

Entrepreneurship Project-Based Practical Learning Model: Development and Implementation

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Abstract – The aim of this study is to develop a learning model for vocational education that centers on products that are marketable, the development of entrepreneurial intentions, and entrepreneurial character. The issues are that project-based learning models are not being implemented in vocational education in an optimal manner. Entrepreneurship-based learning is not being implemented as effectively as it could be, and the practical products that students produce are of low quality and have no market value. This research investigates definition, design, development, and dissemination for product validation using a 4D research and development model. A collaborative mixed-methods design was used to assess the research instrument's validity. Experts in vocational education and practitioners from relevant work-based industries are involved in this study. This research used 26 students in furniture learning (N=10) for the experimental group and (N=16) for the control group. They go through seven model stages and take part in pretest, posttest, and final product assessments. According to the research findings, this learning model is a legitimate new learning model that integrates project-based learning, entrepreneurship-based learning, and practical activities. This model works well when used for practical learning subjects that are focused on commercial products.

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Keywords – Entrepreneurial project, practical learning model, implementation.

1. Introduction

In Indonesia, unemployment remains high, and vocational education graduates hold the highest positions [1]. Indonesia desperately needs jobs [2]. However, job opportunities are scarce, and the educational curriculum does not support it [3]. Education graduates are trained to have work skills, but they are not prepared to create work. There are still few Indonesian entrepreneurs; to become a great country, Indonesia must increase its entrepreneurs by 2% [4].

Entrepreneurship is a current success image because it possesses characteristics that correspond to the demands of 21st century capabilities [5]. Previously, entrepreneurship was a process of buying and selling [6]. Entrepreneurship is then transformed into a product innovation process. From an educational standpoint, it was discovered that entrepreneurship became a learning model to encourage the development of entrepreneurial intentions [7] and instilling entrepreneurial spirit in graduates [8], and ready to start their own entrepreneurs [9]. This step was taken to increase the number of Indonesian entrepreneurs [6].

Entrepreneurship is developing not only in business, but also in entrepreneurship research and education [10]. Entrepreneurship research is beginning to be linked to vocational education because it has the potential to implement entrepreneurship and is suitable for project-based learning and product-based learning [6], [8]. This is one method of developing entrepreneurs through entrepreneurship education [4].

Because it focuses on competency and product, vocational education has a lot of potential for this entrepreneurial plan. So far, vocational education has only focused on developing graduate competencies rather than job creation.

This is demonstrated by the vocational curriculum, which does not include entrepreneurship; the percentage of entrepreneurship in the curriculum is extremely low [4].

Many study programs in vocational education can be developed and produced products such as electrical engineering, machinery, civil engineering, and fashion design. The civil engineering department, for example, can produce furniture through student practicums. If they are market-based, student practicum products can be used as marketable products [4]. As a result, entrepreneurship-oriented learning must be based on the market.

Nakayama [11] stated that constructivism, learning environment, attitudes, literacy, and learning strategies are five factors that influence the learning process. The Indonesian government has regulated the educational process to ensure its effectiveness [12]. The use of learning models such as project-based, problem-based, and inquiry models is regulated by the Indonesian government [13]. This regulation, however, is not being implemented optimally [14]. The learning model's implementation is not optimal, particularly in terms of steps; for example, the project-based learning model has six steps, but not all of them are implemented. The model's goals are then not met by learning.

There is no best learning model; rather, learning models are used based on needs, situations, and conditions. The project-based learning model, for example, is appropriate for project-based learning or product-based learning [16]. This learning model regulation only prepares students to find work, not to create work [4]. The strategy for achieving effective learning objectives is to employ a needs-based learning model [17]. There are numerous learning models, but they are ineffective in addressing educational issues. In general, this learning model is focused on achieving competency. As a result, teaching strategies must be effective [18].

Another point of view is that the use of learning models must inspire teachers and students to consistently achieve learning objectives [19]. As a result, a new learning model that encourages teacher and student motivation to carry out all of the model steps is developed. One of them employs efficacy theory to generate motivation [20]. As a result, the goal of this learning orientation is to develop marketable products as part of retention, attention, production, and motivation [21]. This is an attempt to identify appropriate strategies and approaches for achieving learning objectives [8].

