

**INDUSTRIAL WORKER CHARACTER DEVELOPMENT IN THE
TEACHING AND LEARNING PROCESS OF VOCATIONAL
SCHOOL STUDENTS**

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Abstract

The goal of this study is to examine how the Vocational High School of Machine Engineering Department teaches and learns about industry-based work character. An explanatory sequential mixed approach and the Countenance Stake assessment method are used in this case study. Input, process, and outcome make up the three parts of the Countenance Stake assessment method. According to result of average antecedent, transaction data, as well as response of students, the teaching and learning process in vocational schools was excellent at developing work character. Meanwhile, student professional character can also be shaped by external as well as internal factors such as their religious convictions, their commitment to truthfulness, their sense of responsibility, their ability to think creatively and innovatively, as well as their work ethic, passion, and respect for their coworkers.

Keywords: *Character Development, Industrial Work, Teaching and Learning Process*

1. INTRODUCTION

A workforce with incomplete skills in their sectors continues to be defined as one that includes vocational graduates at all levels, including the local, national, and international levels of government. In other words, the skill they mastered does not meet the standards anticipated by the world of work. The lack of professional management of vocational schools, both in terms of the management system and the learning process, as well as the lack of completeness of its facilities and practical infrastructure, are among the factors that contribute to the lack of mastery of student competency. Because of this, it will almost likely have a negative impact on the graduates it produces.

According to BPS, Open Unemployment Rate or TPT in Indonesia remained above 5% in February 2019 (BPS, 2019). The percentage remains very high because it has not exceeded the objective set forth in the National Medium-Term Development Plan (RPJMN) 2015–2019, which states that TPT in Indonesia should be between 4% and 5% in 2019. In the last five years, vocational high school graduates (SMK) have been the leading contributors to TPT in Indonesia. That is why, Wibowo (2016) thinks that it is critical for vocation school to stay up with market demands as one of its most essential role-holders in workforce preparation. Those who graduate from vocational high schools are expected to be proficient in both hard and soft skill.

According to Mutaqin et al. (2015) also explained that the unemployment of vocational graduates is caused by an imbalance between the number of vocational graduates and industrial absorption. Moreover, according to the data from Kemendikbud that the number of vocational school graduates in Indonesia from 2016 to 2020 continues to increase. The number of vocational school graduates in 2016 was 4.222 students, while in 2020 was 6.298. This can increase the number of unemployed vocation graduates if the available jobs cannot keep pace with the number of vocational graduates.

Furthermore, the industry often complained that many vocation graduates did not have the skills required by the industry (Hanafi, 2012). It is therefore expected that graduates from vocational schools have an appropriate combination of academic talents, technical competencies and employability skills (Widiaty, 2017). The ability to maintain one's employment in a changing environment is referred to as employability skills. Employability skills are skills, knowledge, and competencies that will improve the ability of workers to maintain their jobs in a changing environment at any time. Students' soft skills help them to be more employable after graduation (Amalia & Nugrahadi, 2021). Besides that, character of industrial work also play critical role in the soft skills of vocation graduates is the character of industrial work.

So far, vocational students get a lot of knowledge and abilities but receive little instruction about the character of work, thus the vocational high school graduates' shortcoming in filling job openings is in terms of work character. Currently, the learning process at SMK is unable to prepare students for the expected working character of the workplace. As a result, learners' working personalities are less in line with the desirable work personalities of the labor market.

The Vocational High School (SMK) is a type of vocational secondary education in Indonesia, and it is one of several options. These learners will be educated and prepared for the workplace by this vocational education institution. They will then be able to enter and advance in their chosen careers. Vocational school is an educational institution that places a strong emphasis on the learning process in an effort to equip students with the knowledge, skills, and attitudes necessary to maintain their livelihoods in the world of labor. Rather of producing human beings who are burdens on their families, communities, and society, vocational education attempts to generate productive human beings who are employed. Work is an act of expressing one's individuality.

Students are not only taught hard skills in Vocational schools, but they are also expected to have soft skills in both practice and theory in order to work successfully and with quality. In theory and practice learning, as well as in classes and workshops, one application of soft skills is to include the character of work into the learning process. The work system studied is "*kaizen*" which includes 5R (Concise, Clean, Treat, Neat and Diligent) (Soesilo, 2017). The 5R concept is an effective method in creating an ideal work environment and has a major impact on the quality and productivity of an industry.

