

Designing Interface Based on Digipreneur to Increase Entrepreneurial Interest in Engineering Students

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Abstract— Entrepreneurship is one of the activities produced from higher education as an alternative solution because it contains competence, education, and training elements. Entrepreneurship has values needed during a digital society to survive and be creative in seeing problems into opportunities. Vocational engineering graduate dominates the high level of unemployment in Indonesia. It proves that there is still a lack of student interest in entrepreneurship. This paper aims to present a digipreneur-based (digital entrepreneur) interface design process to increase entrepreneurial interest in engineering students in Technology and Vocational Education. This research uses a research and development approach with three stages, namely: Phase I require analysis and design of the model, Phase II develops with validity and practicality, and Phase III will implement the model while in this study will only focus on stage I, namely Design Interface to Increase Entrepreneurial Interest in Engineering Students. The design of this interface uses elements of a digital entrepreneur known as an LMS Based Digipreneur. An effective and efficient alternative is needed by digipreneurs, namely the Digipreneur-based Learning Management System (LMS). It combines the concept of online learning and elements of technological entrepreneurship. It enables students to be very adaptive and develop their business because LMS facility supports and facilitates online shops that students can make independently. These integrations and implementation can be applied directly to entrepreneurship learning in higher education.

Keywords— Digipreneur; entrepreneurial interest; learning management system.

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I. INTRODUCTION

Vocational education is a form of higher education whose education levels are at the school, polytechnic, institution, and university levels. Vocational education also has the vision to prepare students to compete in the world of work and be able to face changes in the community and their environment. Vocational education has more responsibility than general education, especially in producing professional graduates with high work skills and abilities [1].

Vocational education graduates are expected to be able to be independent. They are hoped able to be an entrepreneur and not depend on available jobs. Vocational graduates in higher education are expected to work professionally and are also expected to create jobs by their fields of knowledge and market opportunities [2]. The learning process of vocational education in tertiary institutions is oriented towards producing a professional and market-oriented workforce (society and industry). It is hoped that vocational graduates will be able to develop their entrepreneurship competence, which is

packaged in education and teaching according to one of the “tri dharma” of higher education. They can produce many young entrepreneurs who can directly improve the nation’s economy [3].

Vocational education aims to produce graduates (workforce) skilled and professional in their scientific fields [4]; when combined with good entrepreneurial skills, it is possible, especially in overcoming the high number of educated unemployed from vocational education. Based on the Central Statistics Agency data for February 2020, the Open Unemployment Rate (TPT) is still largely dominated by university graduates, Diploma I / II / II, and Vocational High School [5].

Based on the Central Statistics Agency, unemployment has increased by 60 thousand people in the past years, with a decrease in the open unemployment rate to 4.9% in February 2020 [5]. However, this condition does not include the negative impact caused by the outbreak of the Covid-19 pandemic. However, the National Development Planning Agency (Bappenas) predicts that the unemployment rate in 2021 is likely to increase to 12.7 million people due to the

pandemic. In 2020 it was estimated that approximately 8.1 million people, or 9.2%, will be influenced by the open unemployment rate (TPT) [6]. Therefore, higher education is essential to immediately enhance entrepreneurship learning by providing alternative solutions through production-based

entrepreneurship training models for students to compete in this globalization era. This figure can also be seen from students' lack of interest in entrepreneurship and utilizing and developing their potential.

