

# **Interactive Module Based on QR Code to Increase Learning Interest in Entrepreneurship Course for College Students**

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*This study examined the effect of an interactive module based on a QR Code on increasing the learning interest of college students at Universitas Muhammadiyah Jakarta in Indonesia. This study used the Research and Development (R&D) method to develop an interactive module based on a QR Code product and to test the effectiveness of the resulting product, and the researcher used an experimental form of one group pretest and post-test design. This research and development used the ADDIE model, which consists of 5 stages, analysis, design, development, implementation, and evaluation. The population in this study are college students at Universitas Muhammadiyah Jakarta in Indonesia. This study used simple random sampling with the Slovin formula consisting of 56 college students at Universitas Muhammadiyah Jakarta in Indonesia. In addition, the researcher used the paired sample t-test to test the hypothesis and the Kolmogorov-Smirnov t-test to test normality in this study. This study concludes that the interactive module based on QR codes increases the learning interest of college students at Universitas Muhammadiyah Jakarta in Indonesia.*

*Keywords: interactive module, QR Code, the interest of learning, social studies*

## **INTRODUCTION**

The teacher's efforts must make learning enjoyable so that students always get involved in the teaching-learning process. Therefore, appropriate learning methods or exciting teaching materials are essential, especially now that we have entered the 21st century. The era of the industrial revolution 4.0 as it is today,

wherein all aspects of life, we use what is called technology in our daily activities (Novaliendry, Huda, Cuhazanazriansyah, Sani, Hendra, & Karnando, 2021; Putra, Mukhadis, Ulfatin, Tuwoso, Subandi, Hardika, & Muhammad, 2021). Therefore, technology is very much needed, including in the health, economy, entertainment, and education sectors.

The rapid development of information and communication technologies means that life in this age is heavily dependent on the use of technology (Batubara, Sumantri, & Marini, 2022; Edwita, Safitri, Nuraini, Rihatno, Sudrajat, Marini, Wahyudi, 2020). The rapid progress of digitalization of technology means that all sectors require technology, including the education sector. The industrial revolution 4.0 changes the standard of living and human activities to be more modern. In education, lecturers should abandon conventional teaching styles and learning methods because they need to be updated. In the era of the industrial revolution 4.0, they started using digital education that can reach all the students of the world without getting stuck by distance (Qureshi, Khan, Raza, Imran, & Ismail, 2021; Hadi, Yuksafa, Yarmi, Safitri, Lestari, Suntari, Umasih, Marini, Sudrajat, & Iskandar, 2022). The industrial revolution in other sectors also relies on the education sector to improve industrial skills. Therefore, the education sector has the opportunity to deliver more meaningful goals in conditions of communication, knowledge, and dissemination of understanding. Digitizing education makes information easier to access anytime and anywhere and makes education more practical (Hashimova, Prasolov, Burlakov, & Semenova, 2020; Ibrahim, Safitri, Umasih, Marini, Apriwahyudi, 2020; Sarifah, Rohmaniar, Marini, Sagita, Nuraini, Safitri, Maksum, Suntari, & Sudrajat, 2022; Sujarwo, Herawati, Sekaringtyas, Safitri, Lestari, Suntari, Umasih, Marini, Iskandar, & Sudrajat, 2022). So, with the digitization of education, it is easier for students and teachers to find other relevant sources related to the subject they want to master without being fixated on one limited basis. So that by digitizing education, students have a broad vision.