Students that learn in workshops and classrooms at a high risk of sustaining work-related injuries, and preventing work-related injuries is a vital component of adopting Occupational Health and Safety (hereinafter referred to as K3) (Pawit M, 2012). Furthermore, implementing K3 is one of the initiatives to make workplaces safe, healthy, and free of pollution, therefore reducing or eliminating work accidents and occupational diseases and so increasing efficiency and productivity (Ismara & Prianto, 2017).

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In accordance with the mission of Vocational High School (SMK), which is to create graduates who are ready to work in the industrial world, the learning process in classrooms and workshops needs to pay attention to K3 aspect. A neat and clean work environment can reduce the potential for such accidents to occur, such as reducing the difficulty in finding the datasheet of a tool, injury due to tripping or even electrocution if the socket is damaged. This incident can occur because there is no element of neatness in the workshop or classroom. On the other hand, Ismara & Prianto (2017) highlight that when viewed from the ergonomics aspect, potential hazards result from incompatibility of work environment design with workers, for example: work attitude (sitting position), tool size, place design (equipment location position, space design), work system, working method.

One way to minimize this occurrence is to incorporate the 5R and K3 principles into the character of student work. By observing the nature of work, the student develops an underlying work culture that will be employed in the future when working in an industry. To prepare students for employment in the industrial world, it is vital to instill habits in the completion of learning tasks and the implementation of work culture both in theory and in workshops. Hence, the researcher seeks to analyze the character development of industry-based work in the Vocational School of machine engineering expertise program's teaching and learning process

2. RESEARCH METHOD

This research is a case study research with mixed methods method *explanatory sequential* and carried out with the Countenance Stake evaluation model (Puspayanti, 2018). There are 3 stages in the Countenance Stake evaluation model, namely inputs (antecedents), processes (transactions) and outcomes. Antecedents stage in this study are facilities and infrastructure, productive learning processes and work readiness. Transaction stages in this research are student performance and teacher performance in subjects. While outcomes in this study are knowledge obtained after students graduate and are ready to work in industry. The subject of this research is the Vocational High School of machine expertise program in East Java. As a source of data (respondents) in this study were students of both 10th grade and 11th grade of the Machine Engineering Department. The sample was selected using a purposive sampling technique. Data collection techniques in this study were questionnaires, interviews and observations. Before the instruments contained in the questionnaire sheets, interview sheets and observation sheets were given to students, the instruments were first tested for instrument validation with construct validity based on the consideration of two lecturers through expert judgment (Mach et al., 2017).

3. RESULT AND DISCUSSION

3.1. Antecedents Stage

From the result of antecedents stage, the development of work character in teaching and learning activities is outstanding with an average value of 63.04 and a maximum ideal value of 81. The assertion of employing personal protection equipment while practicing had the lowest score of 112 students out of 273. So far, students have not used personal protective equipment such as safety glasses and gloves when drilling or dissolving PCBs. This suggests that teachers must arrange personal protection equipment for students to avoid work-related

mishaps. PPE includes headwear, masks, goggles, gloves, safety shoes, and work clothing or pack. Although character values are stated in curriculums and syllabi, some teachers still do not employ personal protective equipment (PPE). This revealed that teachers do not teach safety. Working safely is essential in the business and industrial worlds. Working safely reduces the risk of job-related injuries and makes labor more efficient. The statement of the productive subject instructor offering theoretical learning before doing has the greatest antecedent score of 378. That is, the teacher taught according to the previously created teaching materials. The teacher delivers theoretical instruction before practice to help pupils better grasp the content.

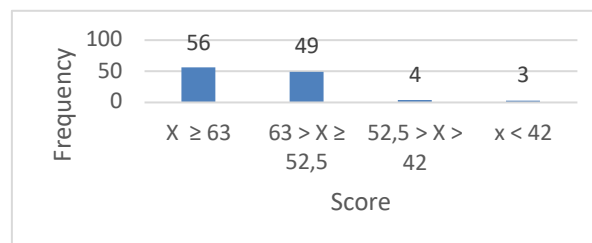


Figure 1 Antecedents Data Results

According to Figure 1, 3 respondents were in the low category, 4 respondents were in the less good category, 49 respondents were in the good category, and 56 respondents were in the excellent category. Overall, work character development at the antecedents' stage is excellent, with a proportion of 75.05 percent.

Table 1 Antecedents Stage NPK Value

Number of Respondents	Number of Statements	Total Score	NPK	Percentage (%)	Description
112	21	7061	63.04	75.05	Excellent

According to interviews with the chairman of the Machine Engineering Department at four vocational schools in two provinces, the practice room and theory room were relatively attractive and suitable for use during the antecedents stage, but the practice room was quite small. Correspondingly, as per Standard operating procedures and K3, the practice area and theory room are highly safe, comfortable, and tidy. Practical equipment, as well as K3, has been adopted in response to demand and technological improvements. Likewise, the work character has been infused with the curriculum, teaching materials, and syllabus.

