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THE EFFECTIVENESS OF PROJECT BASED LEARNING MODEL TO IMPROVE STUDENTS VOCATIONAL SKILLS

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Abstract

The purpose of this study was to determine the extent of the effectiveness of the Model Project Based Learning (PjBL)to improving students vocational skills. The sample of this research are 60 vocational students were divided into two classes, namely the control class and the experimental class. Data were analyzed using independent sample t test. The result of this research showed that the PjBL is effective to improve the students vocational skills. It is proved from the t test results there is t count > t table (6.929 > 2.002) and p <0.05 (0.00 <0.05).

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INTRODUCTION

Vocational schools generally provide science lessons to the extent of theory without application. As an example in the way the subject of waste management, students are only required to choose the type of waste handling. It is of course still less so beneficial to students when they can not continue their education to a higher level and to the provision for a living. Yet in everyday life is a certainly necessary skill to work and earn a living, one of which is vocational skills. This is similar to research done by David and Grace (2013) which examines the importance of vocational skills given early. A vocational skill is one branch of the application life skills appropriate to the vocational high school. Vocational skills are skills associated with certain occupations that are in the community. Vocational skills better suited for students who will pursue a job that relies on the psychomotor skills of scientific thinking skills. Even so skills that they can be embedded within them, need to be taught to learn by using the element of skill scientific process that is integrated, which is expected will lead students to have the ability to think scientifically, conduct research, and experimentation with a scientific approach, which will be useful both short-term and life in the community while working.

Students are not able to apply science that learned in the school to solve problems in their life because to lack of vocational skills-oriented learning development. The concept of vocational skills-oriented learning is the introduction of life skills in education, both as a basis and additionally intended to improve all aspects of quality education (Khera and Khosla, 2012).

Based on interviews withscience teachers in secondary vocational high school in Ngawi regency, East Java, Indonesia on learning in the classroom to provide supplies and life skills to students in order to have the skill for the provision of life learners. To achieve this intention, as educators should be able to change the educational paradigm we are less appropriate. Paradigm in the world of education must be changed from the old paradigm that refers to theoretical science into a new paradigm that applied science. To realize a new paradigm in education is certainly not easy. It takes hard work from all parties involved in the world of education.

One of the things that can be initiated that grow and develop life skills in self-learners. Because based on the results of preliminary research, particularly in vocational learning science is only given limited theory without any application. An example of the material of microorganisms in science lessons, students are only required to classify these microorganisms in a kingdom, then learn how naming living things (binomial nomenclature) were shown pictures of these microorganisms as well as understand its usefulness. These of course it is very less useful for students when making a living. In everyday life is certainly needed is skills to work and earn a living, one of which is a life skills. Skills are unlikely to be obtained by learners merely a theory but very necessary training and practice directly.

Based on the learning problems above, it is necessary to have a learning model that is designed to equip learners with life skills that are integrative combines skills generic (skills possessed by students to learn more and may be used to learn the next skill) and specific skills (skills which is owned by someone in specialized areas) in order to cope with life's problems. Therefore, in this dissertation study, researchers sought to develop an existing model which was later modified to be applied in teaching that are applied science in which supported their activities oriented learning vocational skills through the application of scientific method integrated skill.

Learning integrated with these vocational skills can be achieved by the presence of learning tools, such as modules reflecting a project-based approach. While from the observations at this time in vocational high school at Ngawi regency no one has a learning module, especially on science subjects. Every vocational high school in Ngawi regency is generally still use book packages and work sheet. Modules reflecting the existence of a project based approach based on observation have not yet existed in vocational high school, especially on science subjects of waste handling materials. To be able to teach vocational skills to students in the lesson, especially on science subjects, there should be an activity in the module that leads the students to the vocational activities. This is in line with research conducted Purnamawati (2011) That's study discusses how important a competency-based training in inserting vocational education.

Result of research show that learning device (book of package and work sheet) used in vocational high schools in Ngawi Regency still less based on PjBL. Package book and LKS if used for learning in vocational high school assessed still can not increase vocational skill maximally.

Based on this fact, it is very important to develop a learning tool that can improve vocational skills in adaptive subjects. Based on the above background, it is necessary a research on the development of learning model based on PjBL to improve the vocational skills of students of vocational high schools..

METHOD

This research includes quantitative research. The collecting data in this study using a test technique. The research sample consisted of a vocational high school class some 60 students, divided into 30 students as control classes and 30 students as experiment classes. Data analysis used independent sample t test.

