



Development of Android-Based Edupreneur Media to Improve Student Technopreneurship Competence in the Post-pandemic Era

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Abstract. This research purposes to develop an Android-based Edupreneur media to improve students' technopreneurship competence, especially in the Business Education undergraduate study program. This media development can be applied to Entrepreneurship courses and other courses. With the development of this learning intermediary, it is hoped that it can become a reference for lecturers in making valid and appropriate learning intermediary for students according to the needs in the post-pandemic era that requires objectively good digital mastery. The development of this media can also assist students in achieving the expected competencies. This category of study is development study using the Research and Development (R&D) method which consists of eight steps, (1) preparatory study, (2) arrangement, (3) storyboard improvement, (4) limited exploratory, (5) product improvement, (6) field trials, (7) media enhancement, (8) final production. The improvement of technopreneurship competence was analyzed using paired sample t-Test analysis. The results of the validation of android-based edupreneur learning intermediary conducted by lecturers are declared valid and feasible. While the results of the validation of the edupreneur material were declared valid and feasible. There is a significant difference between students' technopreneurship competencies before and after using android-based edupreneur media. The improvement of students' technopreneurship competence can be seen from the results of product content creation projects posted through social media such as Instagram, Facebook, Twitter, YouTube, and other social media. In addition, it can also be seen from the results of creating online store accounts on e-commerce platforms such as shopee, tokopedia, and other e-commerce platforms according to the interests of each student. In other words, the Android-based Edupreneur learning intermediary can not only be used as a learning medium but also as a student learning resource.

Keywords: Learning intermediary · Edupreneur · Technopreneurship

1 Introduction

We are currently in a wave of globalization that is happening all over the world [1]. Modernization and digitization are carried out by various countries, along with the

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increasingly rapid mobility and speed of information desired by humans. Especially now that we will be faced with a post-pandemic period. Several stores are currently turning online because they see promising prospects by utilizing technology. The phrase from Jack Ma also shows that business is something that must always develop and innovate. Innovations can be made by utilizing online trading platforms or by creating new business models and starting start-ups. The evolution of Science and Technology (IPTEK) in the learning process spurred the development of learning resources and learning intermediary [2]. Computers began to be used as a tool to develop computer-based learning intermediary (Information and Communication Technology / ICT). Learning intermediary can be interpreted as media used in the learning progress. Grounded on the pre-research by conducting interviews and giving questionnaires to Bachelor's degree Business Education students, it was stated that entrepreneurship learning had not used the media optimally, even though it was equipped with a business laboratory in the form of "SIGMA". Therefore, students want Edupreneur learning intermediary and students will be more interested if the desired learning intermediary is adjusted to the needs in the post-pandemic era. This research purposes to develop an Android-based [3–5] and [6], especially for entrepreneurship courses to improve students' technopreneurship competence. According to Gerlach & Erly [7], the intermediaries of the learning process in the class consist of teachers, attributes, equipment, or activities that produce situations that make students acquire knowledge, skills, and attitudes, which are conditioned to improve the cognitive domain, changing student behavior, or to improve digital skills.

According to Arsyad [7] learning intermediary in learning activities can awaken the will and interest in something new, the motivation and stimulus that occurs in learning activities, giving a psychological impact on students. One of the learning intermediary that can be used in Entrepreneurship courses in the class is media Android-based Edupreneur media. Technology was developed to make it easier for humans, one of which is in the field of education. The development of science and technology that is increasingly modern causes demands for the quality of learning and increases the competence of students. To obtain quality results, a breakthrough or innovation in the improvement of learning intermediary is needed, therefore the role of educators is needed to produce an innovative product that can increase student interest in learning to the fullest [8].

Android applications have been widely used by most people. The use of smartphones today has become popular all over the world. Smartphones can have a significant impact on human growth and contribute many benefits for their use. However, in our society today's use of smartphones is mostly only used to download social media and only a small part of them use it for teaching and learning activities [9]. The improvement of android-based learning intermediary is expected to improve student literacy. Learning activities using media allow students to focus on content. Good learning intermediary are those that contain complete media elements including audio, images or animation, video, passage, and visuals that allow students to interact interactively through the available aspects [10].

