

# Development of Digital Learning Media on Entrepreneurship Subject Using Creative Productive Learning Strategies

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**Abstract.** The form of learning strategies that are considered appropriate is creative-productive (CP). This learning strategy challenges students to produce creative product that comes from their understanding of the concepts being studied. Learning steps include: orientation, exploration, interpretation, and re-creation. In connection with this reality, the researchers felt the need to conduct research and development that focused on efforts to obtain alternative structured patterns by developing digital learning media for "entrepreneurship" subject using CP learning strategies in determining business opportunities in the field of mechanical engineering. The development of digital learning materials uses a research and development (R&D) approach, a process used to develop and validate products. Data collection techniques in validating learning material products are carried out by distributing questionnaires. This study was designed in three stages: (1) Research in the form of planning and formulation of learning objectives, (2) Development in the form of making entrepreneurial learning materials using CP learning strategies, (3) Formative evaluation and revision by material experts, media experts and instructional design experts and evaluators one to one, small group, field trial. With these three stages of research and development, it is expected that the teaching material produced is feasible to be implemented and can improve student competence in determining business opportunities.

**Keywords:** Learning Strategies, Digital Media, Learning, Creative Productive Learning

## 1. Introduction

Higher education should emphasize increasing the competence and creativity of graduates with the hope that after graduating students can meet the needs of the workforce or become an entrepreneur. This is in line with the opinion of Sallis who revealed that the quality standards of tertiary graduates were measured by criteria in accordance with the needs of the workforce, customer or user satisfaction [1]. Joyce and Weil revealed that learning development is a plan or pattern that can be used for the curriculum (long learning material), designing learning materials, and for delivering learning inside and outside the classroom [2]. Miarso states the development of learning

materials in the area of educational technology requires a systematic and systemic approach, which is carried out coherently and comprehensively or comprehensively [3]. Along with the development of information and communication technology, today's technological devices have spread widely regardless of economic, social, educational, and so on. In line with the study of learning technology, the penetration of the use of technology media to support learning activities is increasingly open. Good learning can be supported by conducive learning's atmosphere and communication relationships between lecturers and students can run well. The learning process will be effective when utilizing the various facilities and infrastructure available including utilizing digital learning media.

The development of digital learning media in this research is a systematic way of identifying, developing, and evaluating a set of materials and strategies aimed at achieving certain learning goals. At first the creative-productive (CP) learning strategy was called the strata strategy, then with various modifications and development of this strategy it was called the CP learning strategies. The CP learning strategy is a strategy developed by referring to various learning approaches that are assumed to be able to improve the quality of teaching and learning process both in primary and secondary education, as well as in higher education. These approaches include creative active learning (CBSA), also known as inquiry strategies, constructive learning strategies, and collaborative and cooperative learning strategies. This learning strategy is expected to be able to challenge students to produce something creative as a re-creation or reflection of their understanding of the intended problem / topic [4].

The CP learning strategy is expected to be able to develop the quality of learning especially at the tertiary level of education, further stated that this learning strategy challenges students to produce something creative that stems from their understanding of the concepts being studied. The characteristic of creative-productive learning is to actively involve students both intellectually and emotionally through. Learning steps include: orientation, exploration, interpretation, and re-creation. "Entrepreneurship" learning activities can be developed using CP learning strategies.

General competencies possessed after studying the digital learning materials of entrepreneurship subject that will be developed are: students are expected to have broad insights, deep appreciation and skills in analyzing values and processes in developing an entrepreneurial spirit in the business world and determining the best choice to be developed as an opportunity business in mechanical engineering.

Well-designed learning that takes into account conditions and selects appropriate learning strategies will improve the quality of learning and naturally will improve students' learning outcomes. This means that improvements in learning outcomes must start from improving the quality of learning designs. Learning strategies by promoting creativity and productivity are expected to help improve student learning outcomes and skills that take "entrepreneurship" subject. In connection with this fact, the researchers felt the need to conduct research and development of digital media learning "entrepreneurship" using CP learning strategies.