So far, no research has been conducted on marketable product-oriented learning models in vocational education. Then, models geared toward graduates creating jobs have not been investigated.

As a result, this model is intended as a solution to increase entrepreneurship. A good learning model is required for good learning [22], [23], because education produces graduates with exceptional abilities, such as leadership, strategic management, and other characteristics [24].

This study develops an entrepreneurial practice project-based learning model that combines practical activities, project-based learning, and entrepreneurial learning. This model was created to teach students how to create marketable products, how to be entrepreneurial, and how to create jobs.

The first part of this article discusses the background of the research. The second part discusses gap research. The third section discusses the method of using collaborative validation and its validation. Finally, the results and conclusions are discussed, followed by novelty.

2. Literature Review

The development of this learning model is based on expert theories, research results, experience and expert-based validation stages. The transformation process for forming model syntax is composed of learning models that support entrepreneurial activities, projects and practical learning.

2.1. Entrepreneur

Entrepreneurs are those who pay a price for a product in order to sell it at an uncertain price while making business decisions [6]. Entrepreneurship is a creative effort to advance new products, technology, and/or manufacturing methods in order to effect change [25]. According to Schumpeter [26], entrepreneurship is a process of creative destruction, with the main innovator driving economic growth through creative activities with an economic value. Entrepreneurship is about more than just selling; it is also about creative problem-solving activities [27]. The preceding viewpoints imply that entrepreneurship is an activity centered on innovation.

According to Zimmeneer and Scarborough [28], entrepreneurship is the use of innovation and creativity to solve problems and capitalize on opportunities that others face every day. There are efforts underway to identify and expand opportunities for success. Zimmerer [28] emphasized that entrepreneurship must be oriented toward the market's need for creativity and innovation. Entrepreneurship, he claims, has a broad and deep understanding of encouraging change to improve the quality of human life. [28].

Entrepreneurship is a creative and innovative activity that is oriented toward increasing economic and social value while also being marketable [25], [28]. As a result, entrepreneurial values must be emphasized in education because they contribute to the achievement of educational objectives. The combination of these two words can be interpreted as a superior human being who does something, or as a person who does something, decides how to make it, arranges, organizes, and markets it [29]. Based on this simple definition, it is clear that entrepreneurship is not synonymous with selling.

According to various expert opinions, entrepreneurship is an innovative effort to transform something that has no value into something that is valuable. According to Ciputra, entrepreneurship is the ability to turn dirt into gold. As a result, the existence of entrepreneurship is critical for long-term education and is an important part of human life.

2.2. *Entrepreneurial Learning Model*

Entrepreneurship education has advanced quickly. The goal is to prepare students to be entrepreneurs by instilling in them an entrepreneurial spirit [9]. The ability to think critically, create products, negotiate, and create a business plan are some of the skills that are developed. Aside from that, entrepreneurship education is developed through other incredible aspects [9].

Several studies were discovered, including the development of the entrepreneurial learning model (ELM), which focuses on three major components: personal and social emergence, contextual learning, and negotiated enterprise [9]. ELM's three aspects are related to a person's transformation efforts toward entrepreneurial action, risk-taking ability, management, customer relations, innovation, and business development [9].

Entrepreneurship education is also linked to the ability to seek opportunities and to be a leader [9], [30]. The ELM model has the potential to increase entrepreneurial intentions [8]. However, it has not been proven to directly increase the number of entrepreneurs [9]. This ELM can still be developed with different orientations and goals.

Entrepreneurship education and entrepreneurial intentions are linked [8]. There are numerous research findings that support the two-way relationship [31]. As a result, incorporating entrepreneurial learning into education is one solution for fostering entrepreneurship.

2.3. *Project Based Learning*

Project-based learning (PBL) is based on the theory of learning by doing and entails direct

experience, feelings, and the ability to construct experiences in one's mind [32]. A student-centered approach is used in this model [33]. The Indonesian government suggests implementing this model in vocational schools [13]. PBL prepares students to be independent learners who can work in groups. Students are given the opportunity to complete complex and sequential project assignments. PBL implementation allows students to manage the class together because there are projects that they work on with their peers, and educators serve as facilitators [34].

PBL allows students to improve their communication, management, inquiry, reflection, participation, leadership, and critical thinking skills. These abilities are based on PBL learning model characteristics such as presenting concrete problems, the process of solving problems, and the process of working on projects together, so that the steps taken directly encourage students to take action [35].

