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Local potency mapping-project using iMindMap

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Abstract. The results of previous studies confirm that there are several learning models that have the potential to improve students' competencies in reviewing Creative Products and Entrepreneurship Products (PKK). Through iMindmap media presented by the teacher, students of Vocational Middle School (Vocational School) have the opportunity to develop project scenarios based on local potential using a business map. This experimental study aims to determine the effectiveness of the mapping-project learning model by using iMindmap based on local potential media to improve the competency of student entrepreneurship. The mapping-project instrument was developed by researchers and validated by experts. The results indicate that the mapping-project learning model using iMindmap based on local potential could improve student competence in analyzing business opportunities using analysis of strengths, weaknesses, opportunities, threats (SWOT), and designing prototypes of superior products based on local potential using a business map. This study recommends that with the mapping-project model, students' ability to explore Creative Products and Entrepreneurship Products material becomes more profound, meaningful, and student-centered. Future research is needed to analyze the contribution of mapping-projects using iMindmap media on exact lessons.

3 Introduction

Developing vocational education is a strategic step to improve human resources [1]. Vocational high school (SMK) as a school that provides vocational education aims to prepare students to be able to work in certain fields where they are expected to have capabilities and skills in their chosen field. At present, the employment opportunities in various sectors require individuals with expertise and work skills. Therefore, it is necessary to develop the implementation of entrepreneurial learning models that are directed at forming student competencies based on the industry [2]. Talented and skillful students in various fields of choice will be prepared not only to become skilled and trained entrepreneurs but to be able to develop themselves in order to fulfill self-actualization as well [3].

Based on data from the Central Bureau of Statistics, Vocational High School Open Unemployment Rate (TPT) is the highest among other levels of education, where the number of unemployed reaches 1.42 million in the range of 8.92% [4]. As a consequence, this has an impact on efforts to improve the quality of human resources, especially the increase in vocational high school students as well as the provision of productive employment for graduates of vocational high schools. In addition, employment is currently decreasing and competition to find and get jobs is very tight. This phenomena has encouraged and prompted several graduates to create their own employment opportunities with entrepreneurship. They are self-employed with the entrepreneurial knowledge they get at school. Thus,



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it is very important to promote entrepreneurial competence in education (especially vocational education) and lifelong learning [5]. This entrepreneurial ability can be trained by maximizing the role of the family and the resource factors in the environment that are integrated into learning [6].

Entrepreneurship learning has an interesting topic that requires media and information communication technology (ICT) in learning to help improve business productivity, especially in the millennial era based on online applications [7]. Examples of ICT-based learning are varied learning with online-based assignments and uploaded on the internet, using videos, employing iMind mapping-based learning, and technology-based evaluations [8]. Education in the 21st century requires problem-solving skills and students' thinking skills in associating information [9]. Techniques that present associations between concepts, thoughts, and information through networks or non-linear diagrams, using verbal and symbolic elements have been developed by Buzan through mind maps [10]. In conventional learning, mind maps are drawn with colored pens and paper. However, by means of the technology currently available, it is possible to create mind maps using applications in a relatively easy way to create, review, revise, and store the mind maps [11]. The objective of this study are: 1) to develop mapping project learning models using iMindMap media as technology-based business design, 2) Knowing the effectiveness of the mapping project model in improving student entrepreneurial competencies.

2. Method

The design of this study adapted and modified the research and development model initiated by Borg and Gall [12] which was adjusted to the characteristics of students, characteristics of goals, fields of study, and background of learning. The stages of research and development that were carried out include: (1) Collecting Research Information (2) Planning (3) Developing preliminary design of product namely business map using iMindMap application (4) Performing expert validation, (5) Performing main product revision (6) Conducting operational field testing. Operational field testing was carried out by the researcher in the experimental process in the XI class of the TPHP SMK NU Sunan Ampel Poncokusumo. This study aims to measure how effective the Mapping-Project learning model is to improve students' ability to think creatively, analytically, logically, and systematically. This study also aims to identify whether the learning model can improve student competence in entrepreneurship by utilizing the local potential. The next step is (7) Performing final product revision and (8) Final Product Finishing.

3. Results and discussion

The mapping project is one of the innovative learning models that collaborates and incorporates the use of iMindmap applications with student projects in utilizing local potential into a superior product. This learning approach offers an effective assistance to students in creating and constructing visual and meaningful relationships between ideas that further will help students remember, review and understand [13].