Based on the description above, the research problem formulation is as follows: (1) how is the development of digital learning media on entrepreneurship subject using CP learning strategies? (2) How is the feasibility of digital learning media on entrepreneurship subject using CP learning strategies? (3) How is the effectiveness of digital learning media on entrepreneurship subject using CP learning strategies?

Based on the problems that have been raised, the purpose of this research and development is to: (1) Develop digital learning media on entrepreneurship subject using CP learning strategies; (2) Knowing the feasibility of digital learning media on entrepreneurship subject using CP learning strategies; and (3) Knowing the effectiveness of digital learning media on entrepreneurship subject using CP learning strategies.

In general, this research and development is expected to produce digital learning media that can improve student competency and creativity in entrepreneurship subject, especially in determining business opportunities in the field of mechanical engineering, so as to increase student interest in becoming entrepreneurs. Specifically the results of this research and development can provide benefits: (1) As a reference to optimize the learning process of entrepreneurship subject, especially in determining business opportunities in the field of mechanical engineering; (2) Adding knowledge in the field of entrepreneurship, especially in determining business opportunities in the field of mechanical engineering; and (3) As a reference for the development of learning materials in other subjects with different learning models and strategies.

#### **Development of Digital Learning Media**

The development of instructional media in this study is guided by the development of learning models. According to Gustafson (2013: 18) there are several learning development models that can be used in developing learning models: (a) Classroom-Oriented Models, Classroom-Oriented Models are models related to the learning process that takes place in the classroom both educators and students. This is closely related to teaching materials, planning learning strategies, choosing learning media, delivery and evaluation systems; (b) Product-Oriented Models, Characteristics of Product-Oriented Models have four assumptions, namely: (1) learning products needed (2) necessary and important development of existing products (3) emphasis on testing and revision (4) products must be used; (c) System-Oriented Models, These System-Oriented Models can be characterized by their characteristics, namely: (1) it is carried out by a large number of teams and their expertise, (2) is developed linearly with step accuracy and (3) is oriented towards problem solving.

Development of learning materials must be carried out in stages and thoroughly with the aim of increasing student competency or learning outcomes. Sugiono states, it is necessary to do a research in the form of a needs analysis so that the product can be useful for the user community [5].

Basically, digital learning media is an electronic version of text that can be read on a desktop or laptop screen, PDA or other portable device. Digital learning media can use a variety of file formats and can combine other features, such as annotations, audio and video, and hyperlinks. In addition, digital learning media can also include comments and communication tools (chat) that allow interaction between readers, and allow readers to add links to outside sources. Some digital learning media products are tied to software to read them, and some are providing digital media in formats, such as HTML.

Furthermore, the understanding of digital books according to Jones and Brown explains that: "digital books can be as simple as a scanned version of a printed publication, inherent in digital books is the ability to make available a number of features to the reader which includes multimedia, hyperlinks and other interactive components, search features, and customizability to change text size or convert text to audio so as to meet the special needs of readers." Books digital offers several benefits for readers, among others by utilizing the features of audio, video, and simulations that

facilitate understanding of material subjects were more inside. In addition, it provides an opportunity for students to improve understanding of subject matter instead of just reading the text.

Students in tertiary institutions are adults, so they are considered to have the awareness in developing their potential to become intellectuals, scientists, practitioners, and / or professionals. Accordingly, changes in the learning process become important and will create an academic climate that will improve student competencies both hard skills and soft skills. This is in accordance with the aim of Higher Education in Law No. 12 of 2012 that is to become a man of faith and piety to God Almighty and to have noble, healthy, knowledgeable, capable, creative, independent, skilled, competent, and cultured for the interests of the nation. To realize this goal, all students must attend general basic learning subject known as MKDU. In order to improve learning outcomes, the MKDU is added with English, Entrepreneurship, and subject that encourage the development of other characters, both integrated and individual.

