

# The Effectiveness of Industrial Work Practice in Preparing the Capabilities of Students to Enter the Business, Industrial World (DUDI) and Industrial Revolution 4.0

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**Abstract—** Industrial Work Practice or Field Practice is a school project which combines systematically and synchronously between education programs implemented in the school and in companies through work experiences in the workplace to achieve a professional skill level. A problem which likely occurs in the implementation of the internship program is an incompatibility between the students' competencies and the workplace. Therefore, it cannot highly improve the students' competencies in accordance with their fields; the greater impact is that the students even feel unprepared for the workplace. To reduce those impacts, it is necessary to have a solution with regard to internal and external aspects. Overview of various aspects —curriculum synchronization, the role of instructors in the industry, the role of advisors in the school, the role of teachers in adaptive normative subject, professional skills, learning satisfaction, learning behavior, work readiness and capability of students— are expected to guide the students to be more ready to enter the workplace, especially in the industrial revolution era 4.0.

**Keywords:** *Industrial Work Practice; Vocational Competence; Capability; Industrial Revolution Era 4.0*

## I. INTRODUCTION

### A. Background

Industrial Work Practice is a school program which combines systematically and synchronously between education programs implemented in the school and in companies through work experiences in the workplace to achieve a professional skill level.

However, the reality of the work practice is not in line with the expectations and the initial objectives of the Industrial Work Practice program. The objectives cannot be thoroughly achieved due to some problems such as the incompatibility between the students' learning materials in the school and the real practice in the workplace. Other problems in meeting the objectives are limited numbers of both the place where the students will take the Industrial Work Practice program and the advisors at the workplace and at the school. Moreover, the failure occurs due to lack of training received by the students from both the school parties and the industry; although the training has been held by the school, the materials and the presentations, however, are still insufficient for this program. This can be proved by the students' understanding of what they have to accomplish in the

Business and Industrial World when they finally have to enter in it. In addition, another problem in this program is that the industrial parties have less socialization to explain what exact activities that the students will conduct.

The above conditions become the major obstacles to the implementation of the program. Many students are placed in companies that are not in accordance with the background of their majors, for instance in the marketing departments of PT Telkom, Indosat, the local government and many more. The problem in the program is not in the type of the companies that accommodate the students, but the positions that they receive. This might happen continuously because the initial submission done by the students is only the company where they are going to fulfill their Industrial Work Practice program. In fact, after being accepted by the company, the position provided by the company is not in line with the initial expectation.

The students' readiness to go directly to an industry can be another obstacle for this program due to a low level of the students' understanding of the work culture in the company. This can be seen by their unpreparedness and self-distrust which finally can affect them in learning dissatisfaction.

Learning satisfaction for the student is a feeling of pleasure in the subject, in accomplishing the material provided, and in getting the learning outcomes. Then, it can be achieved by having a good implementation of teaching and learning process in which it is an interaction between teachers and students.

The teaching and learning process is not solely dependent on the technique or method used, but clear explanation of the material can affect the success in the teaching and learning interactions. In this case, the teacher should be expert in the field, the learning methods, and the materials presented to the students. Finally, another aspect for the success in the teaching and learning process is the students' understanding. The feeling received by the students after the process might be either satisfied or unsatisfied.

This is in accordance with the statement of Vecchio in Wibowo (2007) that "job satisfaction as thoughts, feelings, and tendencies of one's actions, which is one's attitude toward work." Since satisfaction is one of the psychic elements, then the feelings felt by the students

can be seen from the symptoms arising in the students; if the student feels satisfied in following the Industrial Work Practice program in the industry, then, it is expected to give good results.

Husein Umar (2008) argues that satisfaction is a general attitude which is the result of some specific attitudes towards work factors, self-adjustment and individual social relations outside their work. The definition or understanding of satisfaction is a pleasant emotional attitude which makes individual love doing their job. This attitude is reflected by the moral in learning, discipline, and learning achievement.

Learning satisfaction is an individual subjectivity. Every individual has different levels of satisfaction depending on the value system that works on each individual. The higher the value of the activity, the more the satisfaction they get. In general, the learning satisfaction can be interpreted as a pleasant or unpleasant thing which can be seen from the students' point of view at the end of the lesson. According to Wibowo (2007), satisfaction will be successfully achieved if the individual needs can be fulfilled well, and vice versa.

Learning and teaching are two activities that cannot be separated from one another; learning is related to what someone should do as a subject who receives the lesson (student), while teaching is oriented to what a teacher should do as an instructor. Learning is a process of changing behaviors due to experiences and training including the changes of knowledge, skills, attitudes, and even all aspects of the organism and personal. According to Nasution (1982), almost all students are able to fully master certain subject matter with certain conditions. Learning outcomes are the basis to determine the level of students' success in understanding a subject matter. That success level can be measured through evaluation in order to assess the results achieved by the students in learning the material that has been taught.

