The relevance of airframe powerplant competencies in Bina Dhirgantara vocational high school with the aviation industry

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Abstract. The level of relevance of airframe powerplant expertise competencies with industry affects the opportunities for students to work in the industry according to their area of expertise. For this reason, it is important in this research to conduct research on the Relevance of Airframes Powerplant Competence of Vocational High School Bina Dirgantara with the aviation industry. The method used in this research uses descriptive qualitative case study research. The population in this study was the competence of students of class XII Airframe Powerplant expertise at the Bina Dirgantara Aviation Vocational School taken randomly. Based on data analysis, the results of this study show that: Competence of airframe and powerplant expertise in Vocational School Bina Dhirgantara Surakarta on average 65% of learning at Vocational School Bina Dirgantara is less relevant to the industrial world.

1. Introduction
Human resource development is influenced by the potential of vocational education [1]. Industry involvement is very much needed in improving the quality of graduates and can bridge the gap between the competencies produced by schools and the demands of the industry. Industry practice has not yet received maximum support from the industry [2]. Obtaining competence is very important for students to be equipped when returning to school and after graduating from Vocational School [3] [4]. The pattern of teaching conducted by supervisors or instructors in the industry is different from the pattern of instructors in schools [5]. With this teaching pattern, students can absorb the competencies taught learning patterns carried out in industry can improve the quality of vocational graduates and students can gain competencies in order to compete with other prospective workers [6]. For this reason, it is important for researchers to conduct research to find out the extent of Airframe Relevance and Powerplant Competence in Dirgantara Vocational School with Industrial World.

In accordance with Law Number 20 the Year 2013, Article 15 Vocational education in organizing education prioritizes preparing students to work in certain fields. The curriculum that was compiled was made to prepare students to be ready to work, with a study period of three to four years adjusted to the occupied competencies[7].

Competence is defined as knowledge, skills, and abilities that are controlled by someone who has become a part of himself so that they can perform cognitive, affective, and psychometric behaviours as
well as possible [8]. Jacob & Washington explain the level of human competence at work as shown in Table 1.

**Table 1. Level of human competence at work [9].**

| Category       | Description                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| The beginner   | Beginners literally, new people in a work situation. There are often some improvements but minimal for previous work. As a result, individuals lack the knowledge and skills to meet the requirements needed to do certain jobs |
| Specialist     | People who can be relied on to do specific jobs without supervision. But limited to routine work. Sometimes a trainer is needed at this level to help them have the right behaviour. |
| Experienced specialist | People who can do specific jobs and are able to do it many times. As a result, individuals can do their jobs skillfully and easily. This level will be traversed in some time |
| Expert         | People who have the knowledge and experience and often exceed the requirements needed to do certain jobs. Can use his ability to respond to routine and non-routine cases effectively and efficiently |
| Master         | People who are considered as experts among experts or truly experts among all workers. He is seen as an appraiser and sets standards for others |

Competence as a fundamental characteristic of someone who is reciprocal with an effective criterion and/or one's best ability at work or circumstance [10]. Besides competence is the mastery of a task, skills, attitudes, and appreciation needed to support success [8]. Individual abilities that reflect the knowledge, skills and personal characteristics needed to meet the needs in the world of work [11]. Worker competencies are divided into 3 parts namely Personal competencies, Technical / professional competencies and Intercultural competencies [12]. Workers' competencies are described as shown in Table 2.

**Table 2. Expected nature of workers [12].**

| Personal Competencies | Technical/professional competencies | Intercultural competencies (socio-cultural competencies) |
|-----------------------|-------------------------------------|----------------------------------------------------------|
| The ability to communicate effectively | Problem-solving | Ability to work with different cultures |
| Tolerance for confusion | Up to date knowledge of science | International work experience |
| Democratic leadership | Negotiating skills | Language ability |
|                       | Ability to think strategically/ability to plan | |

The competency profile is a picture of all important obligations and tasks related to the work given. Must contain competencies that are appropriate to the type of work. The rapid development of science and technology has an impact on the competencies needed by a job, therefore the need for an early study to identify and estimate future skills needs. With this study, a new competency profile can be produced which has a slight gap (gap) with the needs and development of science and technology.

