Automotive Vehicle Service Training for Competence Improvement at Muhammadiyah Karangkobar Vocational School

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Abstract. Vocational High School (SMK) is a school that targets the formation of character and skills for its graduates. The learning system in Vocational High Schools that includes practical material makes Vocational High School graduates ready to use and able to work and even create jobs. Thus, Vocational High School graduates are targeted to be able to contribute to the local economy. Very contradictory conditions were found at the Muhammadiyah Karangkobar Vocational School, that was still overwhelmed with the problem of limited learning support practice equipment. This condition is, of course, not very good considering that the output of Vocational School students is skills that should be acquired through a structured and systematic practicum process. The solutions to these problems are, firstly, providing supporting equipment technology grants in practice, especially periodic maintenance of light automotive vehicles, and providing training to teachers and students of the Muhammadiyah Karangkobar Vocational School on periodic maintenance and light vehicle tune-ups. The implementation of periodic service skills training and light vehicle tune-ups for teachers and students of Muhammadiyah Karangkobar Vocational School had a significant impact on students’ knowledge and skills which in the short term can support them in facing the national vocational competency exam, and later it is hoped that it could be useful for graduates while living in the middle of society

Keywords: competencies; skills; vehicle service

1 Introduction

Vocational High School (SMK) is a school that targets the formation of character and skills for its graduates. The learning system in Vocational High School that includes practical materials makes its graduates ready to use and able to work and even create jobs. Therefore, its graduates are targeted to be able to contribute to the local economy. Very contradictory conditions were found at the Muhammadiyah Karangkobar Vocational School, Banjarnegara. Muhammadiyah Karangkobar Vocational School was still overwhelmed with the problem of limited learning support practice equipment. So far, the practical teaching and learning process had only been carried out by watching videos due to the limited equipment and practical simulators available. Occasionally, teaching and learning process practices used the private vehicles of students/teachers who were willing to use their vehicles as practice media. Of course, this condition is still not optimal because the work done tends to be light work

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which does not adequately represent the materials for the department. This condition is definitely not very good considering that the output of Vocational High School students is skills that should be acquired by a structured and systematic practicum process [1], [2].

Muhammadiyah Karangkobar Vocational School is a newly founded Muhammadiyah School in Banjar Negara Regency, so it is still trying to always improve its quality to be on par with other vocational schools. The total number of students at Muhammadiyah Karangkobar Vocational School consisted of 50 students covering students of class X and class XI. In addition, for the number of productive teachers available, there were currently only 5 teachers. This school's infrastructure was not ideal, because until now it only has 4 classrooms. The implementation of education at Muhammadiyah Karangkobar Vocational School was still far from what was expected, which was caused by many factors, such as limited educational facilities and infrastructure, student factors, and external factors, where the demands for student competence are high as a result of the development of science and technology [3], [4]. In Automotive Vehicle Engineering expertise, competency demands for Vocational School students are always tested nationally through the expertise competency examination. Students have a lot of work to do, such as servicing vehicles and vehicle tune-ups. In addition, with the increasingly widespread global competition, the competencies mastered must comply with the standards set by the relevant institutions. Thus, someone competence is proven by having a competency certificate.

Figure 1. Muhammadiyah Karangkobar Vocational School

Muhammadiyah Karangkobar Vocational School had several obstacles/problems in carrying out its functions to equip students with competency skills through national and international level certification, preparing graduates to be ready to work and entrepreneurs with competitive power and advantage. The first problem faced by Muhammadiyah Karangkobar Vocational School was the limited practice equipment to support learning. So far, the practical teaching and learning process had only been carried out by watching videos due to the limited equipment and practical simulators available in schools. Occasionally, teaching and learning process practices used the private vehicles of students/teachers who were willing to use their vehicles as practice media. The second problem was the lack of access to competency training that has selling points in the industry, so it would be difficult for teachers and students to update their abilities according to the needs and standards of the industry. As a result, the ability of students in their field of work was not as expected. Though these skills are needed to equip their lives for the future. In fact, students still did not understand the basic automotive skills that have a high frequency of work such as doing tune-up engine work. It is against this background that light vehicle tune-up skills training is needed for teachers and students related to the field they are studying, namely Automotive Vehicle Engineering [5], [6].
2 Methodology

The solutions offered through the Yogyakarta Muhammadiyah University community service program are:
1. Providing assistance in the form of supporting equipment technology for the implementation of the teaching and learning process, periodic maintenance/service practices, and light vehicle tune-ups at Muhammadiyah Karangkobar Vocational School
2. Providing assistance in the form of practice modules and job sheets for light vehicle tune-up practices as structured learning materials at the Karangkobar Muhammadiyah Vocational School
3. Providing periodic service skills training and light vehicle tune-ups for the teachers and students of Muhammadiyah Karangkobar Vocational School, which in the short term can support students in facing the national vocational competency exam, and later it is hoped that it could be useful for graduates while living in a society.