Satisfaction is one of the psychic elements because a feeling is the main role in resulting the satisfaction. The satisfaction in learning is a general attitude towards one's learning outcomes, which shows the difference between the number of appreciations received by the students and the number they believe they should receive (Robbin in Wibowo, 2007). Furthermore, Gibson in Wibowo (2007), states that satisfaction of learning is an attitude that students have about their learning outcomes; it is the result of their perception towards the learning outcomes and the possibility of reciprocal relationships that show no specific direction or relationship between the learning satisfaction and the learning outcomes.

Students' evaluation of what they feel will be able to help them to shape their own actual feelings. Factors that influence the learning satisfaction of the students towards the learning outcomes are the teachers, Industrial Work Practice materials/ methods, media and learning tools that can improve the students' learning outcomes. The teacher's approach and giving motivation to the students will greatly affect the students' learning outcomes in the Industrial Work Practice program. The motivation given is in the form of enthusiasm to encourage the students to be better. By implementing a good approach and tools or media supporting the program, students will likely give

their opinions without any fear of being blamed or ridiculed.

The variables in this study consist of independent and dependent variables where the effectiveness of the Industrial Work Practice (X) is as the independent variable, while the instructor, the role of the teacher, synchronization of the curriculum, professional skills, the learning satisfaction, the learning behavior, and job readiness are as dependent variables. The data in this study are primary and secondary data in which the primary data is obtained directly from research respondents through questionnaires distributed to the students, while the secondary data is the value of the Industrial Work Practice.

## B. Problem of The Study

Based on the above background, the problems can be formulated as follows:

1. How is the implementation of the Industrial Work Practice seen from the industry side that cooperates with the school?
2. How is the role of the instructor in guiding the students during the implementation of the Industrial Work Practice?
3. How is the role of the supervising teacher in guiding the students before, during, and after the implementation of the Industrial Work Practice?
4. How is the synchronization of the existing curriculum in schools with the needs of the industry?
5. How is the influence of the Industrial Work Practice on the students' professional skills?
6. How is the students' learning satisfaction in the implementation of the Industrial Work Practice?
7. How is the students' learning behavior in the implementation of the Industrial Work Practice?
8. How is the students' work readiness in the implementation of the Industrial Work Practice?

## C. Significances of The Study

1. Describing, analyzing, and making a synthesis about the effectiveness of the Industrial Work Practice as an effort to prepare and improve the students' competences in entering the workplace.
2. As an input for related parties in order to improve the effectiveness of the implementation of the Industrial Work Practice, especially by synchronizing the curriculum and optimizing the involvement of teachers and advisors from the industry, to achieve the professional skills due to the learning satisfaction and learning behavior. Therefore, it is expected to be able to improve the skills of the students before entering the real workplace.

## II. LITERATURE REVIEW

### A. Industrial Work Practice

Industrial Work Practice is a school program which combines systematically and synchronously between education programs implemented in the school and in companies through work experiences in the workplace to achieve a professional skill level. Industrial Work Practice is also known as a Dual System Education or so-called PSG. The Dual System Education is implemented to meet the needs of a professional workforce in their field. Through Dual System Education, it is expected to

create a professional workforce where the students who carry out the education are expected to be able to apply the knowledge gained and to study deeply the industrial world at the same time.

The Industrial Work Practice program is a complementary subject that must be carried out by the students, especially vocational students. In this activity, the students are required to go directly into the Business and Industrial World (DUDI) to apply the knowledge obtained at school and get other knowledge only found in the industry. Thus, it is expected that students' abilities will be more complete and they are ready to enter the workplace after graduating from the Vocational High School.

Collaboration between Vocational High Schools and business/ industrial world or agencies is carried out in the principle of mutual assistance and complementarity for mutual benefits.

The purpose of education to provide professional skill for students is more guaranteed. There is a more appropriate fit between education programs and employment needs (in accordance with the Link and Match principle). Giving satisfaction for the implementation of the school education is vital because the graduates are more guaranteed to get useful provisions for the interests of the graduates, the work world, and the nation.

The learning outcomes of the participants in Industrial Practices will be more meaningful as they will truly have professional skill after graduating as a provision to improve their standard of living and as a provision for sustainable development.

Professional skills gained can elevate self-esteem and self-confidence, which in turn will encourage them to improve their professional skills at a higher level.

