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Development of Learning Model of Project-Based Learning Integrated with Entrepreneurship in The Productive Learning of Motorcycle Tune-Up Competence

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Abstract

Unemployment of graduates of Automotive Engineering expertise program of Vocational High School (SMK) can be overcome with entrepreneurship. The obstacle is that students are not ready to become entrepreneurs. Learning process at school needs to be analyzed to find new learning models that enhance students' entrepreneurship skills which is in accordance with the expertise program. This study aims to analyze the factual conditions of productive learning of motorcycle tune-up competence and entrepreneurial learning in SMK, to analyze conceptual models developed, to determine hypothetical models, to analyze student learning outcomes using hypothetical models, and to determine the final model of learning. The method used in this research is research and development, carried out by conducting preliminary studies, model development, product testing, and final model determination. The result shows that factually productive learning of motorcycle tune-up competence with entrepreneurship lesson are separated. The conceptual model designed using the syntax of project-based learning model has entrepreneurship approach in productive learning, but still requires improvement. After the improvement, there comes a hypothetical model with the principle of integrating productive learning with entrepreneurial activity, and the learning is oriented towards a modified project-based learning model. The model is well implemented because the experimental class' learning result is better than the control class' learnng result. The value of technical skill and entrepreneur skills of experimental class students increased significantly, thus the final model of learning used hypothetical model with the learning model name is PjBL In Entre (Project-Based Learning Integrated with Entrepreneurship).

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INTRODUCTION

By building SMK, the government expects that the vocational graduates can help accelerate the development of various fields, so that a large amount of vocational schools are built. SMK Statistics Data (2017: 10) shows that all vocational schools in Indonesia in 2016-2017 amounted to 13,236 schools, which consists of 4,682,913 students and 1,285,178 graduates. Directorate of Vocational Education (2016) shows that Expertise Program with the most number is Automotive Engineering, which is as many as 5256 units or by 40%. In fact, according to Suryamin in Detik Finance (2016) in February 2016, the highest open unemployment rate at the vocational education level was 9.84%. The survey result indicates the vocational graduates are less capable to reduce unemployment, and it can be said that there are still many graduates of SMK who are not professionals.

The expertise competence that is closely related to the needs of the community is the Motorcycle Engineering and Business competence expertise. For the comparison, the existing workshops to provide after-sales service of Honda motorcycle are less than the number of product sales, which resulted in many users of Honda motorcycles doing the maintenance or repair in unofficial workshop. It shows that there is still an open wide potential for entrepreneurship in the field of motorcycle maintenance service.

The unemployment can actually be overcome if the school maximizes one of SMK's goal which is to create an entrepreneur, but in fact, the students' entrepreneurship skills can be said as weak. One of the reasons is the entrepreneurship lesson. Entrepreneurship learning will be more meaningful for students when it comes to services or products related to the students' skill program.

Widiharto et al (2015: 1) illustrates that project-based learning effectively improves the students' entrepreneurship. Project-based Learning is very good when integrated with Entrepreneurship activities. Prosser and Quigley in Dharma (2013: 16) support the fact that vocational education will be efficient if the environment in which the students are trained is a replication of the environment where they will work. However, the Prosser and Quigly theory needs to be proven in relation to creating a student who is ready to do entrepreneurship in accordance with the program of expertise through the right learning model.

Tune-up is a periodic maintenance performed on the vehicle thoroughly so that the vehicle can work optimally after previously having problems or needing care. Tune-up material is delivered by the teacher using the Direct Learning Model or Active Teaching. This activity focuses only on students' technical skills, where other skills related to tune-up services seem to be neglected. Whereas in the workplace, when taking care of customer's vehicle, students must be able to communicate well in order to satisfy customers with the services provided.

The subject of motorcycle tune-up would be so well if using Project-based Learning model, since there are structured and sequential maintenance activities that match the concepts in Project-based Learning model. The learning will also be better if integrated with Entrepreneurship activities. The learning model concept is to conduct learning activities with tune-up material, using the learning model of Project-based Learning, and the project is to carry out entrepreneurship activities..