Based on teacher observations during the learning experience, it is clear that the character building component of work was successfully completed. The instructor is responsible for learning administration, which includes teaching materials and syllabi. Teaching materials and syllabuses feature character qualities that students will use throughout the learning process. However, in fact, some instructors still fail to demonstrate to students the proper use of wearpacks and safety footwear during practical sessions.

According to the description provided, while the process of developing work character has been successful, there is still something that needs to be considered following that

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regarding the use of personal protective equipment such as safety boots and wearpacks to help make sure that students become adapted to protecting themselves while performing well at school and later in the workplace, as well as to implementing the 5R concept.

3.2. Transaction Stage

The development of work character in teaching and learning activities is excellent, according to the transaction stage study questionnaire, with an average value of 44.05 and a maximum ideal value of 56. The statement that students do not cheat on a friend's work has the lowest score of 112 students out of 296. That is, students commonly plagiarize their classmates' work, including reports on practical results. This shows how low the soft skill of relying on others at work is. The highest score in the transaction aspect is 391, given by teachers of productive disciplines assessing students' practical activity. Therefore, productive teachers always deliver planned assessments that match the teaching material (RPP).

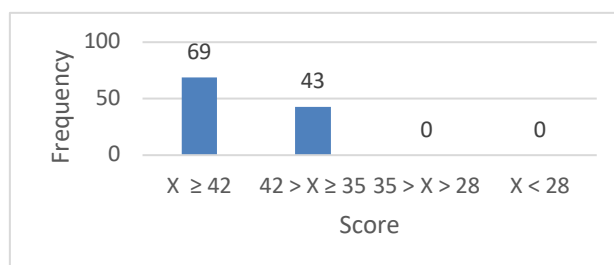


Figure 2 Transaction Data Results

According to Figure 2, none of the 112 respondents fell into the low or less good categories, while 43 fell into the good group and 69 fell into the excellent category. In general, the development of work character is excellent at the transaction stage, with a proportion of 78.67 percent.

Table 3 Transaction Stage NPK Value

Number of Respondents	Number of Statements	Total Score	NPK	Percentage (%)	Description
112	14	4934	44.05	78.67	Excellent

According to interviews with the chairman of Machine Engineering Departments from four vocational schools and two provinces, the character development work that has been done so far involves learning. Moreover, students are accepted at school or during the student orientation period (MOS) where the school engages the police, Indonesian Army, and health professionals to guide pupils. Students with work character traits such as orderliness, responsibility, cooperation, discipline, respect for instructors and friends, religious, tolerance, hard work, initiative, honesty, and others are stated in the teaching material attitude value (RPP). Therefore, any late students will be reprimanded and suspended during the Monday ceremony. At SMKN 2 Singosari, pupils who are late or disrespectful during the ceremony are punished from running all around field three times, or cleaning the school for 15 minutes. Character building is also applied at 4 schools through

community work or social assistance to orphanages, and annual iftars. Student personality attributes such as honesty, discipline, cooperation, initiative, and responsibility are included in Field Industrial Practice (PI) exercises. The implementation of this work character development is made possible by internal and external variables. Family (lack of attention to family facilities, home away from school, parental motivation), school environment (regulations regarding laying plates or glasses after use), facilities and infrastructure (lack of lab sheet or jobsheet when practicing, inadequate equipment for the number of students), teacher and student factors are some of these (teachers do not motivate students). Honesty, time discipline, responsibility, passion, and mutual respect are internal variables that influence work character development.

The character building of work has been carried out from the opening activities to the closing activities, based on the outcomes of teacher observations during the learning process. The teacher instills character building from activities or events that occur around him in the beginning activity. Religious character building begins in SMK, namely SMK N 4 East Java, with students reading the letters of Al-Fatihah and Asmaul Husna from beginning to end. When students and teachers pray together in the school mosque, religious character is applied in four vocational schools when praying is done on time, while learning there is a call to prayer for sure learning is stopped, and when there is a call to prayer while learning there is a call to prayer for sure learning is stopped. The teacher also displays the practical tools, but does not include the K3 since when conducting practical lessons, the teacher does not utilize wearpacks or safety footwear. Character development based on discipline and punctuality is not practiced at SMK N 8 Malang. Students arrive half an hour after the session begins, despite the fact that the teacher has arrived on time and is waiting for them, and there are no consequences in learning when students are not disciplined or on schedule.