Currently, amid the COVID-19 pandemic, digital technology has become the primary educational medium for all students in the world, both college and university students, because it is not possible under conditions like today to conduct face-to-face learning between teachers and students (Mustapha, Thuy Van, Shahverdi, Qureshi, & Khan, 2021). Therefore, teachers need to innovate in a way that makes distance learning as effective as face-to-face learning (Gultom, S., Hutaruk, A., F., Ginting, A., M. (2020; Tawafak, R. M., ALFarsi, G. M., Jabbar, J., Iqbal Malik, S., Mathew, R., AlSidiri, A., Shakir, & Romli, 2021). Teachers must create learning innovations that can be accessed using electronic devices such as smartphones, laptops, tablets, computers, and other electronic devices integrated with the Internet. With the integration of the Internet, learning is more flexible (Dolzich, Dmitrichenkova, & Ibrahim, 2021; Marini, Safitri, Nuraini, Rihatno, Satibi, Wahyudi, 2020; Rihatno, Safitri, Nuraini, Marini, Putra, Wahyudi, 2020; Susanto, DwiYanti, Marini, Sagita, Safitri, & Soraya, 2022; Safitri, Awalia, Sekaringtyas, Nuraini, Lestari, Suntari, Marini, Iskandar, & Sudrajat, 2022; Umasih, Safitri, Nuraini, Rihatno, Maksum, Marini, Wahyudi, 2020). The integration with technology allows students to gain knowledge from various available sources. So that the Internet can make it easier for students to access learning resources such as materials, assignments, and quizzes without being restricted by time and location (PJ & T, 2021; Ashar, Kamdi, & Kurniawan, 2021; Marini, Safitri, Lestari, Suntari, Nuraini, Nafiah, Saipiatuddin, Ambar Arum, Sudrajat, & Iskandar, 2021; Safitri, Lestari, Maksum, Ibrahim, Marini, Sudrajat, Zahari, & Iskandar, 2022). Digital learning has benefits for both students and teachers. In general, digital learning can help students develop technical and speaking skills, find answers, develop group collaboration, and share information (Nguyen & Tran, 2022; Marini, Nafisah, Sekaringtyas, Safitri, Lestari, Suntari, Umasih, Sudrajat, & Iskandar, 2022; Nuraini, Safitri, Rihatno, Marini, Putra, Wahyudi, 2020). The existence of digital learning can maximize student learning outcomes. One of the media that can facilitate digital learning is creating digitally designed modules to make it easier for students to use.

Modules are learning media that students can easily use in the learning process. The module is adequate for learning (Astalini, Darmaji, Kurniawan, Anwar, & Kurniawan, 2019; Rahayu & Sukardi, 2020). Using modules in learning can engage students in self-directed learning without needing a direct explanation from the teacher. A practical module is packaged perfectly and is clear to the reader. Therefore, the module needs to be made as attractive as possible so that the students can understand the teaching material easily. The technology-based module with a QR code updates the printed module so that students can access the module

anytime, anywhere (Nurul, Ahmad, 2021). In addition to interactive texts and images, the module can also contain learning videos and quizzes to support the learning process. Through interactive modules, the student's interest in learning will increase during today's challenging conditions and achieve satisfactory results. Using the module provides benefits including 1) simplifying and clarifying the presentation of messages so that they are not too verbal; 2) overcoming the limitations of time, space, and the five senses for both students and teachers; 3) increasing motivation and enthusiasm for learning; 4) develop the ability to interact directly with the environment and other sources; 5) self-study according to their skills and interests, 6) measuring or assessing their learning outcomes.

A study showed that the use of modules could increase the student's interest in learning since their attractiveness make the students feel comfortable (Rahmatsyah & Dwiningsih, 2021). With students feeling comfortable and interested in using the module, later learning will go smoothly because the students have an interest in learning. Interactive modules are considered adequate for blended learning, as we are currently experiencing (Tubagus, Muslim, & Suriani, 2020). Because in its use, students can use it independently without having to meet the teacher. In addition, the use of technology-based modules is an effective, efficient, and interactive alternative learning medium under the current pandemic conditions as it is more attractive and flexible (Sutarto, Muzaki, Hastuti, Fujiaturrahman, & Untu, 2022; Pebriantika, Wibawa, & Paristiowati, 2021; Chanyawudhiwan & Mingsiritham, 2021). Facilities like that are currently critical for teachers and students so that learning can occur as it should. Through technology-based modules, students can understand independently (Setiyani, Waluya, Sukestiyarno, & Cahyono, 2022). However, previous research has only produced technology-based modules without linking to the QR Code. In addition, previous research in the manufacture of interactive modules is only limited to a material consisting of text and images.

In this study, researchers will combine technology-based modules with QR Codes related to initial entry, evaluation games, and videos about the material provided and test their effectiveness in increasing the learning interest of college students at Universitas Muhammadiyah Jakarta in Indonesia. Furthermore, in this study, lecturers can give quizzes to decide the improvement of scholars' ability to practice competences after studying the material. In addition, the researchers proposed the formulation of the problem as follows:

1. How to develop an interactive module based on QR Code?
2. Can QR Code-based interactive modules positively affect students' interest in learning?

Furthermore, the researcher will explain the use of interactive modules in learning, and the researcher will also explain the interest in learning students.