According to Shahiwala, PBL has not been shown to increase the number of entrepreneurs. However, according to Sasson, PBL orientation can encourage the creation of products through project activities [30]. PBL-created products have the potential to become products that are useful to society. As a result, PBL creates opportunities to create a product buying and selling process, which is consistent with entrepreneurship principles. In developing this project-based entrepreneurial practice learning model, PBL is one of the learning model solutions.

2.4. *Project-Based Entrepreneurial Learning (PBEL)*

Previous research discovered that an entrepreneurial learning model known as the project-based entrepreneurial learning model (PBEL) was developed. This model is an excellent innovation because it combines entrepreneurial learning with project-based learning. The main orientation is that students must create a business proposal and then turn it into a reality [9].

PBEL is intended to contain a variety of substances, including cognition and motivation [36]. There are sections dedicated to entrepreneur and business skills [36]. Priyono [9] categorizes PBEL activities as education and training, experience, and mentoring. Similar to Shane, who organizes entrepreneurial learning activities that begin with self-awareness, knowledge of the environment and opportunities, development of ideas, and gathering resources.

All entrepreneurial actions are a combination of the outcomes of interaction, as well as the integration of the outcomes of motivation and cognition from students, social groups, and mentors [37].

Some or all of these motivations will influence the process of forming individual entrepreneurship from one step to the next [38]. These motivational factors influence entrepreneurship. To influence a person's entrepreneurship, these motivational factors are combined with cognitive factors.

Entrepreneurship education is organized in stages, beginning with the introduction of entrepreneurial opportunities (idea development), followed by evaluating feasibility, developing market-based products/services, financing, organizing, and targeting markets [39]. Each step necessitates the use of appropriate and innovative teaching materials.

To create new entrepreneurs, individuals, groups, communities, mentors, and organizations must all work together. By involving them, increasing cognition and motivation, creating opportunities for the business world, and creating a conducive business environment; providing learning infrastructure by distributing management and business materials; and providing start-up funding, market access, business management assistance, and sustainability [38], [9].

This PBEL model still has several flaws; it is complex and should be simplified to make it more practical. The model was not developed specifically for vocational education. As a result, the difference between this model and the one being developed is that the steps are simpler and more practical, with a greater emphasis on vocational education, entrepreneurship, and marketable products.

2.5. *Efficacy Theory*

Self-efficacy refers to an individual's belief in his ability to plan and carry out an action in order to achieve the desired results [41], [42]. Self-efficacy refers to a person's belief in their ability to achieve a goal or solve a problem, such as the ability to complete school assignments [43]. The concept of self-efficacy is derived from social learning theory [44]. Self-efficacy refers to a person's belief in his ability to make his dreams come true [41]. Including his self-assurance in navigating difficult situations [44]. Self-efficacy is a personal choice, not a physical activity [41].

Self-efficacy is a critical psychological factor that influences achievement, academic motivation, success, and future career choice [45]. Huang and Mayer states that a person's self-efficacy has a significant impact on their academic competence [46]. Self-efficacy has a direct impact on a person's cognitive development. So far, it can be seen that self-efficacy plays an important role in a person's personality [19].

According to Zimmerman, the academic competency in question is the ability to learn [47].

According to Korkmaz and Korkmaz, someone with high self-efficacy will be able to devise strategies to deal with life's challenges, problems, and even lack of self-confidence [44]. As a result, the statement that self-efficacy is one of the factors influencing success is correct [19]. Self-efficacy is very important for a person for it has an effect on human behaviour, where students with low self-efficacy had doubts about their activities [48].

Audrin and Puozzo [26] emphasize the importance of self-efficacy, stating that it has a positive impact on learning and growing one's business. In fact, they claim that self-efficacy is one of the factors influencing academic success. As a result, theoretical efficacy plays an important role in the development of this learning model.

Efficacy theory has a cognitive stage in a human being that, when properly applied, has a tremendous impact on thinking [21]. Attention, retention, production, and motivation are examples of cognitive stages. Efficacy theory has a significant impact on self-efficacy [48]. This theory is an important part of the development of this learning model.

