accordance with the habits of work (work habits).
- (d) in Accordance with the needs indivisu (individual need).
- (e) vocational Education effective for any profession, skill, position, work only for everyone who need, want and can benefit.
- (f) vocational Training will be effective if the experiences of training, forming work habits and habits of thinking that really is repeated so that the match or fit with the job.
- (g) vocational Education requires teachers who are skilled
- (h) At each position there are minimum capabilities that must be possessed by someone in order to work.
- (i) vocational Education should be in accordance with the needs of the industry
- (j) Habituation is effective on learners achieved if the training given on the job real value-laden.
- (k) Content of training in a special occupation is the occupational experience of the expert.

- (l) Use specific job training.
- (m) Vocational Education is a social service which is efficient if in accordance with the needs of a group of people which in its time it requires, and indeed most effectively done through the teaching of vocational education.
- (n) Vocational Education for social will be efficient if the teaching methods used and the personal relationships students consider the traits of learners.
- (o) The Administration of vocational education will be efficient if he was lithe and flowing rather than rigid and standardized.
- (p) Vocational education requires a certain cost and if not met then vocational education should not be forced to operate.

Cairney (2000) [9], D Eane E. N & Kamila G (2015) [10], Buşrá ash shām A, et al (2016) [11], states of knowledge-based industries require workers who are able to work independently, perform the acquisition of information and skills, have a dependency and have the ability technology that connects information, computing, communication, and automation, capable of managing yourself, team cooperation, adapt, solve problems-complex problems, and think creatively and innovatively.

Diego G. Lamar, et al (2012) [12], describe that the bachelor of engineering has a contribution in the field of technology through the skills in the application of mathematical and scientific knowledge to the real world. The experience of the lecturer suggests that the practicum in the traditional way in the engineering curriculum do not convey a message that is interesting because the class only as a requirement that has no connection to the real world because students do not see the real application of the work done in the practicum activities and inhibit the development of the main skills involved in engineering the scientific knowledge obtained. Learning in vocational Education should implement a project based learning (PjBL) in the class, because the instructor find the main characteristics, including; 1) the PjBL is centered on students and focused on the main competence in the design process of searching for solutions; 2) the PjBL help solve the problem; 3) the PjBL recognizes the capacity to do the job is important and needs to be taken seriously by putting at the core of the learning process; 4) the PjBL creates positive communication and collaborative relationships between teachers and pebelajar; 5) the PjBL includes the thinking skills of higher order or high order thinking skills.

With the PjBL, learners can develop an attitude (attitude), knowledge (knowledge), skills (skill), enlightenment (insight), behavior (behavior), habits (habits), and social (associations) of experiences and allow learning associated with the activity of the real work (real-life work activities). Model project-based learning can also enter values about the employability skill with the indicators include: skills adaptation, skills work together, the skills of working with equipment, learning skills, skills of critical thinking, the skills of career, leadership skills, project management skills, the skills of team management, time management skills, skills using IT, skills respect for diversity, skills of negotiation, decision-making skills, problem solving skills, and presentation skills.

3. Method

The method used in the writing of this paper in the form of literature review to make a critical analysis of research results related to the development of vocational education in Indonesia. Review of the literature used in the form of a reference framework of development of vocational education in Asean Countries compared with the condition of vocational education in Indonesia. Review of the literature done by giving the describe the relationship between one research to other research related to point of interest, identification with interpreting and looking for a gap/gaps. In addition, in the study of literature is also done by finding the similarities (compare), find the dissimilarity (contrast), give sight (criticize), compare (synthesize), and summarize.

4. Conclusion

The desire to enhance its graduate vocational Education in the 21st century have a tendency characterized by an increase in the complexity of technology and the emergence of the movement of the restructuring of corporative that emphasizes the combination of quality technology and humans, causing the world of work will require people who can take initiative, think critically, creatively, and capably solve the problem [14]. The relationship human-machine no longer is the relationship of mechanistic but it is a communicative interaction that demands high-level thinking skills.

According to Jean Piaget cited by [13], education includes all values, not privileging one value above another value. Based on the discussion and analysis of the development of the role of Unesa in *penyenggaraan* and increase *lualitas* graduates of vocational education in East Java in the era of *disrupsi* there are some efforts that can be undertaken, including;

- a) Unesa need to do a deep study in order of interest to continue studies in vocational education increased so that the interest of entering vocational education is high and the input is better.
- b) Unesa can provide examples in the implementation of the Curriculum KKNi (Indonesian National Qualifications Framework) it is time used to insert the content of the curriculum using the SKKNI (Standard kompetensi Kerja Nasional Indonesia) which regulates the vocational qualifications which determine the lifelong learning skills including learning skills and problem solving, interaction and cooperation, work ethics, aesthetics, communication and the competence of the media, and others. An example that can be given through the implementation of the PJBL when the teachers of vocational Education teaching Profession.
- c) the Introduction of a system of apprenticeship be one good way to develop education and vocational training. The implementation of the apprenticeship or dual system can adapt the model of vocational education in Germany. The need for co-ordination between the government of the province of East Java with the department of Education of East Java Province, related agencies including the Department of Industry, and the Department of Labor so that the internship can be done in *disergi* with the world of business and industry.
- d) Qualifications of teachers of vocational education in Indonesia should be able to adapt the system of recruitment of teachers of vocational education in Germany that have at least work experience in the relevant field with the field and master the pedagogical.
- e) in Addition to applying the PJBL, can also provide reinforcement of employability skills in the implementation of learning.

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