### **Interactive Module Based on QR Code**

An electronic teaching material, better known as an e-module, has to be interactive with the users, namely the students, so that they can learn independently (Asmianto, Hafiizh, Rahmadani, Pusawidjayanti, & Wahyuningsih, 2022; Mazidah, Erna, & Anwar, 2020; Nurhasanah, Kasmita, Aswirna, & Abshary, 2020). The use of interactive module use is based on technology. It is called interactive because users interact and actively participate in usage. Technology-based interactive modules are a new alternative in the educational world (Apriwanda, Mahanan, Ibrahim, Surif, Osman, & Bunyamin, 2021; Solomon Mahanan, Ibrahim, Surif, & Ken Nee, 2021). In this era of digitization, teachers are innovating as much as possible in using technology in learning media for students. Not only can they increase students' interest in learning, but they also are not outdated and ready to change. The interactive module is an evolution of the print module commonly found in learning (Anggraeni, Sumaryana, Rinawati, & Murniati, 2021). Having an interactive module can make it easier for students to understand the chapters of the material taught by the teacher and for teachers to provide the material. In addition, students become freer to explore learning without restrictions (M. Rafiq, Hashim, Md Yunus, & Norman, 2020). Students find exploring the information they want to know easier without being limited to print media sources.

The module can be used by students independently or in groups without the presence of a teacher (Krismadinata, Mulya, & Juwita, 2022). Because in the development of the module, there are already instructions that are used to make it easier for the students. Even with the presence of a teacher, technology can replace the role of the teacher (Budiaman, Komarudin, Nuruddin, & Kustandi, 2021). Teachers are

professions that cannot be replaced by technology, but teachers must be able to deal with technological changes. Teachers must be able to use technology to create learning media for students, including using modules. Learning modules can be developed digitally, consisting of text, images, animations, and videos to visualize the material (Prastiyono, Utaya, Sumarmi, Astina, Amin, & Aliman, 2021). In its development, it can be adapted to the needs and characteristics of the students.

The interactive module is designed to stimulate students' interest in reading the material, as in the print module, students use only one of their five senses, the eye. Meanwhile, with the interactive module, their senses function optimally and not just their eyes because it is equipped with features such as sound, animation, images, graphics, and elements that can increase students' interest in learning. The interactive module is expected to accommodate student learning styles such as visual, auditory, and kinesthetic learning (Sudarman & Ardian, 2021). Interactive modules are not printable, are structured systematically, and can be used independently by the students to solve problems in their way. Interactive modules can reduce vulnerabilities in printed teaching materials as they can be uploaded to e-learning or accessed via QR code. This makes the interactive module easily accessible to students anywhere, anytime.

Interactive learning modules should be designed with an example of a constructive approach to learning, where students build their knowledge and understanding of knowledge concepts through inquiry. Students' skills are naturally developed through interactive modules (Zhampeissova, Kosareva, & Borisova, 2020). As a result, the students become more independent when acquiring new knowledge. The model that can be used to create interactive modules is the 5E model, namely Engage, Explore, Explain, Elaborate and Evaluate (Shahizah Mahamd Shobri, Surif, Ibrahim, Nursiwan, & Bunyamin, 2021). In this model, students actively participate in the learning process, which can lead to meaningful learning. This learning model is also seen as increasing students' interest in education.

### **Learning Interest**

Teaching and learning activities are dynamic activities that require teachers to be creative and innovative in providing learning materials so that learning activities are not monotonous and engage students in learning (Megasari, Haryono, Putri, Rokhmani, Inayati, Handayani, & Annisya', 2021). Innovation in the form of the learning media used is required to create fun while learning so that the students are interested in learning. Students who have an increased interest in education have a stronger desire to learn, show a more positive attitude, and make more effort in learning to achieve goals (Nguyen, 2021). This explains the factors that increase interest in learning, which consist of what comes from within as an inner drive, and social factors that affect students' attitudes from outside, which are called external factors.

In addition, interest in learning determines students' participation in learning activities and attitudes toward understanding. Therefore, the pupils' interest in education does not only result from their own will but also from how the teacher conveys the materials or methods and learning media used as a teacher. The more attractive the media the teacher uses in the learning process, the greater the student's curiosity about learning, so the student's interest in education can be increased. Therefore, in this case, the teacher plays a vital role in creating fun learning through technology (Maru, Pikirang, Ratu, & Tuna, 2021). This technology can be tailored to the specifics of students participating in learning.