2.6. *Entrepreneurship Education Encourages the Creation of Entrepreneurial Intentions*

Entrepreneurship is an intentional process because it is a continuous process with many positive characteristics [8]. In this case, entrepreneurship education has a broader impact on increasing intention [49], [50]. Entrepreneurial intentions are strongly influenced by entrepreneurship education [51]. Entrepreneurship education has a positive impact on the development of entrepreneurial character, though the effect is small [52]. This condition encourages students to develop entrepreneurial intentions.

Other research indicates that entrepreneurship education improves academic performance in junior high school but not in senior high school [53]. Knowledge gained through entrepreneurship education has no significant impact on entrepreneurial intentions [54], [52]. Students with independent-working parents, on the other hand, have higher entrepreneurial intentions [55]. This shows how the entrepreneurial environment influences entrepreneurial intentions. This emphasizes the importance of entrepreneurship education in shaping entrepreneurial intentions. As a result, entrepreneurship education is critical to encouraging the creation of entrepreneurs. Thus, the urgency of entrepreneurship education is used in this article as part of the development of a combination of entrepreneurial learning models with practical and project-based learning models.

2.7. Transformation of Syntax Model

The project-based learning model and the steps of efficacy theory were used to create this learning model (Figure 1).

The transformation process of this learning model is based on project-based learning model theory and efficacy theory, and the urgency in forming this new model.

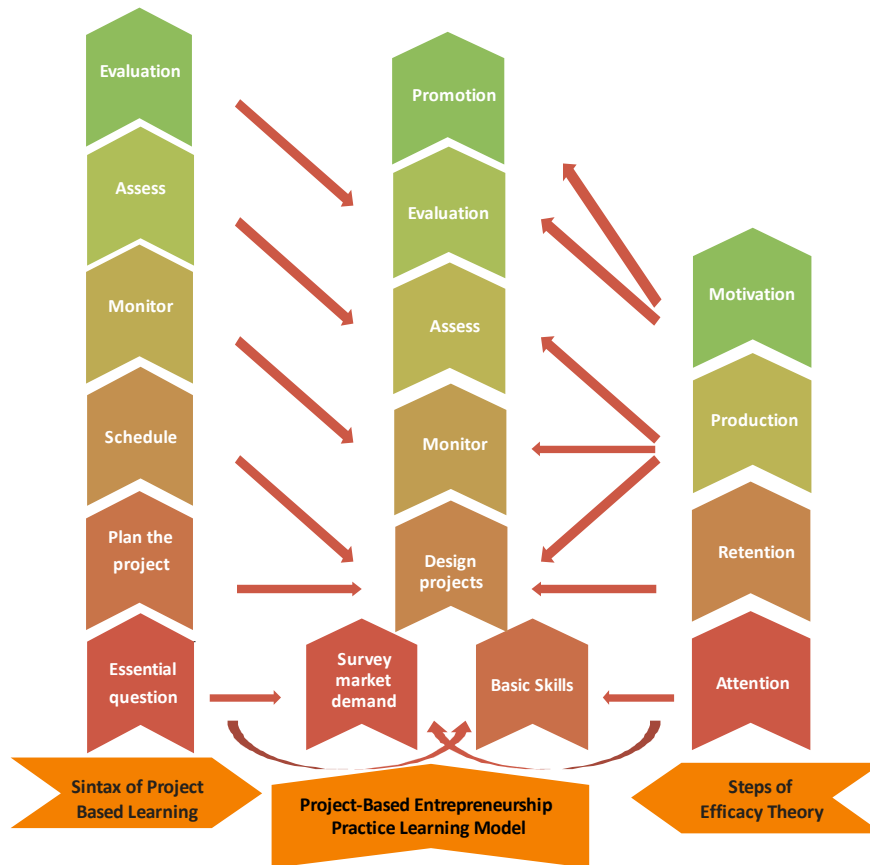


Figure 1. Syntax transformation of entrepreneurship project-based practical learning model

This learning model has seven stages or steps, compiled from a combination of the stages of the project-based learning model and the application of

efficacy theory (Figure 1). This combination form is visualized into seven stages as in Figure 2.