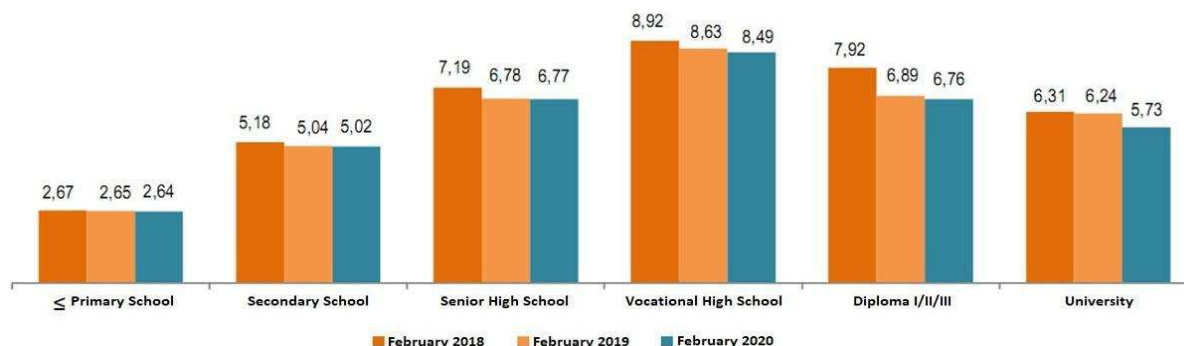


Fig. 1 Open Unemployment Rate in Indonesia from February 2018-February 2020. Source: Central Statistics Agency, February 2020, [5]

Entrepreneurship education and training is a process for developing his concepts and skills. So, he/she can analyze business opportunities, gain insight, have enthusiasm and confidence, and are sure to take action [7]. Entrepreneurship education and training aim to inspire students, arouse emotions, and change mindsets [8], [9]. Research on entrepreneurship theory, education, and training has been researched by many experts, including decision-making theory [10], [11]. Those help us understand why some entrepreneurs can see economically profitable opportunities while others are not. These theories are very helpful for students in dealing with problems in the field related to entrepreneurial problems. According to Kyvik [12], an effective way of teaching entrepreneurship requires a combination of theory and application. Bauman and Lucy [13] stated that cultivating entrepreneurship as a mindset can be considered as an educational competency based on instructional learning experiences and training.

Myovella *et al.* [14] stated that Enterprise had become an indication of a country's economic growth, positively impacting formal education. Entrepreneurship is the ability acquired through education. Entrepreneurship ability is needed to detect better and evaluate business opportunities, increase self-confidence in perceived risks, and scout care and job opportunities.

Murillo-Zamorano *et al.* [15] emphasized that people more like to acquire knowledge that can benefit skills through formal education, which is more practical education. Entrepreneurship learning integrates with vocational education, which prepares students to be skilled in the work and scientific fields they are engaged. Furthermore, they can improve and develop their creativity. Every graduate does not depend on the availability of job opportunities but can also open jobs. Vocational education is required to produce entrepreneurial abilities, one of the main pillars of national economic activity [8]. Currently, many college graduates are still job seekers rather than job creators. These arise from universities' learning system, which focuses more on preparing students to graduate quickly and get a job and not create the job market itself [16].

The challenges and responsibilities of vocational education in Indonesia are very important. The ASEAN Economic Community (AEC), implemented in 2016, where the ASEAN Economic Community opens trade flows for goods and services and the professional labor market [17]. This is a challenge for developing a productive workforce that must be able to compete. Therefore, vocational and vocational education must play a role in preparing students who are ready to compete and have skills in facing the industrial revolution 4.0, 21st century, and the ASEAN Economic Community, not only in the professional field but also in entrepreneurship. The industrial transformation to the 4.0 era affects the production process and the learning process. The need for innovative and flexible, accessible learning was considered important [18], [19].

The Indonesian government must also prepare quality human resources through vocational and vocational education. The vocational education philosophy is carried out to meet the community and industry's needs where vocational education is held. The orientation of vocational education must be focused on graduates' success who can meet the labor market's needs. A complete education program's success is oriented towards the quality of its graduates in both the business and industrial world [20]. Vocational education must anticipate this quickly. The curriculum and educational methods must ensure accordance with highly competitive businesses and industries that keep up with the development of information and technology because every industrial revolution has changed the work process [21]. Vocational education is considered to have a new challenge to produce human resources that can survive in the era of digitalization.

Production-based learning is a skills or expertise education process designed and implemented based on real job procedures and standards to produce goods or services in line with market or consumer demands. Production-based learning emphasizes the students' ability to carry out production or service activities that meet the Business World / Industrial World standards and social standards. Suryadi and Supriatna [22] stated: "production-based learning model is defined as the procedures or steps that need to be performed by the educator to facilitate learners to learn actively, participate and

interact, with a competency-orientation to produce a product either goods or services required”.