#### B. Legal Basis of The Industrial Work Practice

The legal basis for the implementation of the Industrial Work Practice are as follows:

1. UU No. 20 / 2003 about National Education System
2. PP No. 29 / 1990 about Secondary Schools
3. Kep. Menaker No. 285 / MEN / 1991 about Implementation of National Internship
4. PP No. 39 / 1992 about Community Role in the National Education
5. Decree of Mendikbud No. 0490 / U / 1992 about Vocational High School
6. Decree of Mendikbud No. 080 / U / 1993 about Vocational High School Curriculum has been changed into Vocational High School Curriculum 1999
7. Permendikbud No. 60 the Year of 2014 about Curriculum 2013 of Vocational High School/Vocational Aliyah Madrasah

#### C. The Purpose of The Industrial Work Practice

The implementation of the Industrial Work Practice aims to:

1. Produce workers who have professional skills including having the level of knowledge, skills and work ethos that are in line with the demands of the workplace.

2. Strengthen link and match relationships between the Vocational High School and the Industry.
3. Improve the efficiency of the education process and training of professional workers.
4. Give recognition and appreciation of work experiences as part of the education process.

#### D. Advisor Roles

There are two advisors --from the industry and the school-- for the industrial work practice in which each advisor has different tasks. The following is the more explanation.

##### 1. DU/DI and Agencies Advisors

DU/DI and Agencies advisors are employees given the task to prepare, direct, motivate, train, guide, and assess the participants of the industrial work practice in carrying out activities.

##### 2. Tasks of Industrial Advisor

Coordinating and collaborating with the Team Workers of the Industrial Work Practice in determining activities or skills that can be conducted by the students in the industry.

- a. Providing big support in the implementation of the Industrial Work Practice activities by providing facilities in accordance with the activities conducted by the students.
- b. Providing an explanation of the Industrial World about the following things:
  - 1) Nature and work ethos as a worker and the prevailing work rules and regulations.
  - 2) Work specification conducted
  - 3) Products/ services which have been produced
  - 4) Tools and media used
  - 5) Conducting systematic training and guidance based on the planned program and schedule.
  - 6) Assessing of the student activities, both concerning aspects of attitude and work skills in the industry.
  - 7) Encouraging the students to always be active and diligent and enthusiastic in participating in the Industrial Work Practice activities.
  - 8) Giving warnings or penalties to any students who break the rules based on the regulations applied in the industrial world.

##### 3. School Advisors

School advisors are the teachers given the task to prepare, direct, motivate, guide, and bridge between the students and the industry during the Industrial Work Practice activities.

##### 4. Tasks of School Advisors in the Industrial Work Practice:

- Coordinating and cooperating with the industrial advisors in determining the activities done by the students.
- a. Providing moral support during the Industrial Work Practice activities.
  - b. Getting information about the student development and difficulties faced by them as input for the school.
  - c. Having problems and finding solutions of the problem-solving.
  - d. Monitoring as an expectation for having good communication among the industry, the school, and practitioners.

III. FRAMEWORK

A framework of the article is shown as follows:

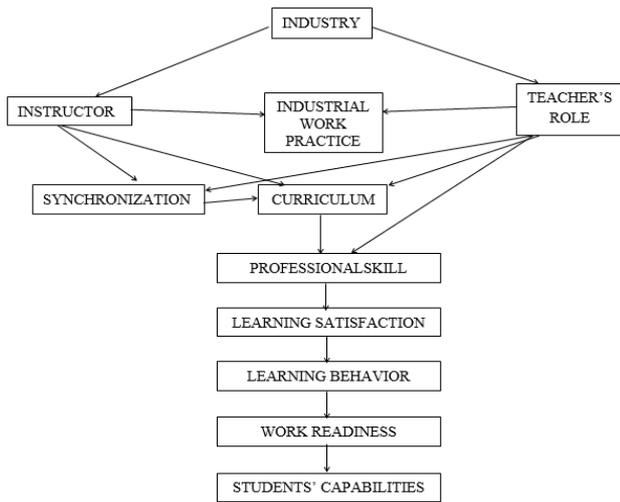
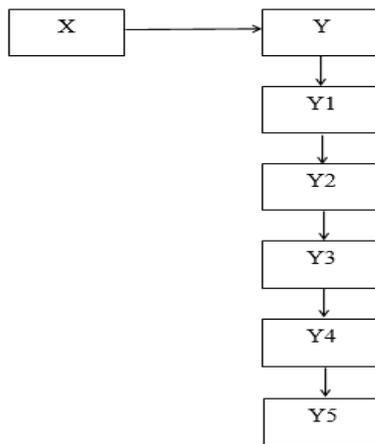


Figure 1. framework of the article

Based on the above framework, the research hypothesis can be formulated as follows:

The effectiveness of the Industrial Work Practice will be very influential on the readiness of the students' competencies in entering the Business and Industrial World (DUDI), especially seen from the roles of both industrial and school advisors, curriculum synchronization, professional skills, student learning satisfaction, student learning behavior, work readiness, and students' capabilities.