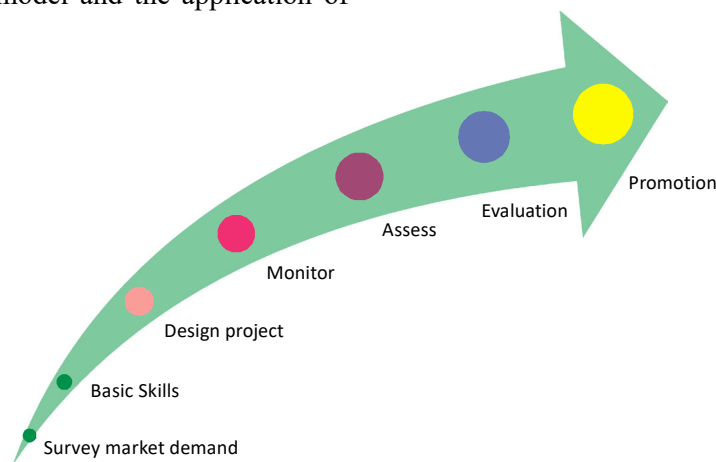


Figure 2. Stages of entrepreneurship project-based practical learning model

After going through the theoretical study process, seven stages of a new learning model were obtained. The next stage of this model is validation.

2.8. Product Validation

Aiken' v was used to assess the validity of the model book and model syntax development. The interclass correlation coefficient (ICC) is used in the reliability test.

The learning model product and learning model instrument were validated using a focus group discussion (FGD). It is a technique that uses a questionnaire to reveal the consistency of information by seven validators. This process focuses on the learning model's validity as well as the model syntax's validity. FGD is a qualitative research technique that employs an interview method for small groups [15].

Barbour [40] also recommends FGD for quantitative or qualitative studies, such as interviews combined with FGD, in order to produce more accurate and high-quality research findings.

2.8.1. Validation of the Model Book

The model book's validation consists of eight indicators, where these eight indicators have an important role in the process of validating and developing learning model books. The following are these indicators.

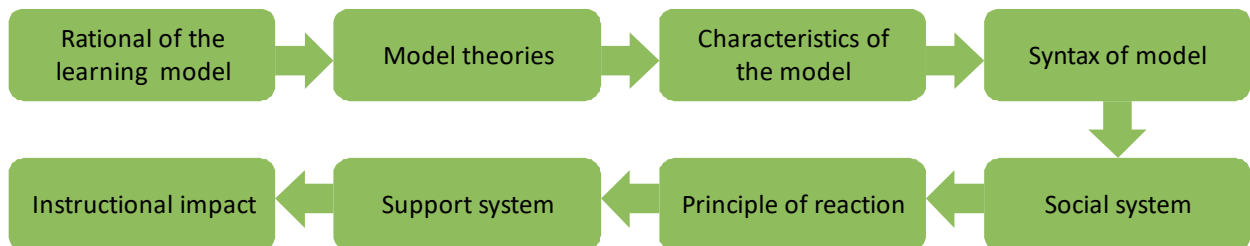


Figure 3. Indicators of model development

Eight indicators were evaluated by seven learning model experts and practitioners from industry. The expert assessment of the model indicators is found to have a very good value, despite the fact that several sub-indicators are not optimal. The interclass correlation coefficient test was then used to perform a reliability test, as shown in Table 2.

In this case, the average measures value with the condition $0,00 < 0,04$ falls into the category of poor reliability. If it has a value of $0,4 \leq ICC < 0,75$, it falls into the fair to good reliability category. However, if the value is $ICC \geq 0,75$, it falls into the excellent reliability category.

Table 1. Intraclass correlation coefficient

	Intraclass Correlation ^a	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.739 ^b	.595	.847	9.481	34	68	.000
Average Measures	.895 ^c	.815	.943	9.481	34	68	.000

These findings show that the average measure value is 0.895, indicating excellent reliability. This means that this learning model indicator can be used to predict the development of learning models.

2.8.2. Validation of the Learning Model Syntax

An expert assessment process is used to validate the learning model syntax. This validation stage focuses on the seven stages of the learning model

being developed. These seven steps were developed in response to needs, and their preparation was based on theoretical research. According to the expert assessment results, the model syntax developed has a high value. Following that, a reliability test was performed on the results of expert assessments for the syntax of the project-based entrepreneurial practice learning model using the intraclass correlation coefficient test.