This research needs to be conducted to try to get a solution in improving students' technical and entrepreneurship skills in an integrated manner to overcome the problems related to professionalism of vocational high school graduates on entrepreneurship aspect. The detail of the research purposes are to: (1) analyze the factual conditions of productive learning in Engineering and Business of Motorcycles competence expertise of SMK; (2) analyze the conceptual model of Project-based Learning integrated with entrepreneurship activities on Productive Learning of Motorcycle Tune-Up Competence; (3) determine the hypothetical model of learning; (4) analyze

student learning outcomes on aspects of technical skills and entrepreneur skills using hypothetical model of learning; and (5) determine the final learning model.

METHODS

This research uses research and development approach (Research and Development). Sugiyono (2015: 407) stated that, Research and Development is a research method used to produce a particular product, and to test the effectiveness of the product. The procedures undertaken in this research are: (1) conducting preliminary study on factual condition in the field; (2) developing the model by arranging conceptual model, validating and revising the conceptual model and the model counterpart, determining the hypothetical model of the model validation and revision; (3) A product trial conducted by testing the effectiveness of the hypothetical model; and (4) determining the final model of Project-based Learning model that is integrated with entrepreneurship in Productive Learning of Tune-up Motorcycles Competence.The designed learning model was validated by two learning model expert whose background was doctoral of education, and two educational practitioners. The experimental product trial was conducted using quasi experiment (pretest-posttest with control group design) in which there were experimental class and control class. The subjects of this study were students of SMK NU 06 Muallimin, Weleri with a sample of 8 students of experimental class and 8 students of control class. The value result of the learning activity is analyzed by using t test. Figure 1 shows of research and development's procedures in this learning model.

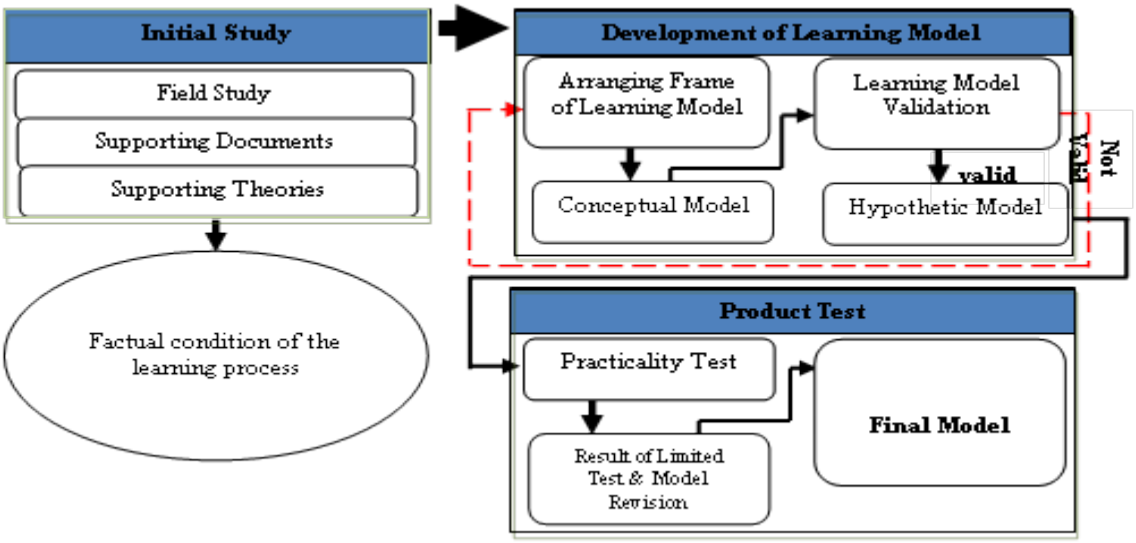

Figure 1. Research and Development Procedures in PjBL In Entre Learning Model

RESULT AND DISCUSSION

Factual Model

Factual model analysis of productive and entrepreneurship learning implementation is still separated. The analysis result on productive learning indicates that the productive learning material on TBSM Skill competence is a material that teaches Expertise, Basic Field of Expertise, and Expertise Competence. Competence in these materials can be used in an integrated manner as a basis for conducting motorcycle maintenance on a regular basis (Tune-up). The learning is still oriented only toward the value of learning outcomes, where it still uses written assessment, and

practice tests. Competencies gained in productive learning are technical knowledge and technical skills.