This production-based learning consists of nine steps or syntax, namely: 1) Analysis of the curriculum and student characteristics; 2) Product identification and analysis; 3) Make important questions about the product; 4) Mapping questions; 5) Analysis of the needs for tools and materials of the product to be made; 6) Making a schedule for making the product; 7) Product Manufacturing Process; 8) Evaluate regularly and 9) Make a Business Plan [23]–[25]. Through this learning, vocational higher education can apply to the learning process, especially entrepreneurship courses. The application of this learning in increasing student interest and learning outcomes in entrepreneurship is very good because it provides active opportunities in the learning process [25], [26].

Production-based learning is very suitable for use in vocational learning, because this model directs students to be able to follow it by practicing directly and being produced. Production-based learning models emphasize more on practical learning, this makes it easier for students to understand and absorb the subject matter provided by the teacher [27], [28]. Through the production-based learning model, it is hoped that students will learn effectively. Because the concept of a production-based approach is not only to achieve predetermined competency standards, but students are also required to achieve competency standards in a relatively very effective time. Students accustomed to producing products by considering time will work more efficiently, so they will also get used to working more productively.

This learning model is an education and training process that is integrated into the production process, where students are given learning experiences in contextual situations following the industrial workflow. It starts from planning based on orders, implementing and evaluating products/product quality control, and post-production service steps. [29]. The production-based learning model starts from planning a product (business plan). Furthermore, namely carrying out the production process, then evaluating the product (doing quality control). Then develop a marketing plan. Production-based learning aims at improving students’ product design. So, it can help increase students’ interest in entrepreneurship [29].

The rapid development of Science and Technology (IPTEK), especially information, communication, and technology (Information, Communication, and Technology or ICT), which has developed and expanded in all fields, even penetrated into the world of entrepreneurship, one of which is known as digitalpreneur. (digipreneur). Digipreneur has a more or less meaning, namely business actors who use their business tools with everything that is digital (Internet, mobile phones, etc.) [30]. Even business people and companies are currently using digital technology; they use digital technology to communicate with their stakeholders, such as customers and suppliers [31]. Not only do they survive in a safe environment and take a competitive position, but the company must also continue to grow, adopt international best practices, master new technologies, and expand the scope of its activities [32].

Along with the times, Digitalpreneurs are increasingly needed by their presence and what they produce clear.

Digitalpreneurs in the future will be a career choice that is very coveted by young generations who have a passion for business. Therefore, this is a challenge and responsibility of vocational education to apply digitalpreneurs to 21st-century learning, to produce graduates who have skills by industry needs [33]. Besides preparing competent graduates, vocational education must also prepare graduates who can become entrepreneurs in this digital era.

The development of online stores and marketplaces is very fast. Based on data on the development of online-based trading businesses in Indonesia, the total number of online trades has reached 26.2 million in recent years. This is also supported by data from the Central Statistics Agency (BPS), namely that in the last ten years, the number of online trades has increased by around 17 percent [34]. An online shop or online shop is an online shopping system where buyers can ask for the price directly from the seller through electronic devices. Meanwhile, the marketplace is an online business model that helps promote merchandise and facilitate online money transactions. This marketplace provides several products from online sellers.

The massive growth of e-commerce requires strong and extensive infrastructure support. In addition, at this time, the difficulty of marketing products directly or manually is due to the Covid-19 pandemic, which requires work from home and is very limited. So, we need a tool or media that functions to facilitate transactions between producers and consumers. The marketplace is a medium that makes it easy for product owners and product seekers [35]. This study aims to increase engineering students’ entrepreneurial interest, making innovative interface design by combining learning management systems with online sales. This research also aims to make it easier for lecturers to monitor product sales marketed by students.

II. MATERIAL AND METHOD

This study uses a research and development approach method [24], [36]. There are three stages to be carried out in the approach and development of this research. Phase I is the analysis and design of the model, Phase II is developed, explaining the validity and practicality, and Phase III is the model’s implementation.