Enjoying learning can stimulate students' interest and excitement, which increases their participation in the learning process (Snezhko, Babaskin, Vanina, Rogulin, & Egorova, 2022). Learners participate more actively in learning when the media used by the teacher in the teaching and learning process are fascinating. Pupils' interest in learning in online lessons has decreased. Therefore, the use of exciting learning media can inspire the pupils, and the pupils feel encouraged and motivated to use learning media designed by the teacher (Ong, Yasin, & Ibrahim, 2021). Enjoying learning positively affects the psyche to reduce stress levels, create a pleasant feeling, and not burden the schedule (Togi Martua Damanik, 2020; Sakka, Gura, Latysheva, Mamlenkova, & Kolosova, 2022). So, playful learning with engaging learning media awakens the desire to learn and does not feel burdened by the available materials.

## METHODS

The method used in this research is R&D (Research and Development) by adapting the ADDIE (Analysis, Design, Development, Implement, Evaluation) model. However, this study was limited to the implementation stage, which was tested through experimental research conducted for college students at Universitas Muhammadiyah Jakarta in Indonesia.

### Research Design

This research belongs to the type of experimental research. The experimental design uses One Group Pretest and Post-test Design. In this design, the test was carried out twice, before and after the experimental treatment. Researchers use one group as research subjects and take measurements before and after treatment. Differences in measurement results were considered treatment effects. The research pattern of the one-group pretest-posttest design method is as follows:

**TABLE 1**  
**EXPERIMENTAL DESIGN RESEARCH TO INCREASE LEARNING INTEREST USING**  
**INTERACTIVE MODULE BASED ON QR CODE**

Group	Pretest	Treatment	Post-test
Experiment	O <sub>1</sub>	X	O <sub>2</sub>

Description:

O<sub>1</sub> : Pretest

O<sub>2</sub> : Post-test

X: Interactive Module Based on QR Code

### Population and Sample

The population in this study are college students at Universitas Muhammadiyah Jakarta in Indonesia participating in Entrepreneurship Course. With the random sampling used the slovin formula with a margin of error of 10%, there are as many as 56 college students for the experimental group.

### Research Instruments

This investigation accustomed to pretest and post-test instruments related to learner's interest in learning entrepreneurship courses consisting of three aspects. Firstly, feeling pleasure involves feeling unhappy about taking entrepreneurship course lessons, feeling unexcited to take entrepreneurship course lessons, feeling the benefits of entrepreneurship course lessons, and being interested in studying entrepreneurship courses. A pretest was carried out before giving treatment, and after that, the researcher gave the therapy using an interactive module based on QR Code. After being given experimental treatment, the post-test was given to the experimental group. The pretest results were compared with the post-test results of the experimental group that had been given treatment. The comparison between the pretest and post-test will show the effective therapy of the interactive module based on the QR Code given on learning interest. In addition, this research and development also used validation instruments from media and material experts to test the advisability of the media at the trial stage.

**TABLE 2**  
**MEDIA VALIDATION INSTRUMENT GRID TABLE**

Aspects	Indicator	Item number
Design	Interactive module based on QR Code layout	1
	The color combination in the interactive module based on the QR Code display	2
	Illustration of an image on interactive module based on QR Code	3
	Attractive, interactive module based on QR Code display	4
	The use of fonts in an interactive module based on a QR Code is easy to read	5
Module Content	The material in the interactive module based on QR Code is ready to understand	6
	Normal letter spacing	7
	The presentation of material fosters student learning interest.	8
	The use of letter variations does not exaggerate	9
QR Code	QR Code quality	10
	The suitability of the content of the material on the QR Code	11
	Video compatibility on QR Code	12
Easy to Use	Interactive module based on QR Code is easy to use	13
	Practical, interactive module based on QR Code	14
	It can be used individually or in groups	15

**TABLE 3**  
**MATERIAL VALIDATION INSTRUMENT GRID TABLE**

Aspect	Indicator	Item number
Material Quality	The suitability of the material with the natural appearance of learning indicators	1
	The suitability of the material with the learning objectives of natural appearance	2
	Information in an interactive module based on QR Code provides new knowledge	3
	The material is accessible for students to understand	4
	Consistency of material with the subject	5
	Quiz questions and evaluations are used both to test students' ability	6
Language	The language used is communicative, effective, and efficient	7
	The sentences used do not have a double meaning	8
	The language used is easy to understand for students	9
	Consistent in the use of terms, symbols, scientific names	10
Implementation	QR Code quality	11
	It can be used individually and in groups	12
	Interactive module based on QR Code according to the student's need	13
	The practicality of an interactive module based on the QR Code	14
	Compatibility of the contents of the QR code with the material	15