Analysis Results Entrepreneurship subject of Motorcycle Engineering and Business in the process of learning activities in the field is to learn about the theory and creation of entrepreneurial products. The entrepreneurial learning usually produces products that are less in line with the competencies of the students. The learning method used to deliver this material is by using lectures or searching, by discussing entrepreneurial theories. Entrepreneurship learning is also still only oriented to value, which consequently students can only understand the theory without any direct experience of entrepreneurship.

The analysis of factual condition is strengthened by the result of Samsudi's observation (2014: 314) which result that development of learning productive program of vocational school in creating entrepreneurship of graduate is considered as a very important thing by every principal, teacher, and instructor from industrial world. The development can be applied to the respect of learning material, learning method, and learning evaluation.

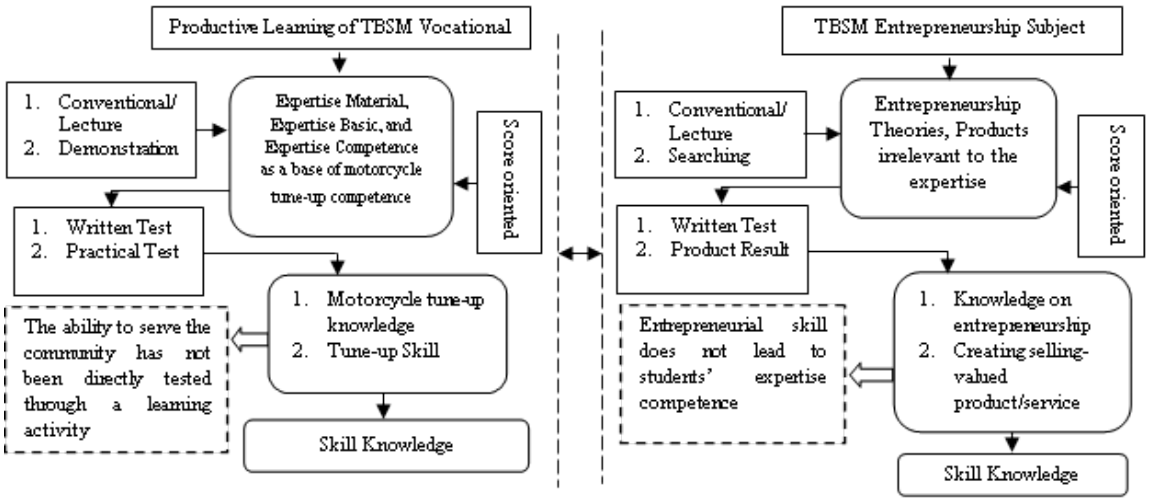

Figure 2. Factual Learning Activity in SMK

Table 1 shows the results of preliminary study, which there are some aspects that need to be improved to get a productive learning model integrated with entrepreneurship.

Table 1. Weaknesses of Productive Learning Factual Model and Aspects that need to be improved

Learning Components	Factual Model Weaknesses	Aspects that need to be improved
Content	Only ready for working	Integrating with entrepreneurs
Orientation	Score as the final purpose	Providing direct experience by providing services of motorcycle tune-up service
Model and Method	Classical, demonstration, lecture	Using PjBL model with engaged approach
Assessment	Written and practices result	Authentic evaluation
Gained skill	Motorcycle technical and tune-up skill	Technical and entrepreneurial skill of motorcycle tune-up competence

Conceptual Model

This learning model concept is a model oriented to products and services that benefit. The goal is to make every result of learning done with this learning model to get selling-valued product or service. This learning model uses project-based learning model syntax integrated with entrepreneurship. The model uses engaged approach. The learning result of using this learning model is in the form of integrated technical and entrepreneur ability to conduct motorcycle tune-up activities and to perform motorcycle tune-up service. The last character in the model is to use an authentic assessment. The concept of the created learning model is validated by an expert of learning model and educational practitioner, results of validation had Strongly Agree criteria with assessment percentage 92,56% from 28 questions.