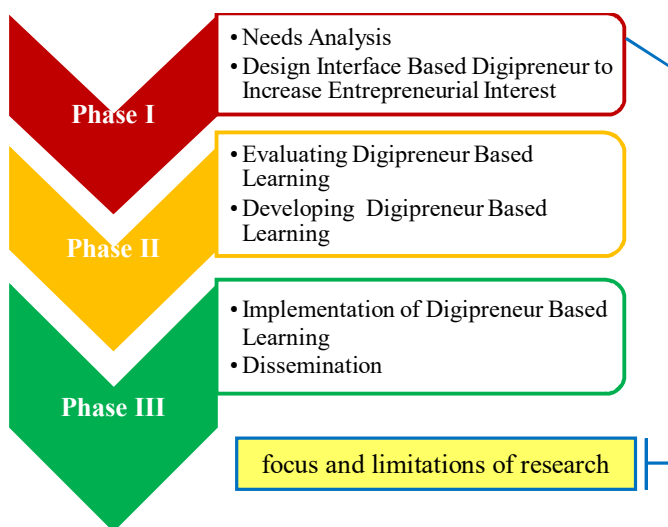


Fig. 2 Focus and Limitation of Research

This research focuses on stage I, namely the Design Interface to Increase Entrepreneurial Interest in Engineering Students. This research is implemented in the entrepreneurship course in engineering education at Padang State University. This interface is designed using the Learning Management System (LMS) framework assisted by the CorelDraw X7 application in designing it.

III. RESULT AND DISCUSSION

This interface design uses digital entrepreneur elements that are applied to an LMS called the LMS Based Digipreneur. Apart from being a medium in managing learning, the application designed in this study is also designed as a medium for product sales and marketing (marketplace). So, the design will be made in the form of a learning management system by combining e-commerce and promotion. Entrepreneurship course is one of the general subjects that must be taken by all students in universities, especially engineering students. Several basic competencies in entrepreneurship courses support students' interest in entrepreneurship. Starting from designing a business plan which includes analyzing the situation and conditions if you are going to raise a business activity (SWOT analysis). Furthermore, activities in making products and marketing products, innovations made in this study are making marketing activities that were previously carried out manually made online based on digipreneurs in the form of e-commerce or marketplace. The following is a system design drawing to be made.

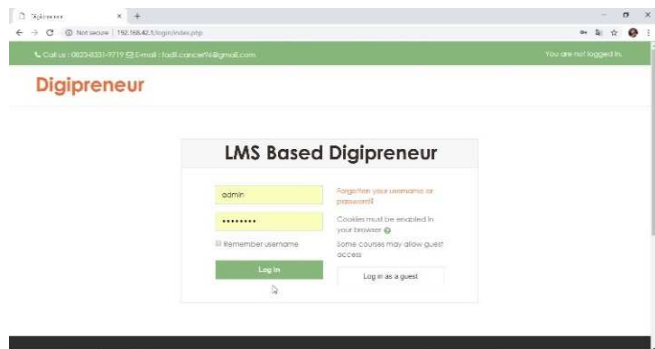


Fig. 3 Interface login LMS based digipreneur

In general, this application uses a learning management system (LMS) framework. The login page is developed in a user-friendly manner, displaying a space to fill in the user's id name and password. Users who are not registered in the application can log in as a guest, where the access rights they receive in the application are more limited. The user-designed in this application has several levels, including the administrator, teacher, student, and customer.

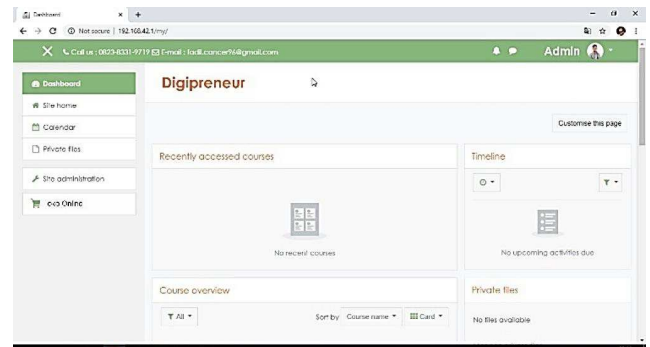


Fig. 4 Interface dashboard LMS based digipreneur

After logging in as a certain user lever, then you will go to the dashboard page. For example, the following is the administrator user interface. The interface on this page displays the main page, and there is a navigation menu on the left, which presents several menus that can be accessed by each user, namely the dashboard, site home, calendar, private files, site administration, and online shop. What distinguishes admin users from other users is the site administration menu section which only exists and can be accessed by administrators. The other menus are also available for other users.