Edupreneur is an application that contains features to learn things that are closely related to entrepreneurship, such as marketing strategies through social media, market-places, various types of advertising and so on that can bring entrepreneurial ideas to

life. Not only in the form of writing, but also equipped with audio visuals. The application designed and developed in this study is an Android-based Edupreneur. In general, this media device is equipped with a student worksheet feature developed in a more interesting way. In addition, the Edupreneur application has model templates and specification such as backgrounds, control buttons, navigation bars, hyperlinks, and back sounds, and is equipped with a special page for student projects. Students can read the material as well as feels like physically opening a book complete with relevant tutorials and examples. By using this learning intermediary, it is hoped that it can provide renews to the media for teaching and learning activities. The use of Edupreneur media can improve student interest in learning and can also affect student achievement or learning outcomes. The use of this media can also improve understanding and achievement of learning outcomes. Through the improvement of Android-based Edupreneur learning intermediary, it is hoped that the competence of students' technopreneurship, especially in Entrepreneurship courses, will increase.

The term technopreneurship appears in line with the science and technology that is increasingly undergoing renewal. Entrepreneurship is the ability to turn every opportunity into an economic challenge. These abilities are synergized with capabilities in the field of technology, then entrepreneurial skills in the field of technology emerge which are commonly known as technopreneurship. In this case, it can be said that technopreneurship originates from research and new findings in the field of technology that is carefully developed so that they can provide benefits for the creator and the user community.

The word technopreneur is defined as an entrepreneur in the field of digital innovation, which is a combination of the use of technology and entrepreneur. For the most part, the word technology refers to the implementation of knowledge practices that are used to operate the industry, such as: creating machines, developing skills, making decisions regarding some problems that occur, and so on. Furthermore, entrepreneur refers to a group of people or individuals who develop a business bravely accept risk and uncertainty to achieve profit by analyzing the opportunities that exist. Digital entrepreneurs not only have skills in the field of technology, but also must be responsive to technological updates that are supported by finding creative ideas [11].

Based on data from We Are Social and Hootsuite, it is stated that Indonesia is the country with the largest internet growth in the world, which 51% in the last two years. This figure is far from the average global internet growth of only 10%. Indonesia is also in the top 12 countries in the world with the largest penetration of smartphone use in the world. This shows that there is enormous potential if business people can start going digital who tend to want a lot of innovation and convenience in their daily lives. The presence of online buying and selling platforms, social media, and electronic payment transactions is an efficient choice for today's society, especially for students.

2 Literature Review

2.1 Theoretical Review

Learning intermediary must be seen as one of the important and major factors in determining the successfull of the learning process [12, 13] not only as a method used to

improve student learning outcomes. Making learning intermediary must be able to provide information [14] to lecturers to improve teaching abilities and quality as well as assist students in achieving optimal learning development.

Based on observations made by the teaching and learning process for entrepreneurship courses at the Faculty of Business Economics, Department of Management, especially in the Bachelor degree of Business Education study program, both lecturers and students experienced several obstacles in understanding teaching and learning materials including preparation of learning intermediary and preparation of entrepreneurship teaching materials relevant to the post era pandemics. However, among some of these obstacles, the most pressing obstacles to overcome are the constraints of teaching materials and learning intermediary that are more realistic and practical. Lecturers who teach courses feel confident that if the learning process uses learning intermediary that is following the topic of the subject being taught, it will be more effective, efficient, and fun so that it can improve students' understanding both in theory and practice. One of the learning intermediary that is expected to build an interesting and conducive learning environment is the use of media in the form of an Android-based Edupreneur application.

In distinction to the explanation above, it can be concluded that the development of learning intermediary is a mechanism of assembling, and measuring data and information to evaluate the accomplishment of student learning activities. In carrying out lecture activities, lecturers as subject teachers must pay attention to the competency needs of their students.