Entrepreneurship subject are lessons that shape the character of entrepreneurship or at least students can increase knowledge about the ins and outs of business both in terms of soft skills and hard skills so that students are able to take advantage of opportunities around them in creating their own businesses after graduation or while still in college. Entrepreneurial learning material used as a reference in the Department of Mechanical Engineering, State University of Medan (Unimed) so far is still entrepreneurial in general. The description and case studies still refer to businesses outside the field of mechanical engineering. Learning materials to be developed are oriented towards developing business in the field of mechanical engineering, for example, in the field of welding production, metal plating, automotive modification and other mechanical engineering businesses. The learning objectives to be achieved are that students will be able to understand, apply, and make entrepreneurial lifestyles with the ability to communicate, lead, and apply business management in managing their business properly, especially in the field of mechanical engineering.

### **Creative productive Learning (CP)**

Learning strategy is a plan or a pattern that is used as a guide in planning learning in class or learning in tutorials and to determine learning tools including books, films, computers, curriculum and others. Joyce in [6] also states that each learning strategy directs us into designing learning to help students in such a way that learning objectives are achieved.

#### **1. Understanding of Creative-Productive Learning Strategies.**

Made Wena states that the approaches referenced in the creative-productive learning strategy include; active and creative learning (Active Student Learning Methods) which is also known as inquiry strategy, constructivism learning strategy, and collaborative and cooperative learning strategies [4]. With these approaches the creative-productive learning strategy is expected to challenge students to construct their own concepts or materials and produce something creative as a re-creation or reflection of students' understanding of the problem / topic being studied.

### **Characteristics of Creative-Productive Learning Strategies.**

Creative productive learning has several characteristics that distinguish it from other learning models [4]. Characteristics of creative-productive learning strategies include the following: (a) Intellectual and emotional student involvement in learning, (b) Students are encouraged to discover / construct their own concepts that are being studied through interpretation conducted in various ways such as observation, discussion or experiment, (c) Give students the opportunity to take responsibility for completing joint assignments, and (d) To be creative, one must work hard, be highly dedicated, enthusiastic and confident.

The creative productive learning strategy is assumed to be able to motivate students in carrying out various activities so that they feel challenged to complete their tasks creatively. Made Wena [4] describes the stages as follows: (a) Orientation, learning activities begin with an orientation to communicate and agree on the tasks and steps of learning; (b) Exploration, can be done in various ways, such as reading, observation, interview, watch a show, do experiments, browsing through the internet, and so on; (c) Interpretation, the results of exploration are interpreted through analysis, discussion, question and answer, or even in the form of a retry, if that is indeed necessary. Interpretation should be carried out during face-to-face hours, preparations have been made by students outside of face-to-face hours; (d) Re-creation, students are assigned to produce something that reflects the results of their interpretation of the concepts / topics / problems that are studied according to their respective creations; (e) Evaluation and evaluation are carried out during the learning process and at the end of the learning process.

## **2. Research Methods**

This research was conducted at the Department of Mechanical Engineering at the Faculty of Engineering, State University of Medan. The study was conducted for 1 (one) semester. The development of learning material that is used as the basis for this research and development is the development model of Dick and Carey, considering the steps of developing the Dick and Carey model are more complete and specific.

This research uses a research and development (R & D) approach. That is a process used to develop and validate educational products, such as textbooks, learning films, and others. Educational research and development includes several stages in which a product is developed, tested, and revised according to the results of field tests.

The data in this study were analyzed qualitatively, and the data collection instruments developed in this study were related to data collection techniques carried out at each stage of the study, namely: (a) questionnaire in the form of a questionnaire, used to ask questions and observations in stages expert development and validation, as well as learning outcomes tests in the form of objective tests and action tests used to measure student competency improvement.

### 3. Results and Outcomes Achieved

#### 3.1. Results

This research was started from the data collection conducted at the lecturers of entrepreneurship subject and fifth semester students of Mechanical Engineering Study Program, Faculty of Engineering, State University of Medan.

#### Preliminary Research Results

To find out the learning process of entrepreneurship subject in the FT.Unimed mechanical engineering study program, data collection was carried out in preliminary research, there were seven indicators proposed, the same indicators were applied to the questions raised by lecturers and students. Of the 30 students who were the subjects of the study came from 16 Public High Schools (SMU) and 14 from the Vocational High School (SMK).