RESULTS AND DISCUSSION

To test the effectiveness of PjBL Model that have been developed, researchers designed an experimental study is to compare the results of mastery learning students from the control group applied regular inquiry learning models and groups of students experiment applied the PjBL Model. Testing took each sample as many as 30 students for the control class and experimental class. The test results are as follows.

The results of the analysis of the skills of vocational students individually in science teaching and learning activities with learning model regular inquiry (control class)and with learning model PBL(experiment class)in vocational high school of Ngawi regency that serves in Table 1.

Table 1. Description of vocational skills results on the control class (ordinary Inquiry Learning Model) and on the experiment class (PBL)

Class	Average of pre-test	Average of post-test
control	56.53	69.67
experiment	58.13	82.53

Based on Table 1 it can be seen that the value of vocational abilities individually control class at the time of the pre-test (test before learning materials provided) amounted to 56.53. In details, here is the graph the value of student learning outcomes after having a pre-test (test before learning materials provided) the control class:

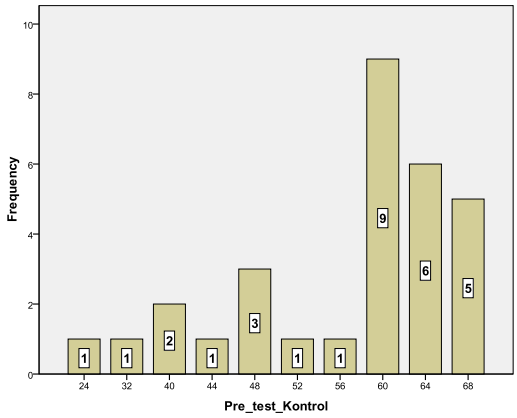

Figure 1. The Results of Distribution Frequency on the pretest Grade Control

Can be seen in the table above, note that the value of vocational abilities individually control class at the time of the post-test (test after learning materials provided) amounted to 69.67.

In details, here is the graph the value of vocational ability of the students after the holding post-test (test after learning materials provided) the control class.

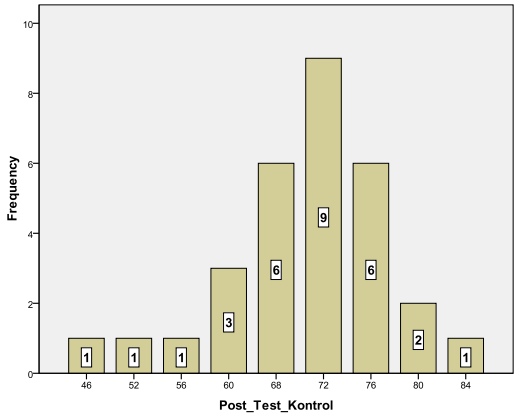

Figure 2. The Results of Distribution Frequency on the pretest Grade Control

Based on Table 1 can be seen that the average value of vocational ability of the experimental class students individually at the time of the pre-test (test before learning materials provided) amounted to 58.13.

In details, here is the graph the value of vocational ability of the students after having a pre-test (test before learning materials provided) in the experimental class.

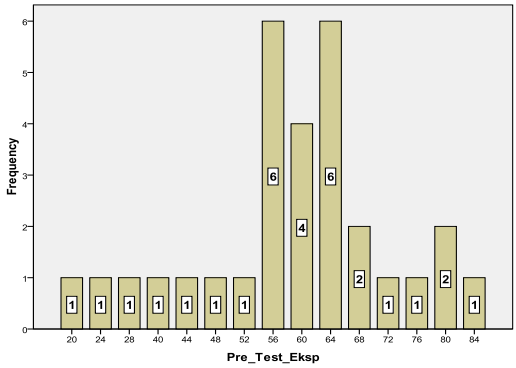

Figure 3. The Results of Distribution Frequency on the pretest Grade Control experiment

Can be seen in the table above, note that the average value of vocational ability of the experimental class students individually at the time of the post-test (test after learning materials provided) amounted to 82.53.

In details, here is the graph the value of vocational ability of the students after the holding post-test (test after learning materials provided) in the experimental class.

