The Effects Of Industrial Working Practices And Student Competencies On Work Readiness Of Students In SMKN 1 Sedayu

Aryo Eko Saputro dan Sugiyono

Department of Mechanical Engineering Education, Faculty of Engineering, Yogyakarta State University, Indonesia

E-mail : aryoos@gmail.com

Abstract. This research aimed to analyze the effects of industrial working practices and student competencies on students’ work readiness. This research is a survey involving 72 respondents (grade 12 students). Data were collected using a questionnaire (Likert scale) and documentation techniques. The results suggest that the industrial working practices’ achievement is considered high (77.8%), students’ competencies are considered high (79.6%), and students’ work readiness also falls within high category (79.4%). Industrial working practices have positive and significant effects on students’ work readiness indicated by \( t > 4.396 > 1.667 \) with correlation of 0.465. Student competencies have positive and significant effects on students’ work readiness indicated by \( t > 2.262 > 1.667 \) with correlation of 0.261. Both industrial working practices and student competencies have positive and significant effects on students’ work readiness calculated by \( t = 9.911 > 3.130 \) with correlation of 0.471.

1. Introduction

The labor market is currently very competitive after ASEAN moved toward the economic integration and created Asean Economic Community (AEC) at the end of 2015. The ultimate purpose of AEC is to increase economic stability in the ASEAN region. AEC is expected to help the ASEAN members to overcome economic problems and prevent the recurrence of the 1997 financial crisis. AEC does not only open trade flows of goods and services but also the professional labor market. This is at the same time a threat to Indonesian workers because they have to compete with professional workers from abroad. Therefore, improving the quality of Indonesian workers must be conducted.

Improving the quality of Indonesia’s workforce is the most important thing in overcoming the fierce competition in the world of work. One of the educational bodies that plays an important role in creating professional workforce is Vocational High School (SMK). Professional workers must possess excellent work readiness, hard skills, and soft skills. According to Wibowo (2011: 324), work readiness is an ability that a person has to carry out a job or task based on skills and knowledge characterized by professionalism and attitudes demanded by the job. While according to Slameto (2010: 113), readiness is a response to a certain situation. The ability to adjust to any conditions will affect a person’s way in giving responses. This condition includes at least 3 aspects: 1) physical,
mental, and emotional conditions; 2) one’s own needs, motives, and goals; 3) other skills, knowledge and sciences. According to Hari Dini Nugraha, career guidance and industrial work practices had a positive and synergetic effect on work readiness (63.1%) and the rest 36.9% was influenced by other variables (Hari Dini Nugraha Day, 2017: 7).

Another study suggests that the higher the mechanical talent and learning achievement, the higher the readiness of students to work in the industry. (Aditya WahyuPradana, 2014: 7). Whereas the interviews and observations on students and teachers at SMK N 1 Sedayu show that most of the students were ready to work and only some of them felt that they were not ready. According to the teachers, those students had limited wielding skill. In general, most of the students were competent and ready to work.

It is necessary to carry out research on the effects of industrial working practices and students’ competencies on students’ work readiness. The participants of this study were grade XII students of wielding engineering program at SMKN 1 Sedayu. This research aimed to find out students’ work readiness, industrial working practices, students’ wielding skills, and the effects of industrial working practices and students’ competencies on the students’ work readiness.

2. Method
2.1 Research Design
This is a qualitative study based on the philosophy of postpositivism which is used to examine the condition of natural objects (Sugiyono, 2015: 15). This type of research uses a survey technique. Survey research is a form of research that is not limited to one or several variables. (Sukardi, 2003: 15). This study reveals data on events or respondents that have already taken place. A set of treatments or manipulation of the variables are then given.

2.2 Research Setting
This research was conducted at SMK N 1 Sedayu, located on Jl. Kemusuk, Argomulyo, Sedayu, Bantul. The research subject consisted of grade XII students of Wielding Study Program in the academic year 2017/2018. The study was conducted from January 25, 2018 to February 24, 2018.