Based on some previous research literature that already exists, namely, research conducted by Agus, et.al., [15] entitled "Development of Android-Based Learning intermediary in the Covid-19 Pandemic Period to Improve Students' Scientific Literacy", and research conducted by Kevin, et.al., [16] entitled "Android-Based Learning intermediary Development Strategies During Pandemic Times To Improve Student Science Literature", we conducted development research with an element of novelty, namely an Android-based application or learning intermediary that can be used to improve post-pandemic student competence. In the Edupreneur learning intermediary that was developed, there are also materials or reading sources that can be studied by the user or users. So that in addition to increasing technopreneurship competence, it can also increase student entrepreneurial literacy. Literacy is not just reading and writing, but consist of thinking skills using learning resources and knowledge sources in the form of print, graphics, digital and auditory media. Literacy can be translated into various kinds, namely basic literacy, library literacy, media literacy, technological literacy, and visual literacy [17].

Based on the development research conducted by Rahayu. W.P, et al., [18] shows the results that the improvement of learning intermediary Flipbook based is declared valid and feasible to increase students' technopreneurship competence. Based on this research, the researcher intends to develop android-based learning intermediary to make it easier to use and flexible. Although this Edupreneur learning intermediary is intended for students, it is possible that it can be used by students too.

Learning innovations impacted by Covid-19 can foster a new paradigm for educational institutions that do not require the learning process to be passed face-to-face in the

classroom [19]. There is an important role for information systems and online technology in the world of education [20, 21] that must be prepared to carry out modern learning methods that can be done independently. One way is to use Android as a learning tool or medium [22]. The use of Android can be an alternative as well as a solution to make students including students more active in the learning mechanism. The more active students will affect the learning outcomes obtained. [23, 24].

3 Method

This study approach using the Research and Development (R & D) model. The R & D research model according to Borg & Gall [25] is the most suitable development model to produce learning intermediary for Android-based Edupreneur applications in the implementation of learning in Entrepreneurship courses. Because the stages of this research are very supportive of making learning intermediary and in accordance with the current curriculum. The stages in R & D research according to Borg & Gall are very appropriate to be applied to development in formal education. This research and development use 8 stages of development research, adjusting to field conditions.

The following is the procedure for the research and improvement of learning intermediary for Android-based Edupreneur applications in the implementation of learning. The stages of development research carried out in this development research, among others; (1) Preliminary Study. Activities carried out at the preliminary study stage are library research and field surveys regarding the obstacles and needs of students in taking Entrepreneurship courses; (2) Planning. At this stage, the researcher makes a design plan or storyboard for the development of Edupreneur learning intermediary products. (3) Development of Android-based Edupreneur Learning intermediary. Activities carried out at the development stage, namely the preparation of learning intermediary storyboards, validation instruments, drafting usage guides, validation and design revisions; (4) Limited Trial. Revision of the product that has been improved from the suggestions, a limited trial was carried out with the trial subjects being students of S1 Business Education offering C (control class) with 6 trial subjects with a proportion of 2 students from the number of trial subjects being students of high ability, 2 trial subjects students of high ability medium, and 2 randomized students of low ability test subjects; (5) First Phase Revision; on the results of a limited trial that produces qualitative and quantitative data from lecturer response questionnaires and student responses to the product, if there are suggestions or input then improvements are made; (6) Field Trial. Next is a field trial or with the trial subject of Bachelor Degree Business Education offering C students totaling 30 students (experimental class). The test is carried out with an experimental model, namely learning by using Edupreneur media products that have been developed. In testing the product, the researcher collects information to find out the weaknesses and constraints of using the product, which is then carried out to improve the product: (7) Completion of Field Trial Results Products. After conducting field trials on the product development, further revisions are made based on the results of field trials. From the results of a limited trial that produced qualitative and quantitative data from student response questionnaires to the product, if there were suggestions or input, the final stage of improvement was carried out for the final product. The data obtained from the constraints during the process of distributing media to students, their use, and smoothness

in the implementation of field trials were used as material for product revision; (8) Final Product, At this final stage, the researcher no longer revises, the final product produced is in the form of an Android-based Edupreneur application learning intermediary for Entrepreneurship courses.

Meanwhile, for data analysis, this research and development use the IBM SPSS 22. Paired sample t-Test analysis, this investigation program is a method used to analyze the average of two variables in one class, defining that this a research is useful for testing one sample that gets a treatment then the results will be compared with the average of the sample between before and after getting treatment.

State that the test analysis criteria from the paired sample t-Test analysis are as follows:[26].