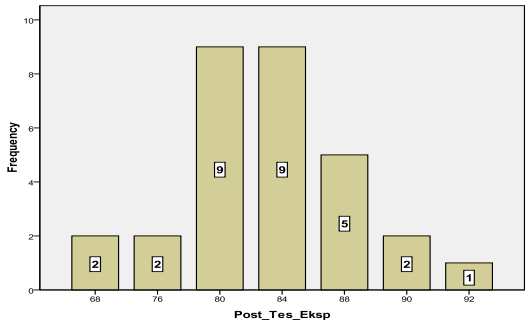

Figure 4. The Results of Distribution Frequency on the Post-Test Grade Control experiment

Based on the data above, the t test to compare the average value of the control class and experimental class which aims to determine the level of effectiveness of PjBL Model based on value.

From the results of the analysis presented above shows that there are differences in the average value of the control class experimental class, shown with a probability value smaller than $\alpha = 0.05$ ($p = 0.00 < 0.05$) or t count > t table (6.929 > 2.002). This means that the inquiry learning model with PjBL Model proven effective to apply in learning science.

Based on the results that the inquiry learning model oriented vocational skills through integrated skills proved effective scientific method to be applied in science teaching is evident from the results that the t test t count > t table (6.929 > 2.002) and $p < 0.05$ ($0.00 < 0.05$)**.**

Based on the results of the above research we can know that the importance of expressing the relevance of learning topics with real life. This is the aim of researchers in developing a model of how to handle waste based PjBL is designed specifically for the level of school education. So the learning that is integrated with the vocational skills can be achieved by the existence of learning tools, such as modules that reflect the existence of a PjBL approach.

The results of this study are consistent with the results of previous research conducted by Iwamoto, Hargis and Vuong (2016), which resulted that based on the analysis it was proposed that the experimental group involved in the project and active in learning is significantly higher than the control group.

Based on the result, it is found that there is difference of mean value of control class student with experiment class which means study based on PjBL model proved effective to be applied in science learning especially in improving students' vocational skill.

The results of this study are also in line with previous research conducted by Koparan and Güven (2014), resulting in project-based learning increasing the level of statistical ability of students in the intervention group.

The project-based learning model is not just a series of classroom meetings and collaborative group learning, but this method focuses on the creativity of thinking, problem solving and interaction between students and students to create and use new knowledge in this case is the knowledge and skills of students in processing waste into a product that has economic value that will be useful for students in the future or in other words learning using PjBL model based learning can improve vocationall skill students.

In harmony with the results of the Holm (2011), that's has resulted in increased learning including, higher levels of engagement and more positive perceptions of the subject matter. Through a clear research base in support of effectiveness, project-based methods can make it

better. Similarly, Srikala & Kumar, (2010), who showed that the Impact Evaluation of the Life Skill NIMHANS model shows that it can improve adolescent adjustment with teachers, schools, increase prosocial behavior, overcome problems, and increase prices self, because there are significant differences between groups in the program and not in the program.

The results of this study also support the results of research from Baş (2011), indicating that there is a significant difference between experimental group attitudinal scores and control groups. On the other hand, it is found that project-based learning is more effective in the positive development of student achievement level. At the end of the study, it was revealed that students who were educated with project-based learning were more successful and had better attitudes toward the lessons than students who were trained on instructional methods based on student textbooks.

Based on the vocational value of the students in the experimental class, the highest score of students was 92 students and the lowest was 68 as many as 2 students and most of them had 84 students as many as 10 students. This illustrates the average vocational capacity of the average student in the experimental class is that students have values ranging from 80 to 88. Students who have a value> 90 are student who has the ability to comprehend because it has a higher intelligence than other students. While students who have a value <70 is a student who has a delay in understanding the material that can be caused by internal factors students and external factors students.

As revealed by Slameto (2003), that the factors that influence learning are: (1) Internal factors consist of: physical factors, psychological factors; (2) External factors consist of: family factor, school factor and community factor.

Provision of vocational skills to students is very useful to have the skills for the provision of student life. This can be achieved one of them with the model of learning model of project-based learning as conducted in this study. Just as the research results of Casey, (2015), which obtained results that substantial evidence to support the use of PjBL such as making a positive impact on the attendance of students in economically disadvantaged schools. The research findings also provide positive support for teachers and administrators who are looking for ways to implement the PjBL environment in their school systems. So also with the results of research from Halim, et al, (2013), that's collaboration between educational institutions, employers and professionals from industry can beestablished to enhance the relevance of the curriculum and also the teaching and learning process, so thatthe employability skills of hearing impaired students are meeting the needs of employers.

CONCLUSION

The PjBL model proved effective in improving the vocational skills of students. This is evident from the t test results that is t count > t table (6.929 > 2.002) and p <0.05 (0.00 <0.05).

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