**Data Analysis**

In statistical analysis, the Kolmogorov-Smirnov test was used to test the normality of data distribution. The basis for conducting the normality test, namely:

- 1) If the significance value  $> 0.05$ , then the residual value is normally distributed.
- 2) If the significance value is  $< 0.05$ , then the residual value is not normally distributed.

In this study, inferential statistics for hypothesis testing using paired sample t-test. Conclusions from the hypothesis are made using criteria with a significance level of 0.05. The basis for decision-making in the paired sample t-test is.

- 1) If the significance value (2-tailed)  $< 0.05$ ,  $H_0$  is rejected, and  $H_a$  is accepted.
- 2) If the significance value (2-tailed)  $> 0.05$ ,  $H_0$  is accepted, and  $H_a$  is rejected.

The data measurement analysis technique was used to determine media and material experts' responses using a Likert scale with the questionnaire score category in Table 4.

**TABLE 4**  
**VALIDATION SCORE-CATEGORY MEDIA AND MATERIAL EXPERTS**

Scoring Scale	Alternative Answer
5	Excellent
4	Good
3	Fair
2	Poor
1	Bad

The advisability test of the learning media interactive module based on the QR Code was analyzed with a percentage rating scale. The average percentage of each component is calculated using the formula:

$$\frac{\text{Total score obtained}}{\text{Maximum score}} \times 100\%.$$

The validation criteria used in the validity of learning media in the interactive module based on the QR Code are presented in table 5.

**TABLE 5**  
**MEDIA AND MATERIAL ELIGIBILITY CRITERIA BASED ON RATING SCALE**

Percentage of Scoring Scale	Eligibility Criteria
86% - 100%	Very Worthy
51% - 85%	Worthy
26% - 50%	Less Worthy
0% - 25%	Not Advisable

## RESULTS AND DISCUSSION

This research and development used the ADDIE model, which consists of 5 stages: analysis, design, development, implementation, and evaluation.

### Analyze

The analysis was carried out by looking for information related to the learning interest of college students through learning media used by teachers in entrepreneurship course learning. Data were obtained from questionnaires and interviews conducted with lecturers in college colleges in Jakarta. The results are that the students feel bored while learning in an entrepreneurship course. This is because the learning media used has been impressive ancient and has yet to utilize technology, so it is not interactive. In line with the results of questionnaires and interviews conducted in entrepreneurship courses still use printed books, so it does not cause interest college students to read and learn them. This makes learning ineffective.

Based on the opinions of the interview results, learning media can be applied to college students to reduce boredom and make learning enjoyable by creating interactive learning media modules based on QR codes. It does not only include narration but also comes with images and videos, as well as exercises in the form of interactive quizzes. In that way, college students become interested in studying entrepreneurship courses, and the learning process will be more effective.

### **Design**

The design phase of making learning media interactive modules based on QR Code is based on analyzing needs in the previous stage of creative and innovative thinking and business ideas and plans with IT components material. Therefore, the first step is to formulate indicators and to learn objectives based on the entrepreneurship book.

The next step is to make a storyboard to describe the layout of the material in the module and determine illustrations of examples of outbound and inbound marketing through making promotions. The last step is to create interactive quizzes through online applications that college students can access through QR codes.

### **Development**

The phase of developing an interactive module based on a QR Code for entrepreneurship course learning at Universitas Muhammadiyah Jakarta in Indonesia is divided into several steps. The first step is that the researchers prepare the Canva applications, which are used to make interactive learning media. In addition, the researchers also designed the material content about entrepreneurship, images of examples of making promotions, and videos from YouTube. Then the pictures and videos can be accessed by college students through the QR Code.

The second step is for researchers to develop a learning media interactive module based on QR codes by packing outbound and inbound marketing material with complementary media content prepared in the previous phase. After the cover of the Interactive Module based on the QR Code displayed, college students can move to the table of contents page, introductions, and instructions for use and go directly to the material contents page. This module starts with the introduction of the material and then continues with the content of materials about entrepreneurship. For example, in chapter one, there is material content about entrepreneurship. On the following pages is an example of outbound and inbound marketing equipped with images. A QR Code can also be scanned to display a video related to the materials. After college students understand the content of the materials, they can turn to the page containing evaluation quizzes that can be accessed through QR Code.