The main principles and fundamental of designing mind maps in iMindMap applications are as follows: (1) the central theme of a topic (the main idea of a topic or problem) is placed and defined in the middle, (2) key ideas from the central theme emanate out of the center that is described as a branch of a tree, (3) the branches contain images or key ideas written in capital letters and is underlined. Each basic idea grows a further set of ideas, connected with arrows, like twigs at the end of a branch. (4) Branches from the central theme are given attractive colors to provide visual impact [14]. Figure 1 below shows the designed iMindMap form.

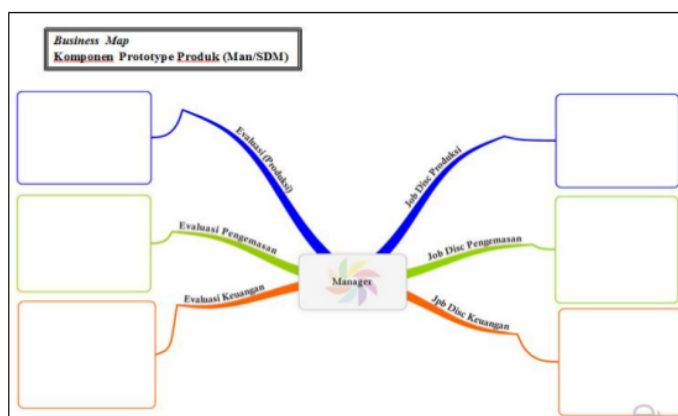


Figure 1. Student's worksheet in the form of iMindMap.

The assumption of mind mapping is based on associative memory models. The human brain is equipped with a structure that allows the storage of some information [15]. Every information which reaches the brain is connected to other information through associations, forming a network of interconnected elements.

Based on the results of a simple experiment (One Group Pre-test Post-test Design), students' entrepreneurial competencies which include knowledge, skills, and attitudes increased after obtaining a treatment model Mapping project with local potential mapping using the iMindMap application as seen in figure 2.

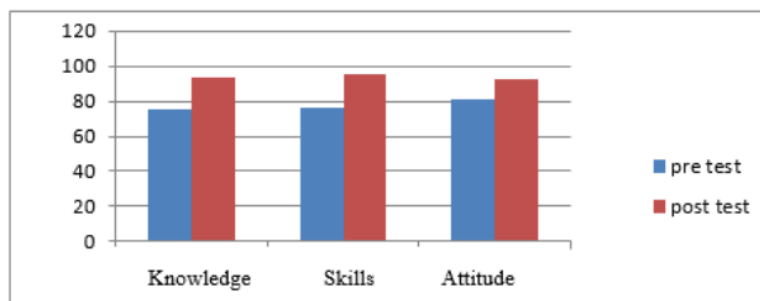


Figure 2. Entrepreneurship competency of students before and after treatment.

Knowledge and entrepreneurship skills of Vocational students grow as the learning approach progresses. Vocational students can better understand the scope of entrepreneurship if their learning practices are based on local perspectives to be designed as a superior product [16]. Learning using mind maps will train students to think in a structured manner, familiarize them to associate several aspects that are connected, and be able to plan projects or businesses, organize available resources, carry out projects according to pre-determined work steps, and evaluate the course of business to achieve good quality [17]. Therefore, this learning model is effective for improving student competence in learning. The effectiveness of the Mapping-project model with local potential mapping using iMindMap can be seen in table 1.

Table 1. Mapping-project model effectiveness.

No	Aspects	Pretest Score	Posttest Score	Gain	Remarks
1	Knowledge	75.5	93	0.71	Effective
2	Skill	76.2	95.4	0.80	Effective
3	Attitude	81	92	0.57	Moderately Effective

Through the mapping project model, student' skills in developing a business plan increased by 80% with a varied iMindMap structure and design. The model applied can provide meaningful entrepreneurial knowledge to students about the accurate and precision analysis of business plans through the design of iMindMap. In addition, the model applied is moderately effective to enhance team collaboration in developing business ideas and design creativity.

4. Conclusion

Student entrepreneurial competencies which include knowledge, skills, and entrepreneurial attitudes increase after obtaining Mapping-Project learning model treatments by mapping local potential using iMindMap. Learning using mind maps in the form of an iMindMap application will train students to think structurally, get used to associating several aspects that are connected, be able to plan projects or businesses, organize available resources, carry out projects according to predetermined work steps, and evaluate the business to achieve good quality. The use of technology in making mind maps using iMindMap makes it easier for students to review, revise, and save the mind map that they have made. Therefore, it is strongly recommended to use iMindMap for learning.

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