Table 2. Intraclass correlation coefficient

	Intraclass Correlation ^a	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.333 ^b	.205	.498	4.500	34	204	.000
Average Measures	.778 ^c	.644	.874	4.500	34	204	.000

These findings show that the average measure value is 0.778, indicating excellent reliability. This means that as learning model syntax, this learning syntax is reliable. The syntax is as follows: basic skills, market demand survey, project design, project monitoring, process evaluation, final evaluation, and project promotion.

3. Research Methodology

This research data was obtained through planned stages in scientific methodology. Clear and measurable procedures, measurements, and data analysis were obtained.

3.1. Research Subject

The research subject is a project-based entrepreneurial practice learning model. This model was created by combining the steps of the project-based learning model with entrepreneurship and efficacy theories. Experts evaluate this subject. After that, the validated learning model was tried out in the woodworking practical course.

3.2. Procedure

Using the 4D research and development model (define, design, develop, and disseminate). The defining, designing, developing stages are carried out by involving experts with a collaborative validation approach between academic experts and industry practitioners to make product validation better.

Meanwhile, the dissemination stage is carried out among students of the practical woodworking (furniture) course.

3.3. Measures

After the product validation process, the learning model was applied to 26 students. Consisting of two groups (N=10) for the experimental group and (N=16) for the control group. The learning process is assessed based on seven stages of the learning model. The main focus of assessment highlighted in this article is on pretest-posttest, and final product assessment.

3.4. Data Analysis

The pretest-posttest assessment data was analyzed using percentages. Product assessment data is analyzed using percentages and based on product quality (accuracy of size, neatness, timeliness, aesthetics, and production costs). However, this article only explains in general terms the effectiveness of applying the model to the final product assessment value. Full descriptions appear separately in other publications.

4. Results

The following is the process of implementing an entrepreneurial project-based practical learning model with seven stages (Figure 4). Every student carries out the learning stages correctly and according to instructions.

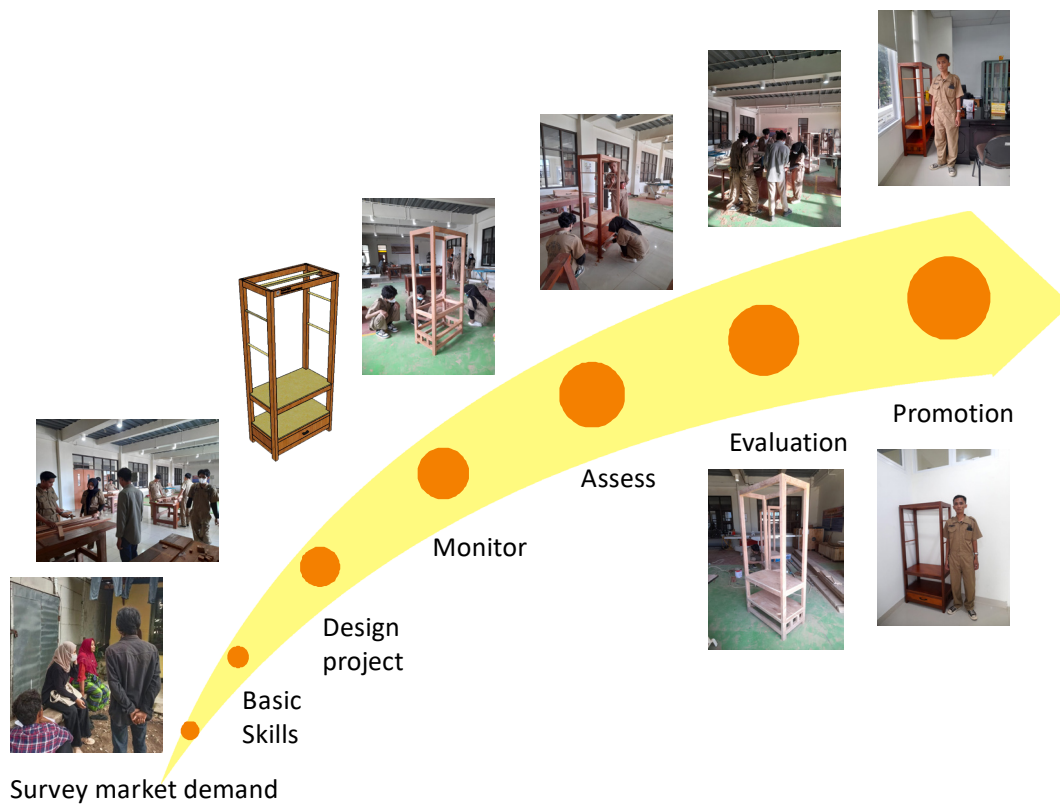


Figure 4. The process of implementing an entrepreneurial project-based practical learning model