- a. Asuming that the amount of Sig. (2-tailed) < 0.05 , there is a significant difference between student competencies before using edupreneur media and after using edupreneur media.
- b. Asuming that the amount of Sig. (2-tailed) > 0.05 , there is no significant difference between student competencies before using edupreneur media and after using edupreneur media.

4 Finding and Discussion

Results of Android-based Edupreneur Learning Intermediary

The decision of the validation of edupreneur learning intermediary using android carried out by lecturers is to produce a very feasible validation with an average percentage of 97.30%. The information collected besides quantitative data is qualitative data in the form of input and recommendations from validators which are used as a reference for product improvement. While the decision of the validation of the substansial contained in the android-based edupreneur media by expert lecturers have an average result of 94.58% Researchers conducted interviews through conversations and questions and answers with respondents. The second technique uses a questionnaire containing a series of questions or statements to collect data or information that must be answered by the respondent freely according to his opinion [27].

Analysis of Value Increasing Student Technopreneurship Competency

The improvement of students' technopreneurship competence is measured through the ability to create content and e-commerce platforms through the links listed on the Edupreneur media. As for product content that is made free of charge, they can create product content in the form of goods or services, in which they must post product content on social media such as Instagram, Facebook, Twitter, YouTube, and other social media. As for the e-commerce platform, you can use Shopee, Tokopedia, or other e-commerce platforms according to the interests of each student.

Then each student is required to send a link or link to post product content that has been created as well as an e-commerce link or link from the business they have created to lecturers who are in charge of entrepreneurship courses so that lecturers can see how

significant the technopreneurship competence of their students is, and how many viewers are interested in them. The posted content.

While the output of the paired sample t-Test test analysis of the average value before using android-based edupreneur media with the average value after using android-based edupreneur media is in the following explanation.

1. Output Analysis of Average Project Values for Application of Entrepreneurship Courses Before and After Using Android-Based Edupreneur Media

a. The results of the summary of descriptive statistics between the two variables

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before using android-based edupreneur media	77,53	30	2,06	,37672
	After using android-based edupreneur media	83,27	30	1,44	,26232

b. The results of the correlation or the relationship between the two variables

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Before using android-based edupreneur media and After using android-based edupreneur media	30	,148	,435

From the data, it is recognized that the significance value of 0.435 means that this amount is greater than 0.05. As the based for decision-making in the correlation test, because the significance amount is greater than 0.05, there is no relationship between the two variables.

c. The results of the paired sample test analysis

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Before using android-based edupreneur media – After using android-based edupreneur media	-5,73	2,33	,426	-6,60	-4,86	-13,46	29	,000

From these data, it is recognized that the value of Sig. (2-tailed) of $0.000 < 0.05$, it can be sure that there is a significant difference between the technopreneurship competencies of students before and after using android-based edupreneur media.

5 Discussion

Producing Valid and Appropriate Android-Based Edupreneur Learning intermediary

The learning intermediary chosen in this study and improvement is Edupreneur. This media provides more reading sources or materials along with links or site links that can be visited directly by users. Researchers prioritize reading sources and links because they have the aim that students can directly practice the theories that have been learned through edupreneur media. Media Edupreneur is packaged in the form of an Android-based application that can be used by users for free via smartphones and can interactively connect directly with other supporting applications such as Instagram applications, Canva, and e-commerce platforms.

Android-based edupreneur learning intermediary to facilitate independent learning for Bachelor's degree students of Business Administration/Commerce Education, Faculty of Economics and Business, especially in entrepreneurship courses, can be implemented as a learning medium as well as a learning resource. This learning intermediary has been approved by a team of experts and respondents. From the data taken on the validation sheet starting from the aspect of appearance, operation, and grammatical structure, the data obtained is quite good with an average of 3.84 on the Likert scale. Student feedbacks to the developed learning intermediary are very excellent to backing self-reliant learning as indicated by an average value of 3.43 on the Likert scale. This result that the Android-based edupreneur learning intermediary provides significant added value to students as a medium as well as a source of independent learning.