2.3 Research Subject
The population in this study consisted of all grade XII students of Wielding Study Program of SMK N 1 Sedayu in the 2017/2018 academic year (89 students). The sample of the study was determined using the Krejcie-Morgan table with a 95% of confidence level and an error rate of 5%. The selected sample consisted of 72 respondents.

2.4 Procedure
2.5 Data, Instrument, data Collection Technique
The data in this study were in the form of scores from the respondents. Questionnaires about industrial work practices and work readiness were used. The 1 to 5 point Likert scale was used. A questionnaire is a method used to gather information from respondents consisting of a series of questions (or other types of prompts) for the purpose of gathering information from respondents.

2.6 Data Analysis Technique
The data analysis techniques in this study are descriptive analysis and inferential analysis. Descriptive analysis was conducted using Microsoft Excel 2013 and tested using one sample t-test. The inferential analysis is done using simple regression analysis, multiple regression analysis, and significance test (T and F test), and continued by looking for effective contributions to the relationship of each independent variable to work readiness.

3. Results And Discussion
3.1 Industrial Working Practices Variable
In the descriptive analysis, the 2013 Microsoft Excel was employed to process the data. The results show that the highest and lowest score on this variable are 104 and 64 respectively. The mean, median, and mode are 85.61, 86.5, and 91. The data processing also shows the standard deviation/SD (7.551), the class interval (7 class), the width of the class (6), and the class range (41). The results of industrial working practices are presented in Figure 2.

![Figure 2. Frequency Distribution of Industrial Working Practice Variable](image)

Figure 2. Frequency Distribution of Industrial Working Practice Variable

![Figure 3. Achievement Categories of Industrial Working Practices](image)

Figure 3. Achievement Categories of Industrial Working Practices

Figure 3 suggests that the achievement of industrial working practices (6164) falls within the “moderate to high” interval. Fortunately, it is closer to the “high” category than the moderate one.

3.2 Students’ Competency Variable
The data processing using the 2013 Microsoft Excel shows that the highest and lowest score on this variable are 89 and 67 respectively. The mean, median, and mode are 79.6, 80, and 78.
The data processing also shows the standard deviation/ SD (4.356), class interval (7), the width of the class (4) and the class range (23).

![Bar chart showing frequency distribution of students' competencies.](image)

**Figure 4.** Frequency Distribution of Students’ Competencies

Figure 4 shows that the highest frequency of this variable is within the 79-81 interval. The next step is finding the ideal score. The ideal score is the score set with the assumption that each respondent gives the highest score on each question. The ideal score was then compared with the real score.

The ideal score for students’ competencies is $4 \times 100 \times 72 : 4 = 7.200$ ($4 = \text{the total of wielding practices, } 100 = \text{the highest score, } 72 = \text{the number of respondents, and } 4 = \text{wielding practices}$). Thus, the achievement of industrial working practices is $5.732 : 7.200 = 0.796$ or 79.6% of the expected results. The following scale is used to categorize the achievement of students’ competencies.

![Achievement categories scale.](image)

**Figure 5.** Achievement Categories of Students’ Competencies

Figure 5 suggests that the achievement of industrial working practices (5.732) falls within the “moderate to high” interval. Fortunately, it is closer to the “high” category than the moderate one.

### 3.3 Work Readiness Variable

The data processing using the 2013 Microsoft Excel shows that the highest and lowest score on this variable are 113 and 74 respectively. The mean, median, and mode are 95.27, 96, and 96. The data processing also shows the standard deviation/ SD (8.5), class interval (7), the width of the class (6), and the class range (40).
Figure 6. Achievement Categories of Work Readiness

Figure 4 shows that the highest frequency of this variable is within the 86-91 and 92—97 intervals. The next step is finding the ideal score. The ideal score is the score set with the assumption that each respondent gives the highest score on each question (Ristian Wahyu Sadewa, 2018: 5).