After the validation, it turns out that there are some suggestions and aspects that need to be improved to polish the learning model construction, which first is to replace the engaged approach to the scientific learning approach in carrying out learning activities since scientific approach always integrates with project-based learning. Second, there is also establishment of technical skills, technical hard skills, and technical soft skills, as well as entrepreneurial skills consisting of entrepreneur knowledge, entrepreneur hard skills, and entrepreneur soft skills, as the ultimate goal of learning model in order to simplify and to clarify the analysis of student ability. Third, it is to prepare learning tools to complement/support the learning implementation. Fourth, it is to provide a detailed description of the skills trained in learning model made. Fifth, it is to re-clarify the steps and syntax of learning model to make the model users easy to implement them. Sixth, it is to divide the syntax of the model into 4 core steps which are (1) preliminary activities, (2) activity simulation, (3) activity implementation, and (4) evaluation, which in the 4 steps, there is a learning activity as the learning implementation guidance.

Hypothetic Model

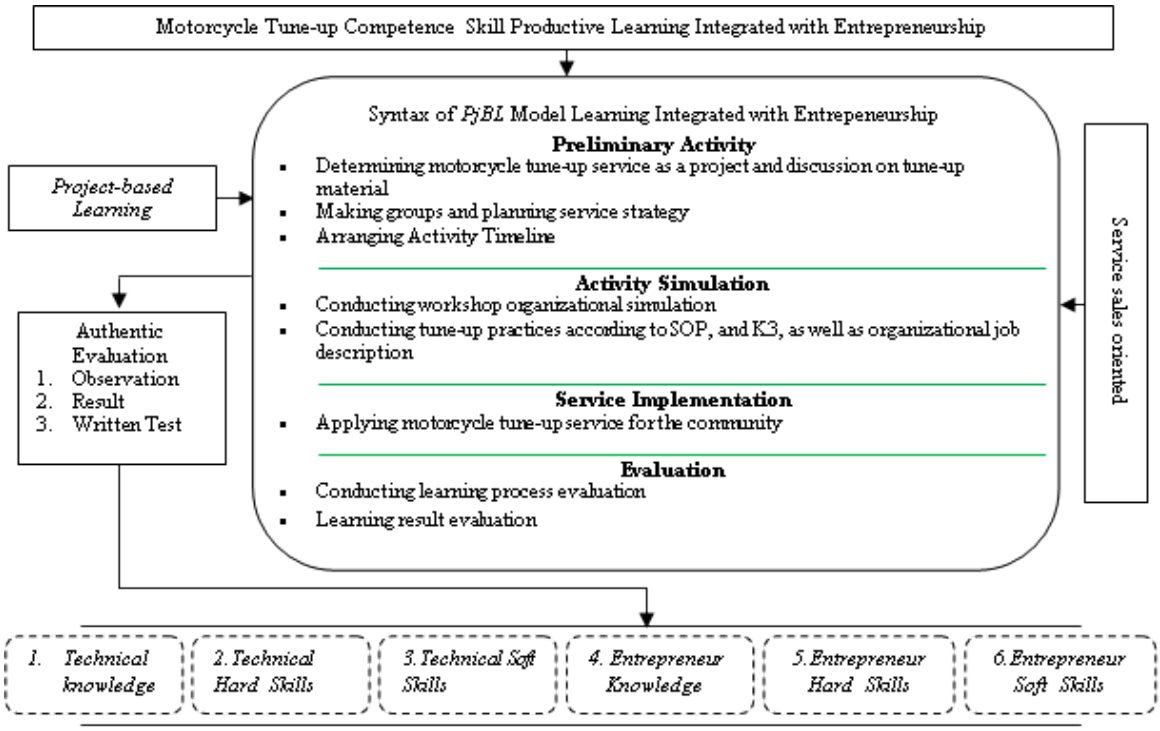

Figure 3. Hypothetic Model of Learning

The hypothetic model is obtained by combining the productive learning of motorcycle tune-up competence with entrepreneurship activity, which the learning step is implemented using the modified project-based learning model concept. The learning model is oriented towards the sales of motorcycle tune-up services. The tune-up competencies being taught are designed to be able to obtain favorable results at the end of the learning steps. The integration of the three elements resulted in four main syntaxes in learning, which are: (1) Initial activity, consists of determining motorcycle tune-up service as a project and discussing tune-up material, making group and planning service strategy; (2) Activity Simulations, consists of performing workshop organizational simulations and performing tune-up practices according to SOPs, and K3, as well as the job description of the organization; (3) Implementation of service, consists of applying motorcycle tune-up service for the society; and (4) Evaluation of activities, consists of evaluation of learning process and learning outcomes. Knowledge gained from learning activities is to understand the motorcycles marketing and tune-up, selecting marketing activities and tune-up measures, designing marketing activities of tune-up services, and compiling marketing schedules for motorcycle tune-up activities. Skills gained from learning activities are: (1) Technical Hard skills, which is the ability to tune-up a motorcycle; (2) Technical Soft Skills, which is the application of professional attitude to work; (3) Entrepreneur Hard Skills, which is the implementation of the designed motorcycles tune-up service strategy; (4) Entrepreneur Soft Skills, which is to apply the natures of an entrepreneur at the time of the learning activities implementation.