Information:

- X = the effectiveness of the Industrial Work Practice
- Y = work readiness
- Y1 = roles of both industrial and school advisors
- Y2 = curriculum synchronization
- Y3 = professional skill
- Y4 = learning satisfaction
- Y5 = learning behavior

IV. RESEARCH METHOD

In this research, the methodology consists of some stages:

A. Preliminary Research

At this stage, the researchers will determine the setting and the subject of the study by contacting the principal and the subject teachers at the school that will be used in the research. Then, the researchers will conduct other preparations, such as arranging the research schedule and procedures of collaboration with the class teachers.

B. Formative Evaluation

1. Self-Evaluation

a. Analysis

This stage is the first step of the research and development. The researchers will analyze the students, curriculum, and materials or instruments to be developed.

b. Design

In this stage, the researchers will design the instruments to be developed which include blueprint, objectives, and methods that will be developed. Then, the design results that have been obtained were validated by experts and peers, using existing validation techniques such as the data triangulation technique. The design results are called the first prototype.

2. Prototyping

The design results in the first prototype developed on the basis of self evaluation are given to experts (expert review) and students (one-to-one) in parallel. The results of the validation are then used as the revised materials. The revised results of the first prototype are called the second prototype.

a. Expert Review

In the expert review stage, the product that has been designed will be examined, assessed and evaluated by the experts. The experts will review the content, constructs, and language of each prototype. Suggestions from the experts are used to revise the developing instrument. At this stage, the responses and the suggestions from the validators about the design that have been made are written on the validation sheet as material for revising and stating whether this design has been valid or not.

b. One-to-one

In the one-to-one stage, the researchers have tested the design that has been developed for students/ teachers of the trial subjects. The results of this implementation are used to revise the design that has been made.

c. Small group

The revisions of the expert and the difficulties experienced when testing the first prototype are made as the basis for revising the prototype and called the second prototype. It is then tried out to the small group. The results of this implementation are used for revising before being tested at the field test stage. The results of question revisions based on students' suggestions/ comments on the small group and the results of the analysis of the items are called the third prototype.

C. Field Test

The suggestions and the results of the trial on the second prototype are used as a basis for revising the

second prototype design. The results of the revision will be tried out to the research subjects or so-called field test.

Products that have been tested on the field test should meet the quality criteria. Akker (1999) suggests that three quality criteria are validity, practicality, and effectiveness (having potential effects).

It is planned that this research and development model is to use a survey model for the teachers and the students.

#### 1. Procedures of the research and development

The research and development procedures follow the rules of scientific procedures listed in the PPKI book of Universitas Negeri Malang.

#### 2. Product Try-out

The result of this research and development in the form of a model will be tried out in vocational high school to know its result and impact.

##### a. Try-out Design

##### b. Try-out Subject

The subject of try-out in this research and development is students, a teacher in school and teacher in industry. Type of data used is primer and secondary data.

##### c. Data collection instrument covers the quantitative data, qualitative data, nominal data, ordinal data, interval data and ratio.

The types of research instruments are:

#### 1) Test

It is a measurement given to the individual to get the expected answers, both written and verbal answers. The result of this measurement is mostly used as quantitative data which normally use the measuring instrument so it can be processed by using a statistical technique.

#### 2) Interview

Interview is a very good data collection tool to know the opinion, response, motivation, belief as well as someone's projection of his or her future. Interview method is used if most of the data needed are inside the respondent's mind. Therefore, interviews are widely used in perceptual studies with a qualitative approach.

#### 3) Observation

Often used to measure the individual behavior or the process of occurring observable activities. According to Sutrisno Hadi, observation is an observation and recording activity using systematic phenomena being investigated.

#### 4) Questionnaire

It is an investigation of a problem that generally involves a lot of public interests (the crowd), carried out by distributing a list of questions (questionnaire) in written form to a number of subjects in order to get answers or written response as needed. (Kartini Kartono, Pengantar Metodologi Riset Sosial, pg. 200)

#### 5) Documentation

Documentation is a form of perpetuation, archives or enshrined relics. This documentation is used to get the data directly from the research sites or sources, such as relevant literature books,

magazines, activity reports, diaries, minutes of a meeting and several documents related to research.

#### 6) Measurement Scale

Scale is a tool to measure the attitudes, values, interests, passions, attention, motivations, which are arranged in the form of written statements to be assessed by respondents and the results are in the form of a range of numerical values based on the criteria made by the researchers.

From the above explanation, not all those research instruments will be used in this research and development proposal. The test will not be used because it is not aimed to test the ability of either teacher or students. Hence, the instruments will be used are interview, observation, questionnaire, documentation and measurement scale.

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