Table 3. Providing pre-test and post-test treatment

Group	Experimental (n=10)	Control (n=16)
Pre-test	6,65 (SD= 0,46)	7,03 (SD= 1,67)
Post-test	9,20 (SD= 0,63)	8,13 (SD= 1,68)

The assessment of the cognitive abilities of students in the experimental class had better scores than the cognitive abilities of the control class. Even though the difference is not that big, there is quite a good improvement in the experimental class.

Table 4. Product assessment

Group	Experimental (n=10)	Control (n=16)
product assessment	3,6 (SD= 1,04)	3 (SD= 0.51)

Product assessment was carried out in both classes. It was found that the experimental group product scores were better than the control group product scores.

5. Discussion

Educational research is one of the important topics that still exists today, especially with the many educational problems that still exist and the demands of current developments [3]. Technological developments are also the reason why education is important, because education is in contact with technology, especially vocational education [4]. This research has a strong reason for being carried out due to technological developments. Apart from that, this research was conducted based on the high unemployment rate, limited employment opportunities, low quality of vocational education graduates, and problems with learning models that are not yet on target as explained in the background [2]. This research creates a solution to existing problems, namely creating a new learning model that is oriented towards creating graduates who have good knowledge skills, entrepreneurial skills, and competence in making quality products. Several previous studies have been used as references for the development of this research [36], [37]. Research on the entrepreneurial project-based learning model was also carried out by other researchers, and has a positive impact on work ability and entrepreneurial ability [9].

This research produces an entrepreneurial project-based practical learning model with seven stages.

The most prominent aspect of entrepreneurship at the learning model stage is in syntax 1, namely market demand surveys, where students are asked to carry out market survey assignments to the community about wood products that are in demand and still in use. At this stage, students are asked to practice communication skills to obtain information, negotiate, and mentally meet the public. This stage was created based on relevant studies that to become an entrepreneur, you need the ability to read market needs [6]. The entrepreneurial aspect also stands out, namely in syntax seven (7), where the results of student practicum products are sold to consumers. The ability to sell this product is part of entrepreneurship because it is considered to be part of the ability to meet community needs. This section is also in line with the statement that the characteristics of entrepreneurship are bringing about innovation and impacting economic value [25].

Meanwhile, the syntax of learning models number two to six focuses on project abilities starting from basic skills, design, monitor, assess, and evaluate. This syntax has a major role in shaping students' abilities in creating projects. At this stage, they are asked to train basic skills in woodworking practices, make designs according to community needs, and make it into a product that can be used (Figure 4).

Learning models have an important role in helping to achieve learning goals. This learning model supports the creation of students' ability to create projects and entrepreneurial abilities. This is in line with previous research, where providing entrepreneurial experience has an impact on the formation of entrepreneurial abilities [6].

This research is very appropriate for practicum courses or those with an orientation towards making products. Of course it is very appropriate for entrepreneurship-oriented courses. Indonesia as a developing country really needs the application of this kind of learning model, as do other developing countries. However, it does not rule out the possibility that developed countries will also consider it. Because this learning model has proven to be effective in improving cognitive abilities, students' ability to make products, and students' entrepreneurial abilities in meeting market needs. This is a very good thing for the development of educational research.

6. Conclusion

This entrepreneurial project-based practical learning model has proven effective in improving students' cognitive abilities, project creation abilities and entrepreneurial abilities to meet market needs.

This model has seven stages in accordance with the demands of project work based on market needs, and encourages students to solve problems through market-based products. This learning model is very suitable for practicum courses that are product and entrepreneurship oriented. This research contributes to improving the quality of vocational education learning.

The research was conducted in the woodworking practical course at Universitas Negeri Padang. This study used 26 students (N=10 for the experimental group and N=16 for the control group). The practicum process in this research uses a combination of the SketchUp application for the product design process. However, all research processes are carried out with full attention.

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