The ideal score for students’ work readiness is $5 \times 24 \times 72 = 8.640$. The real score of this variable is 6.860. Thus, the achievement of students’ work readiness is $6.860 : 8.640 = 0.794$ or 79.4% of the expected results. The following scale is used to categorize the achievement of students’ work readiness.

![Achievement Categories of Work Readiness](image)

Figure 7. Achievement Categories of Work Readiness

Figure 7 suggests that the achievement of work readiness (6860) falls within the “moderate to high” interval. Fortunately, it is closer to the “high” category than the moderate one.

3.4 The Effects of Industrial Working Practices on Students’ Work Readiness

The research results show that industrial working practices have positive and significant effects on students’ work readiness. According to the sample data ($N=72$), the correlation value between industrial work practices and work readiness is 0.465. This value shows that industrial working practices have positive effects and fall within “moderate” category. The table below shows the Correlation Coefficient (0.40-0.599).

| Coefficient Interval | Category     |
|----------------------|--------------|
| 0.00 – 0.199         | Very low     |
| 0.20 – 0.399         | low          |
| 0.40 – 0.599         | Moderate     |
| 0.60 – 0.799         | High         |
| 0.80 – 1.000         | Very high    |

The coefficient of determination is the square of the correlation coefficient ($r^2$). The coefficient of determination between $X$ and $Y$ is 0.216. This shows that industrial working practice variable affects students’ work readiness by 21.6%, and the rest 78.4% is influenced by other variables.

The t-test was used to examine the significance. Based on the t test, the $t_{count}$ is 4.396 which is greater than 1.667 ($4.396 > 1.667$) at the significance level of 5% or $p (<0.05)$. Thus, it can be concluded that there is positive and significant effects of industrial work practices on students’ work readiness.

A simple regression equation (with one predictor) was then administered. Based on the calculation, the $a$ and $b$ values are 50.374 and 0.524 respectively. The regression equation was used to predict students’ work readiness based on industrial work practices ($Y = 50.374 + 0.524 X$). This means that if the achievement of industrial work practices is increased to 110, the work readiness value will be 108.014.
3.5 The Effects of Students’ Competencies on Students’ Work Readiness

The research results suggest that students’ competencies have positive and significant effects on students’ work readiness. There is a positive correlation between students’ competencies and work readiness (0.261) although this correlation is in low category. The low category falls within the 0.20 - 0.399 interval for the correlation coefficient. The coefficient of determination is the square of the correlation coefficient ($r^2$). The coefficient of determination ($r^2$) between $X_2$ and $Y$ is 0.068. This shows that industrial working practice variable affects students’ work readiness by 6.8%, and the rest 93.2% is influenced by other variables.

The $t$-test was used to examine the significance. Based on the $t$ test, the $t_{count}$ is 42.261 which is greater than $t_{table}=1.667$ (4.396 > 1.667) at the significance level of 5% or $p (<0.05)$. Thus, it can be concluded that there is positive and significant effects of students’ competencies on students’ work readiness. A simple regression equation (with one predictor) was then administered. Based on the calculation, the $a$ and $b$ values are 54.750 and 0.509 respectively. The regression equation was used to predict students’ work readiness based on industrial work practices ($Y' = 50.374 + 0.524 X$). This means that if the achievement of industrial work practices is increased to 100, the work readiness value will be 105.65.

3.6 The Effects of Industrial Working Practices and Students’ Competencies on Students’ Work Readiness

The research results suggest that industrial working practices and students’ competencies have positive and significant effects on students’ work readiness. There is a positive correlation between these two variables and work readiness which falls within moderate category. This correlation is higher than that of each variable. The moderate category falls within the 0.40 - 0.599 interval for the correlation coefficient.