According to the description given, vocational students' development of work character has been ingrained since they entered the vocational school or during the Student Orientation Period (MOS). When students or teachers do not even show up on time for class, tough restrictions and penalties must be enforced.

3.3. Outcomes Stage

A mean score of 29.33 and a maximum ideal score of 36 gleaned from survey data collected from four vocational schools in two provinces indicate that the results fall into the "excellent" category. From statements, it can be seen that the lowest score came from students who formed new enterprises in order to open positions in the area of Machine Engineering with a score of 112 students out of 322. As a result, students are unsure of their talents in the field of Machine Engineering, necessitating further character-building and post-secondary life counseling.

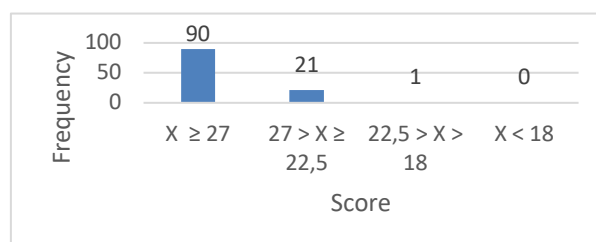


Figure 3 Outcomes Data Results

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According to figure above, among the 112 responses, there was only one person in the "less good" group, 21 in the "good" category, and 90 in the "excellent" category. With an 81.47 percent success rate, the overall growth of work character is excellent.

Table 4 Value of NPK Outcomes Stage

Number of Respondents	Number of Statements	Total Score	NPK (%)	Percentage	Description
112	9	3285	29.33	81.47	Excelent

According to interviews with the chairman of the Machine Engineering Department from four vocational schools and two provinces, students exhibited sufficient work qualities and good discipline for the outcomes stage. As a consequence, three of the four institutions have their own particular job fair and have cooperated with various firms to conduct out internship opportunities (PI) or recruit students in these fields. Many alumni from the Machine Engineering Department are working, but just a few are doing so in line with their majors, as seen by the proportion of graduates.

Moreover, observations made by teachers throughout the course of the lesson reveal that pupils have demonstrated a range of work traits such as religiousness, cooperation, honesty, hard effort, discipline, and responsibility in both theory and practice. Programmatic evaluations, such as the presentation of discussion outcomes, practice reports, evaluation of practical learning, and much more, are held during the course of learning.

Based on the description given, it can be stated that pupils already possess work traits ranging from religious, disciplined, accountable, honest, diligent, timely, and collaborative. Because of this, students will be more prepared for the workplace once they graduate and begin their careers in company or industry. Machine engineering students choose to work rather than start their own enterprises in order to create jobs.

Furthermore, there was also factors that influence the character building of industry-based work include:

A. External Factors:

1. Family Factor

Developing work character begins in the family context, where the student learns from his or her parents and siblings for the first time. A student's ability to study is hindered by a variety of factors including poor family resources such as a lack of parental involvement, a lack of parental motivation, and a lack of parental financial support.

2. School Environmental Factors

The atmosphere of the school canteen has a significant impact on the development of work character in students. In a daily task, pupils who are used to eating and drinking in the canteen and then putting their plates and cups in the shelves supplied will be more organized and conscientious.

3. Factors of Facilities and Infrastructure

When students practice without a labsheet or worksheet, this becomes a factor that impairs their preparedness to learn. Before beginning the practice, the teacher

should create a lab sheet or jobsheet to ensure that pupils are not confused. Additionally, personal safety equipment should be worn.

4. Factors of Teachers and Students themselves

The teacher does not set an example for students in the use of personal protective equipment such as wear packs and safety shoes when they are learning. Students are indirectly taught not to work safely by the teacher. Furthermore, pupils are unaware of the significance of character in their own lives. As a result, there are still those who ignore time management.

B. Internal factors:

Internal variables that affect the development of work character include religious beliefs, honesty, time management, responsibility, being creative and innovative, being tough and hardworking, being enthusiastic, and having a positive attitude toward one another.

4. CONCLUSION

To sum up everything that has been stated so far: (1) The development of work character in the teaching and learning process of Vocational high schools in Machine Engineering department is in the excellent category. The excellent category was proven by the antecedent data which show that the average value of 63,04, while the transaction data, show that the average value of 44,05, and the outcome data, show that the average value of 29,33. Furthermore, supporting factor in development of work character include religious convictions, their commitment to truthfulness, their sense of responsibility, their ability to think creatively and innovatively, as well as their work ethic, passion, and respect for their coworkers

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