Model's Effectiveness

The assessment of this study is divided into six criteria. The difference of experimental class and control class learning result are listed in the following table:

Table 2. Assessment of Pre-Test Difference between Experimental and Control Class

No	Criteria	Mean of Group Score		Equation Test	
		Experimental	Control	t Count *(t Table 2.14)*	Criteria
1	*Technical Knowledge*	2.21	2.17	0.25	No Difference
2	*Technical Hard Skills*	2.98	2.83	0.67	No Difference
3	*Technical Soft Skills*	1.53	1.63	-0.65	No Difference
Mean of *Technical Skills*		**2.24**	**2.21**	**0.09**	**No Difference**
4	*Entrepreneur Knowledge*	1.58	1.73	-0.82	No Difference
5	*Entrepreneur Hard Skills*	1.38	1.33	0.43	No Difference
6	*Entrepreneur Soft Skills*	1.40	1.35	0.29	No Difference
Mean of *Entrepreneur Skills*		**1.45**	**1.47**	**-0.03**	**No Difference**

Table 3. Assessment of Post-Test Difference between Experimental and Control Class

No	Criteria	Mean of Group Score		Equation Test	
		Experimental	Control	t Count *(t Table 2.14)*	Criteria
1	*Technical Knowledge*	3.00	2.38	4.71	Different
2	*Technical Hard Skills*	3.85	2.93	5.82	Different
3	*Technical Soft Skills*	3.72	2.91	5.62	Different
Mean of *Technical Skills*		**3.52**	**2.74**	**5.38**	**Different**
4	*Entrepreneur Knowledge*	3.15	2.00	7.64	Different
5	*Entrepreneur Hard Skills*	4.08	1.33	32.00	Different
6	*Entrepreneur Soft Skills*	3.83	1.35	18.03	Different
Mean of *Entrepreneur Skills*		**3.69**	**1.56**	**19.22**	**Different**

Table 4. Improvement Test of Experimental Class Study Result

No	Criteria	Mean of Experimental Class Score		Discrepancy Test	
		Pre Test	*Post Test*	t Count *(t Table 2.14)*	Criteria
1	*Technical Knowledge*	2.21	3.00	5.16	Different
2	*Technical Hard Skills*	2.98	3.85	4.91	Different
3	*Technical Soft Skills*	1.53	3.72	15.54	Different
Mean of *Technical Skills*		**2.24**	**3.52**	**8.54**	**Different**
4	*Entrepreneur Knowledge*	1.58	3.15	8.11	Different
5	*Entrepreneur Hard Skills*	1.38	4.08	30.67	Different
6	*Entrepreneur Soft Skills*	1.40	3.83	16.89	Different
Mean of *Entrepreneur Skills*		**1.45**	**3.69**	**18.55**	**Different**

Table 5. Improvement Test of Control Class Study Result

No	Criteria	Mean of Experimental Class Score		Discrepancy Test	
		Pre Test	*Post Test*	t Count *(t Table 2.14)*	Criteria
1	*Technical Knowledge*	2.17	2.38	1.42	No Difference
2	*Technical Hard Skills*	2.83	2.93	0.48	No Difference
3	*Technical Soft Skills*	1.63	2.91	8.60	Different
Mean of *Technical Skills*		**2.21**	**2.74**	**3.50**	**Different**
4	*Entrepreneur Knowledge*	1.73	2.00	1.90	No Difference
5	*Entrepreneur Hard Skills*	1.33	1.33	0.00	No Difference
6	*Entrepreneur Soft Skills*	1.35	1.35	0.00	No Difference
Mean of *Entrepreneur Skills*		**1.47**	**1.56**	**0.63**	**No Difference**

In Technical Knowledge criteria, the experimental class scores higher than the control class because the experimental class is doing active and innovative learning, discussing the tune-up project, the material is directly focused on the tune-up. Meanwhile, the control class implements direct lecture learning model, on so that the students only focus on teacher's talks, and teaching materials are still fragmented. By using the same type of learning model, Setiabudi and Yudiono (2015: 50) stated in their study that the learning cycle E5 model learning with the help of module which is a learning sheet using learning cycle E5 steps can improve students' learning ability on the competency to improve the steering.