The $F$-test was used to examine the significance. Based on the $F$-test, the $F_{count}$ is 9.911 which is higher than $F_{table}$ 3.130 at the significance level of 5% or $p (<0.05)$. Thus, it can be concluded that there is positive and significant effects of industrial work practices on students’ work readiness. When $F_{count}$ is greater than $F_{table}$, the multiple correlation coefficients are considered significant, i.e. can be applied to the entire population.

Based on the calculation, $F_{count}$ is greater than $F_{table}$ (9.911 > 3.130). Therefore, the multiple correlations are significant. The multiple regressions are then conducted.

The calculation resulted in $a$ (40.461), $b_1$ (0.485), and $b_2$ (0.167). The regression equation $Y' = 40.461 + 0.485 + 0.167$ was used. This means that if industrial work practices and students’ competencies are optimized (the work readiness will be $Y' = 115.361$). This effect is supported by relative and effective contributions from both variables.

| No. | Variables                      | Effective Contribution % |
|-----|--------------------------------|--------------------------|
| 1   | Industrial working practices   | 16.8%                    |
| 2   | Students’ competencies         | 5.4%                     |
| **Total** |                                | **22.2%**               |

Table 2 shows that the relative and effective contributions of industrial working practices make up for 75.2% and 16.8 % respectively. The relative and effective contributions of students’ competencies
account for 24.8% and 5.4% respectively. The totals of effective and relative contributions from both variables to work readiness are 22.2% and 77.8%.

4. Conclusions and Suggestion
4.1 Conclusions
The research results suggest that the students’ achievement in industrial working practices, students’ competencies, and students’ work readiness are all within “high” category. Furthermore, industrial work practices have positive and significant effects on students’ work readiness. Students’ competencies also have positive and significant effects on students’ work readiness although they are in the low category. The combination of the two variables has positive and significant effects on students’ work readiness. In conclusion, grade XII students of Wielding Engineering Study Program are considered ready to compete in the world of work.

4.2 Suggestion
Several suggestions can be offered based on the research results. The research results suggest that the students’ achievement in industrial working practices, students’ competencies, and students’ work readiness are all within “high” category. Thus, it is crucial for schools to maintain and optimize these variables.

This research provides information that the contributions of industrial work practice and student competency variables for work readiness account for 22.2% and 77.8%. The contributions have not yet reached 100%. Thus, there are other factors that have not been examined influencing students’ work readiness.

5. References
[1] Djojonegoro, Wardiman 1998 Pendidikan dan pelatihan kejuruan dalam era kompetensi global Jakarta PT Jayakarta Agung Offset
[2] Dwi Sapitri Iriani, Soeharto 2015 Evaluasi pelaksanaan praktik kerja industry isiswa kompetensi keahlian jasa boga SMK N 3 Purworejo Jurnal pendidikan dan teknologi kejuruan 22 (3), pp. 5
[3] Nugraha, Hari Dini 2017 Pengaruh bimbingan karir dan praktik kerja industry terhadap kesiapan kerja siswa teknik pemesinan SMK N 2 Pengasih Jurnal Pendidikan Teknik Mesin. 5 (1). Pp. 7-8
[4] Pradana, Aditya Wahyu (2014). Kesiapan kerja siswa teknik pemesinan ditinjau dari bakat mekanik dan prestasi belajar. Jurnal Pendidikan Teknik Mesin. 2 (3), 7-9
[5] Rukey, Achmad S 2003 Sistem manajemen kinerja Jakarta Gramedia Pustaka Utama
[6] Slameto 2010 Belajar dan faktor-faktor yang Mempengaruhi Jakarta Rineka Cipta
[7] Sugiyono 2015 Metode Penelitian Pendidikan (pendekatan kuantitatif, kualitatif dan R&D). Bandung :Alfabeta
[8] Sukardi 2003 Metodologi Penelitian Pendidikan Jakarta Bumi Aksara
[9] Wibowo 2011 Manajemen Kinerja Jakarta PT. Raja Grafindo Persada