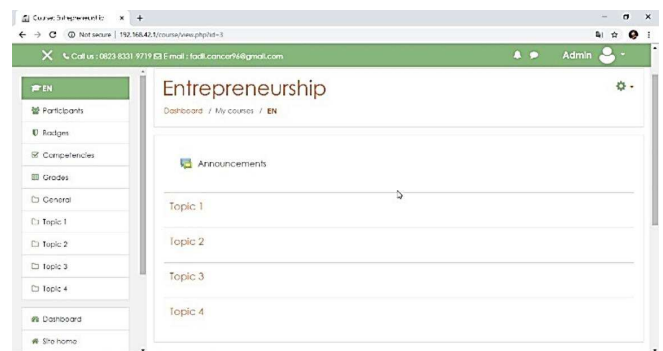


Fig. 5 Learning interface on LMS based digipreneur

After being registered in the application and incorporated into a learning class, teachers and students can carry out online learning in the form of e-learning. The teacher can upload learning modules in learning files or videos in this menu. There is an additional menu on the main menu navigation in the form of a short name of the newly created course. The menus that can be accessed include participants, badges, competencies, grades, general, and topics 1 - 4. The teacher can add subjects in e-learning according to what he teaches students. The teacher can also add students to the learning class as participants. Students can download learning material that the teacher has previously uploaded as teaching material. Some materials that can be downloaded are material files, folders containing material files, and playing learning videos.

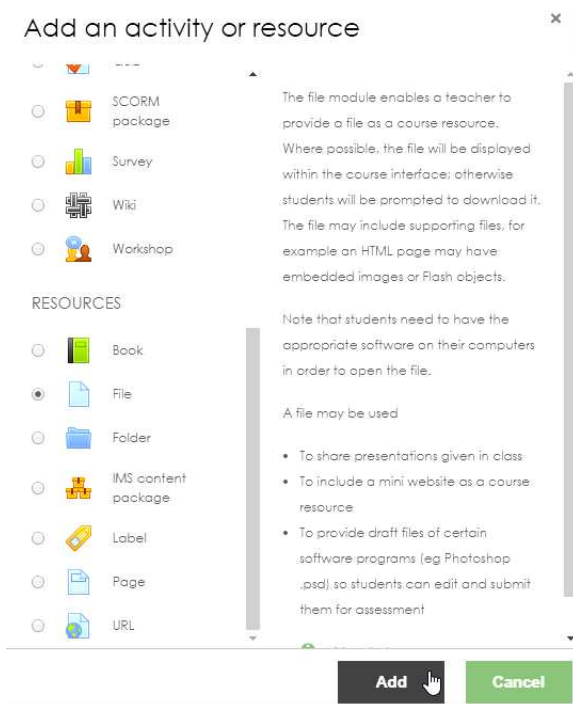


Fig. 6 Interface activity and resources on LMS based digipreneur

In the LMS, there are learning facilities in several activities or resources. There are several menus in the activity section, such as an assignment, chat, forums, quizzes, and others. There are also several menus in the resources section, such as books, files, folders, labels, pages, and URLs that students can use as learning resources that teachers provide to students.

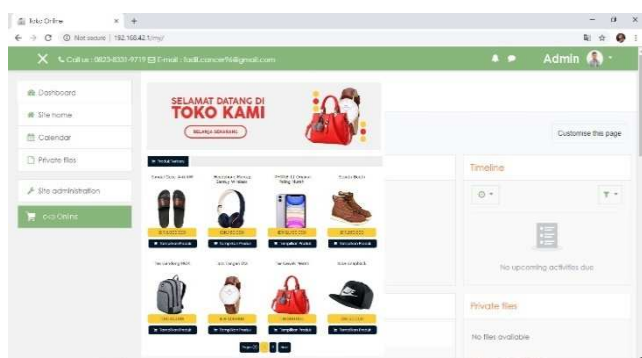


Fig. 7 Online shop interface collaborated on LMS based digipreneur

Fig. 7 is the online shop interface design collaborating with the learning management system (LMS) page. The innovation was made to facilitate students' business plans and marketing material in entrepreneurship learning. So, students can immediately practice it in the designed application. Students can sell products that have been made, then promote them online. Teacher involvement is also very influential because teachers will accept any products students promote online. So, this application designed can be a marketplace for transactions between producers and consumers.