3 Results and discussions

The implementation of this service program began by coordinating with the Karangkobar Muhammadiyah Vocational School Manager. This program aimed to gather information about the needs and problems faced by Karangkobar Muhammadiyah Vocational School and conveyed the aims and objectives of implementing this community service program. Then, it was followed by identifying the problems faced by Karangkobar Muhammadiyah Vocational School. In this case, the Muhammadiyah Karangkobar Vocational School teacher as a community service program partner participated in providing information and statements about the needs and problems faced by the Muhammadiyah Karangkobar Vocational School and students. After the identification of the problem had been completed, coordination was then carried out regarding the schedule for implementing community service activities [7].

The next stage was the preparation of practical equipment to be donated to Muhammadiyah Karangkobar Vocational School for facilities and media for light vehicle tune-ups. In preparing the equipment and practical media, the service program members were tasked with determining the technical specifications regarding the tools to be brought, and the specifications of the tools needed to suit the needs of students. Then, checking the practical equipment was assisted by student members as their duties in this service program.

![Figure 2. Handover of workshop tools](image-url)
The next stage was the implementation of periodic service training and practice and tune-ups for students and teachers of Karangkobar Muhammadiyah Vocational School which were carried out by the chairperson and collaborating lecturers in this service program. Some methods in this service program were conducted. (1) Lectures and discussions method was done in theoretical briefings on vehicle/car tune-ups by UMY Automotive Engineering Technology lecturers. (2) Demonstration method, when the instructor/lecturer gave an example on how to tune-up the engine/vehicle unit according to the correct maintenance procedure, was conducted. Tune-up work must be carried out according to procedures/recommendations from the manufacturer, both the order of work, inspection, specifications, size adjustments, and others. This was intended for the efficiency of the work process and so that the results could meet the standards recommended by the manufacturer. Before the tune-up activity, it was necessary to make preparations for the engine, such as starting and warming up the engine first to identify the state of the machine. Identification was carried out to find out whether the idle speed was too large or too small, the engine was lame, there was an abnormal sound on the engine, and so on [8]. (3) Observation method, when the instructor/lecturer supervised practical activities by individual or group training participants, was also conducted. In addition, observations were also done in practice exams to tune-up vehicles/cars by students and teachers.

The evaluation stage was carried out to find out how effective the running of this program and how many benefits the community got from this program. Assistance was provided to the teachers of Muhammadiyah Karangkobar Vocational School so that this program could continue when it was finished [9][10].

The final results of teachers and students competency improvement through light vehicle regular service training that had been carried out at Muhammadiyah Karangkobar Vocational School partners were as follows:

1. Students' knowledge of conventional engine tune-ups has increased through this training program. This could be seen from the results of the evaluation after the instructor delivered the theoretical material the better. In addition, with the strengthening of soft skills for students and teachers, the working character would be better. However, the low ability of students' automotive basics was an obstacle in delivering tune-up materials, so the instructor carried out a review of the basic materials first.

2. The skills of teachers and students in tuning up conventional engines have increased. This could be seen from the results of the trainee practice exams that most of them were able to carry out conventional engine tune-ups although some of them have to be given a little guidance by the instructor in some of the work steps.

3. In general, the service carried out at Muhammadiyah Karangkobar Vocational School through engine tune-up training was acknowledged by participants to have great benefits, both for teachers and students. For teachers, teachers were getting better
trained and able to tune-up in the right way. For students, students were more prepared in facing national exams and their future career.

4 Conclusion

Based on the results of the service that had been carried out, it can be concluded that this community service program had been carried out and well-received by the Muhammadiyah Karangkobar Vocational School. Providing assistance in the form of practice modules and job sheets for light vehicle tune-up practice could improve structured learning at the Muhammadiyah Karangkobar Vocational School. The implementation of periodic service skills training and light vehicle tune-ups for teachers and students of Muhammadiyah Karangkobar Vocational School had a significant impact on students' knowledge and skills which in the short term could support them in facing the national vocational competency exam, and later it is hoped that it would be useful for graduates while living in the middle of society.

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