In Minister of Education Regulation No. 23 of 2006 emphasizes that the competency standards of elementary and secondary education graduates are divided into the following sections; (1) Competency standards of education unit graduates; (2) Subject group competency standards; (3) Competency...
standards for graduating subjects. Whereas in Ministry of Education Regulation No. 54/2013 defining graduation standards with SMK qualifications is shown in Table 3.

**Table 3.** Competency Standards for Vocational high school Graduates [13].

| Dimension | Ability Qualifications                                                                 |
|-----------|----------------------------------------------------------------------------------------|
| Attitude  | Having a behaviour that reflects the attitude of the faithful, noble, knowledgeable, confident, and responsible in interacting effectively with the social and natural environment and in placing themselves as a reflection of the nation in world relations |
| Knowledge | Having factual, conceptual, procedural, and metacognitive knowledge in science, technology, art and culture with human, national, state, and civilization insights related to the causes and impacts of phenomena and events |
| The Skill | Having the ability to think and act effectively and creatively in the realm of abstract and concrete as the development of what is learned in school independently |

Curriculum is any form of activity or activities in the world of education that can influence students while in the school environment and things that have a function to deliver education on its purpose. Departing from the definition of relevance and curriculum, the relevance of the curriculum is the relationship or everything that has a relationship with all forms of activities or activities that exist in the world of education that can affect students and can realize educational goals.

In vocational professional education, practical learning such as the workplace is a representation of pedagogy. Experiences gained include clinical development and professional skills through observation, mentoring, mentoring, and supervision. Being an expert in their field requires specialist knowledge needed in their fields. A practitioner (professional practice) has applied specialist knowledge needed in professional practice. The profession is a job that organizes itself through systematic training and discipline required by having technological knowledge, prioritizing services compared to profits, and there is a code of ethics. The basis that must be mastered by an expert is usually empirical case study analysis on practical learning, learn the basic conditions that are often encountered; and includes research that has to do with practical needs. Before students are deployed to the workplace, schools must develop assignments that have been established in the development of instructional strategies and the expertise of an instructor at work. This strategy helps schools teach new skills. Then an instructor assigns assignments to develop work skills in students. The final process is the placement of students in the workplace based on the skills they have learned. Therefore, these skills will develop when students have experienced several experiences and situations that occur in the workplace. As shown in Figure 1.
Figure 1. Development of teaching patterns in schools so that they can be developed in the workplace.

2. Research methods
This type of research includes quantiative descriptive research with survey methods. The survey method is the collection of data at a particular time with the aim of describing the actual situation, or identifying existing standards compared to existing conditions, or determining the relationship between certain events. The measurement scale used in this study is a Likert Scale which consists of five question answer choices. The research instruments that have been prepared will then be tested. The purpose of testing the instrument is to find out whether the instrument has been able to capture the data needed in research. Descriptive research only explains, describes, and objectively describes the data obtained. The step of descriptive analysis begins with the search for mean, median, mode, interval, and categorization distribution.

3. Results and Discussion
The relevance level of the Airframe and Powerplant Skills Competency with the needs of the airline business world. The relevance of airframe and powerplant basic competencies in aircraft structure material, the results are less relevant in their application by students. This is possible for students lacking in understanding the material taught in learning. The relevance of the basic competencies of airframe and powerplant on aircraft electrical competencies, the results of students are less relevant in all materials in its application. This is possible for students lacking in understanding the material taught by the teacher.

The relevance of the basic competencies of airframe and powerplant on aircraft hardware aspects, the results of students are quite relevant in almost all materials in its application. This is possible for students to understand the material taught by the teacher. The relevance of the basic competencies of airframe and powerplant on the aircraft engine aspect results in students being less relevant in almost all material in its application. This is possible students are less able to understand the material being taught.

4. Conclusion
Based on research conducted on the relevance of the competency of airframe and powerplant expertise at the Vocational High School Bina Dhirgantara Aviation Surakarta with the needs of the airline industry, it can be concluded as follows: The level of relevance of airframe and powerplant competencies with the airline industry is still not relevant, as evidenced by the results of 69%, from the aspect of
aircraft engine competence shows that competency learning is less relevant to 66% results. So it can be concluded that the relevance of Airframe and Powerplant expertise is less relevant to the airline industry, as evidenced by the insignificant percentage obtained between students and the airline industry. The role of schools and industry especially teacher competence is needed to produce workers who are ready to enter the workforce.

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