The following is an example of displaying transaction interface design by consumers when buying or choosing a product. Based on the marketplace or e-commerce in general, consumers can choose the type of product, the number of products, and the total price will be known according to the type and quantity of the selected product. This page can be

accessed by consumers and students who have access to these products, teachers can also monitor and see the transaction process.

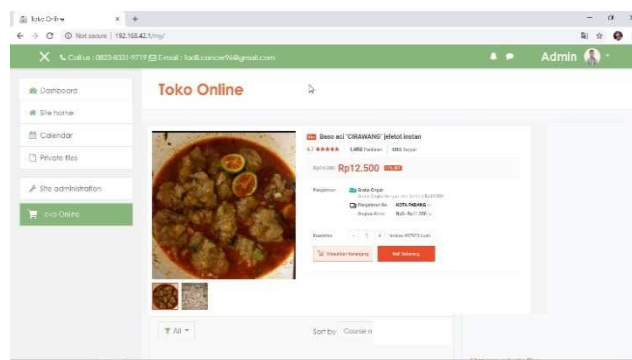


Fig. 8 Interface transactions by consumers in the online shop collaborating on LMS based digipreneur

In its implementation, the learning management system (LMS) collaborates with a marketplace or e-commerce based on digital entrepreneurs (digipreneur). It is an innovation applied in entrepreneurship learning in higher education on business plans and product marketing materials. Students plan a product by analyzing various things, including needs analysis, SWOT analysis, financial management, structural business management, and others. Then make a product, then market it online.

The working principle in this designed application is, first, the teacher assigns assignments to students by applying product-based learning. Furthermore, students work on product-based assignments. Students' products will be uploaded into the application consisting of the product name, price of the product unit, product stock, and the estimated range of product manufacture. Furthermore, teachers accepted products that students uploaded for publication to be able to appear on customer pages.

Previous entrepreneurial learning, which still adopted the teacher center learning pattern, made entrepreneurship learning stand-alone, without the support of technological elements or tools. The rapid development of technology and the still warm conditions from the Corona-19 virus outbreak hit the business sector. This challenge must be taken seriously by higher education, especially technical education. An effective and efficient alternative is needed by digipreneurs namely Digipreneur-based Learning Management System (LMS), which combines online learning and technological entrepreneurship elements. So, it enables students to be very adaptive and develop their business. The LMS facility supports and facilitates online shops created independently by students. This integration and implementation can be applied directly to entrepreneurship learning in higher education. Through this system, it can be suppressed the global economic challenges and the high unemployment rate of higher education graduates

IV. CONCLUSIONS

Vocational and vocational education with entrepreneurship education (entrepreneurship) are two things that cannot be separated. In addition to preparing students who are skilled in their field, vocational education is also expected to increase

and develop students' creativity amidst competitive demands [37]-[38]. So, each graduate does not only depend on the availability of job opportunities, but they can open the new one jobs. Design innovation of the LMS interface, which is collaborating with a marketplace or e-commerce based on digipreneurs, is expected to increase the entrepreneurial interest of engineering students in universities.

The application interface can also make it easier for teachers or lecturers to monitor the progress of products marketed by students. This interface design uses digital entrepreneur elements that are applied to the LMS. This research's strengths are that apart from a learning management system (LMS) based on a digipreneur in managing learning, this application can also be used to sell and market products (marketplace). Innovation is applied in entrepreneurship learning in universities to business plans and product marketing materials. Teachers and students can more easily promote and sell products online based on digital entrepreneurs (digipreneur). The system is expected to answer the global economy's challenges and reduce the high unemployment rate for higher education graduates.

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