In Hard Skills Technical criteria, the experimental class performs simulation and teacher's guidance by using Work Order, and focuses on Tune-up work. Meanwhile, the control class learning is implemented using teacher's demonstration, the job is not directly focused on tune-up material, and the guidance is less practical. Its results in higher score of experimental class, which is supported by Indarti's research (2016: 29) that states that PBL is able to improve some skills, such as student's technical ability, so as to allow graduates to practice professionally.

In Soft Skills technical criteria, experimental classroom learning was conducted with teacher's simulation in SOP and K3, where the students focused on studying technical soft skill of tune-up implementation. Meanwhile, the learning in control class is implemented using teacher's demonstration, where teaching materials were still split and practices learning was still ordinary. It results in higher score of experimental class, which is supported by the results of Yunata and Soesanto (2014: 41) research that expresses that the learning by simulation method creates a new learning atmosphere and fun among students, which have a positive impact on student learning outcomes.

In Entrepreneur Knowledge criteria, Learning is carried out actively and innovatively by discussing tune-up service project, where tune-up material is directly focused on entrepreneurship. While in control class, activity of learning is conducted by lecturing method which makes the students less active. The result of experimental class is higher, which is supported by the research of Hikmaningsih et al. (2015: 327) which states that the Project-based Learning model can improve the high level cognitive ability on physics subject. By equivalently similarly oriented on aspects of knowledge, PjBL In Entre learning model is able to increase students' knowledge on entrepreneurship skills criteria.

In Hard Skills Entrepreneur criteria, the experimental class conducting the lesson with the simulation in preparation before the service implementation, then performs service activities according to the standards previously planned by the students through tune-up service project. Meanwhile, the control class does not perform the service, which means their hard skills entrepreneur value is considered equal to the criteria's pre-test value. The skill result of the experimental class students is higher, which the result is supported by Setiarini research (2013: 154) which reveals that the business plan preparation given to the students as an effort of economic learning model is very useful for the implementation of entrepreneurial activities.

In Entrepreneurship Criteria of Soft Skills, the experimental class is trained to practice directly about the attitudes of an entrepreneur serving the community, while the control class does not perform the service so that the entrepreneur value of soft skills is considered same as the pre-test criteria. The result shows that the ability of experimental class students is higher than the control class, which is supported by a similar research by Hadromi (2014: 37), which states that the result of observation of entrepreneurship spirit of D-3 students increases optimally by using internship work based learning.

This Final learning model uses a hypothetical model that has been previously specified, because the learning by using the model is well executed which is proven by better results of experimental class than the control class. In the beginning of the activity, students were having creative and innovative discussion in planning a motorcycle tune-up service project. The simulation steps were well executed, the students' interest was high and they looked happy during the lesson. The service was well implemented because students could perform their duties in serving the tune-up of motorcycles owned by the community through teacher monitoring. Evaluation run well, students could report the results of their learning activities by showing and delivering the results of service activities. The challenge existed was that learning activities required sufficient funding support, so that the service needs, particularly spare-parts, could be fulfilled.

CONCLUSION

The result showed that factually, productive learning of motorcycle tune-up competence is separated with entrepreneurship lesson. Productive learning tends to prepare students for work, whereas entrepreneurial learning still tends to theories or products that are not relevant to students' competence.

The conceptual model is designed using the syntax of project-based learning model with entrepreneurship approach. However, it still needs improvement in order to obtain a more practical model.

The hypothetical model is derived with the principle to combine productive learning and entrepreneurial activities. The learning is oriented on a modified project-based learning model so as to derive the four core steps which are Preliminary Activity, Activity Simulation, Service Implementation and Evaluation.

The model works well because there are significant differences in learning outcomes between experimental and control class on the technical skills and entrepreneur skills aspects. Experimental class has a better learning outcome improvement than control class, thus the final model uses a hypothetical model named PjBL In Entre Learning Model.

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