Based on the decision of the feasibility and validity research obtained by the researcher, previous research that is in line with research on the improvement of android-based edupreneur learning intermediary, namely the research conducted by Nafisah and Ghofur (2020) with the title "Improvement of Android-Based Barcode Scan Learning intermediary in Social Studies Learning" which shows that the developed learning intermediary meets the criteria very well, and an expert validation of learning intermediary covers several aspects including display, operation, interaction with an average of 3.68. So that it can be used by students to support independent learning at home. While the student's response to this learning intermediary is very good to support learning at home which is shown with an average score of 3.64.

Further research conducted by Sulistyorini and Listiadi (2022) entitled "Development of Android-Based Ispring Suite 10 Learning intermediary on Adjustment Journal Materials in Vocational High Schools" shows the results that 92.37% with very feasible meanings from the validators. The percentage of grades obtained from material experts is 99.28%, intermediary experts 87.19%, and linguists 90.66%. While the decision of student feedbacks get a proportion amount of 90.6% with a very decent explanation.

Furthermore, previous study that is also related to this study and development is study conducted by Ramdani, et.al.,(2020) entitled "Development of Android-Based Learning intermediary as same time as the Covid-19 Pandemic Period to Improve Students' Scientific Literacy" which shows the outcomes of the feasibility study of android-based learning medias show the validity of 84% with very good standart. The outcome of the media feasibility study captured an average score of 88%, the syllabus captured an average grade of 83%, lesson plans captured an average grade of 82%, and scientific literacy instruments captured an average grade of 83%. In conclusion, android-based media products on natural science material are feasible to be implemented in learning, especially during the covid-19 pandemic.

The previous research that is also relevant to this research and development is research conducted by Astuti, et.al., (2018) which shows that the results of the training product This is in the model of an Android-based learning intermediary application that can be used by teachers in supporting learning activities in the classroom. The update of this research is following the research conducted by Siahaan, Manurung, and Siahaan [16], in This research shows that android-based media products on natural science materials are feasible to be applied in learning, especially during the covid-19 pandemic. Based on the results of this study, it can be seen that in the post-pandemic era it is also necessary to develop learning intermediary such as edupreneurs. So that in the future this Android-based Edupreneur learning intermediary can be used as a learning medium as well as a long-distance learning resource by students.

Improving Technopreneurship Competence of Post Pandemic Era Students through Android-Based Edupreneur Learning intermediary

Based on the desicion of surveys and trials conducted by researchers on a sample of 10 groups of Commerce/Business Education students, the existence of this android-based edupreneur learning intermediary is very helpful for students in obtaining learning materials, understanding the material, and can foster a new enthusiasm for students to learn to improve technopreneurship competence in entrepreneurship courses. In addition, the existence of this learning intermediary also helps lecturers in implementing lecture materials. We know that the development of android-based edupreneur media can improve students' technopreneurship competence, especially in entrepreneurship courses because edupreneur learning intermediary is also equipped with materials, content creation tutorials, along with links or links used to post and practice making online shops through the platform. e-commerce.

Based on the analysis of study results, it is proven that the improvement of android-based edupreneur learning intermediary can improve students' technopreneurship competence, this is in line with the desicion of study conducted by Aryanto, Sani [28], this research shows that the implementation of edupreneurship based on regional wisdom requires a collective effort from various parties synergistically and comprehensively. In addition, this development research is also following the results of research conducted by Rohmah and Bukhori [3] indicates that an android learning intermediary operation that can help the delivery of material by additional competency features, quizzes, learning videos, and a glossary that can be accessed offline as well as the ease of downloading on the web that has been provided with a user manual so that android-based interactive

learning intermediary using articulate storyline 3 in Correspondence subjects can be used as learning resources and media distance learning support.

The development of edupreneur media is also in line with the research conducted by Pelipa and Marganingsih [29]“The Influence of Edupreneurship and Work Practices on Student Life Skills Abilities” which shows that Edupreneurship simultaneously has a significant influence on student life competences. Among the Edupreneurship and Career Training as an objects, the variable with the most significant influence on the Student d variable is the Edupreneurship variable. In addition, it is also following research conducted by Liliati and Kuswanto, the results show that the Android-based learning intermediary with local content in the form of the othok-othok toy ship can improve the competence of diagrammatic and argumentative representation in physics learning.

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