The results of the preliminary research questionnaire can be described as follows:

##### a. Indicators Explain Learning Outcomes

This indicator is described in 3 questions and the results can be seen in the following table:

**Table 1.** Preliminary Research Results Indicators Explain Learning Outcomes

No	Question	Answer	
		Yes	Not
1	Did the lecturer explain the learning achievements and competencies to be achieved in learning?	27 people (90%)	3 people (10%)
2	What are learning outcomes and eye competencies college according to student needs?	14 people (46,7%)	16 people (53,3%)
3	Do Entrepreneurship subject need development?	29 people (96,7%)	1 people (3,3%)

##### b. Indicators Provide Motivation Stimulus and Feedback.

This indicator is described in 5 questions and the results can be seen in the following table:

**Table 2.** Preliminary Research Results Indicators Provide Motivation Stimulus and Feedback.

No	Question	Answer	
		Yes	Not
1	Does the lecturer provide motivation to students to study hard?	27 people (90%)	3 people (10%)
2	Is an Entrepreneurship subject interesting and not boring?	10 people (33,3%)	20 people (66,7%)
3	Do lecturers assess student performance fairly and according to the competencies achieved by each student?	25 people (83,3%)	5 people (16,7%)
4	Does the lecturer assign tasks to be done at home individually or in groups?	27 people (90%)	3 people (10%)
5	After completing checking student assignments, does the lecturer explain the correct answer to students?	14 people (46,7%)	16 people (53,3%)

**c. Indicators arrange teaching materials to be provided.**

This indicator is described in 4 questions and the results can be seen in the following table:

**Table 3.** Preliminary Research Results Indicators Arranging Teaching Materials to Be Provided

No	Question	Answer	
		Yes	Not
1	Did the Lecturer explain GBPP and SAP Entrepreneurship subject for one semester?	26 people (86,7%)	4 people (13,3%)
2	Does the lecturer explain the summary of the subject matter of Entrepreneurship subject at each meeting?	14 people (46,7%)	16 People (53,3%)
3	Do Lecturer conduct tests early the ability of students to establish boundaries early material eye study Entrepreneurship at the beginning of the semester?	7 people (23,3%)	23 people (76,7%)
4	Is the material resource that is used notified to the students so that students can learn it independently?	14 people (46,7%)	16 people (53,3%)

**d. Indicators use various methods and media in the delivery of learning.**

This indicator is described in 2 questions and the results can be seen in the following table:

**Table 4.** Preliminary Survey Results Indicators Using Various Methods and Media in Submitting Learning

No	Question	Answer	
		Yes	Not
1	Do lecturers use varied learning media in Entrepreneurship subject?	6 people (20%)	24 people (80%)
2	Do lecturers use varied methods in the learning process of Entrepreneurship subject?	29 people (96,7%)	1 people (3,3%)

**e. Focus Group Discussion (FGD)**

Participants FGD consists of vocational school teachers the fields of entrepreneurship, can be in grab conclusion of discussions results were described as follows: (1) Materials that are relevant to the learning objectives, Entrepreneurship subject material must start from basic knowledge about Entrepreneurship, which is then followed by tips on becoming an entrepreneur, identifying various business opportunities, ending with how to implement business in technical fields that are complemented with examples of the calculation of production costs in engineering business; (2) Presentation methods that are relevant for achieving learning outcomes, It is proposed to use several methods of presenting learning in accordance with the characteristics of students. In order to make learning more interesting and the competencies and learning objectives can be achieved, the learning presentation method is varied, namely: if participatory lectures, interactive question and answer, group discussions and presentations of each group and project final project consultations; (3) Relevant Learning Strategies; For achieve the learning objectives based KKNi needed an innovative learning strategy that is able to engage students actively and critically to produce learning to stimulate students to be more creative capture business opportunities. Creative productive learning strategy is a learning strategy that requires students to be able to produce a final product of learning

to dig as much information as possible from various sources to be discussed and consult later developed products entrepreneurship form of new entrepreneurs. Learning strategies with creative productive approaches are relevant to desired learning outcomes; and (4) Evaluation of learning, FGD participants suggest that evaluations be made in the form of written tests individually or in groups. At the beginning of the learning entrepreneurship be evaluated with the work on the problems of pre-test and end of the study done by working on the evaluation of the post-test. Evaluation is also during the ongoing learning process, with independent assignments done individually, journal review. Review books and case studies that are discussed in groups.

The results of the preliminary study concluded that it is necessary the development of materials learning subject entrepreneurship which emphasizes the opportunities and challenges in accordance with the needs of the students. Next step is the identification and analysis of learning objectives. Identification and analysis of learning objectives will be formulated after considering all forms of data and information as well as suggestions obtained from the needs analysis and FGD in preliminary research.

The results of the analysis of the learning objectives then it can be concluded material from entrepreneurship subject that are expected to increase opportunities and interest in entrepreneurship are as follows: Chapter 1 Introduction, Chapter 2 Entrepreneurship Nature, Chapter 3 Becoming an Entrepreneur, Chapter 4 Business Opportunities, Chapter 5 Opportunities Engineering Business.

### **Next Stage Plan**

Phase subsequent book media instructional print developed into a medium of learning Entrepreneurship shaped digital. After completing the digital learning media product, the next stage of research will be carried out, namely: (a) Material Expert Validation; Material expert assessment consists of 3 (three) aspects, namely the preparation of learning materials, presentation of learning materials and assessment tools. An assessment of the question items is given in the scaling score 1 - 5, and comments / input for improvement / revision. For the aspects of the preparation of teaching materials, visits of learning objectives, student characteristics, student involvement and examples provided are in accordance with the designation. The material has also been compiled from various sources that enrich students' insights; (b) Learning Media Expert Validation; Evaluation of media experts in this case instructional media experts consists of 3 (three) aspects namely setting and lay out, book cover, and visual illustrations. An evaluation of the question / statement items is given in the scaling score 1 - 5, and comments / input for improvement / revision; (c) Validation of Learning Design Expert; Inputs and suggestions from learning design experts are divided into 4 (four) indicators namely learning objectives, learning strategies, material preparation and evaluation tools. An assessment of the question items is given in the scaling score 1 - 5, and comments / input for improvement / revision; (d) One to one evaluation; Evaluation of one to one is done with 3 (three) students in an individual. The three students come from students who have high, medium, and low abilities. Students are asked to read the learning material and discuss it. In this evaluation interviews were conducted. After a one-to-one evaluation of revised learning materials, direct improvements were made to parts that were considered difficult for students to understand, difficult to read, or cause misunderstandings; (e) Small Group Evaluation; Learning materials were re-evaluated to Small Groups consisting of 12 students and did not include three students who were involved in the one to one evaluation; and (f) Field Trial; The Field Trial involved 30 students. Field Trial is most



similar to the state of the real as is done in environments that resemble the environment are real. In this field trial a post-test was conducted to determine the effectiveness of learning materials and creative productive strategies developed. This research and development concludes with the final product reporting and socialization stage among the Unimed Mechanical Engineering Study Program.

#### 4. Conclusion and Suggestions

Based on the formulation of objectives and exposure to the results obtained in research and development of entrepreneurial learning materials, it can be concluded as follows: (1) Preliminary research results show that, entrepreneurship learning needs to be developed, especially in determining opportunities for engineering. This print entrepreneurship learning media is only the first step, digital entrepreneurship learning media will be developed; and (2) Research and development has been carried out 70%.

Based on the conclusions of the research results that have been presented, then in the following description put forward some relevant suggestions, namely: (1) This print and digital entrepreneurship learning media is only the first step, other subject digital learning media will be developed; and (2) The development of this learning media can collaborate with expert teams / development teams so that educators can arouse their motivation by preparing learning resources that have an appeal.

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