The evaluation questions used a combination of inbound and outbound marketing materials. College students can access this quiz through QR Code. This evaluation quiz is designed like an interactive quiz using an application to increase college students learning interest. The last step is to re-check the completeness of the materials, the accuracy of the selection illustrations, the suitability of the video material, and the suitability of quiz questions with the material in the learning media Interactive Module based on the QR Code.

### **Implementation**

The implementation phase of the interactive module based on QR Code in entrepreneurship learning material for inbound and outbound marketing college students at Universitas Muhammadiyah Jakarta in Indonesia was tested by two experts, media and material experts, for validated the product. Media validation is done by distributing questionnaires. The results of the validation of the experts are used to improve the interactive product module learning media based on the developed QR Code.

After getting a valid score from experts, the interactive book based on QR Code was tested on a random sample involving college students at Universitas Muhammadiyah Jakarta in Indonesia as the experimental group. Before the trial, students were given a pretest questionnaire on interest in learning; after the media trial, college students were given a post-test questionnaire on interest in education.

The following table shows the results of the pretest and post-test data analysis of student interest in the Kolmogorov-Smirnov and paired sample tests.



**TABLE 6**  
**TEST OF KOLMOGOROV-SMIRNOV**

		experiment
N		56
Normal Parameters	Mean	0.0000
	Std. Deviation	1.3746
Most Extreme Differences	Absolute	.111
	Positive	.097
	Negative	-.111
Kolmogorov-Smirnov Z		.111
Asymp. Sig. (2-tailed)		.083

The normality test using the Kolmogorov-Smirnov test aims to determine whether the residual value is usually distributed. Based on the results of the normality test shown in table 3, it is known that the significance value is  $0.083 > 0.05$ ; it can be concluded that the pretest and post-test residual value of the interest in learning for college students at Universitas Muhammadiyah Jakarta in Indonesia is normally distributed.

**TABLE 7**  
**DESCRIPTIVE STATISTICS**

Pair 1	N	Mean	Standard Deviation	Standard Error Mean
Pre	56	4.39	1.436	.192
Post	56	18.86	1.368	.183

**TABLE 8**  
**PAIRED SAMPLES CORRELATIONS**

		N	Correlation	Sig.
Pair 1	Pre & Post	56	0.288	.031

Based on the result of the paired sample t-test, it can be noticed that the average value of the pretest =  $4.39 <$  the average value of the post-test =  $18.86$ ; it can be concluded that the average value of the post-test after testing the interactive module based on QR Code is better than the average value of the pretest before being tested on the media.

**TABLE 9**  
**PAIRED SAMPLES TEST**

		Mean	Standard Deviation	Standard Error Mean	95 % Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pre-Post	-14.464	1.673	.224	-14.912	-14.016	-64.701	55	.000

Based on the result of the paired sample t-test, it is known that the significance value (2-tailed) is  $0.00 < 0.05$ , so  $H_0$  is rejected, and  $H_a$  is accepted. There is an average difference between the pretest and post-test, which means that using interactive modules based on QR codes positively influences the learning interest of college students.

### Evaluation

The evaluation involved media experts as well as material experts aimed at improving the interactive module based on QR Code learning media product that was developed.

#### Media Expert

Assessment of the validity of the interactive module based on QR Code by a media expert who is one of the college students at Universitas Muhammadiyah Jakarta in Indonesia. The following are the results of the media expert validation.

**TABLE 10  
MEDIA VALIDATION**

Media Expert Validation							
No	Aspect	Indicator	Score	Total score	Maximum score	Percentage (%)	Validation criteria
1	Design	1	4	20	25	80	Worthy
		2	5				
		3	3				
		4	3				
		5	5				
2	Module Content	6	5	19	20	95	Very Worthy
		7	5				
		8	4				
		9	5				
3	QR Code	10	5	13	15	86.7	Very Worthy
		11	4				
		12	4				
4	Easy to Use	13	5	13	15	86.7	Worthy
		14	4				
		15	4				
<b>Percentage of All Aspects</b>						<b>87.1%</b>	
<b>All Aspects Validation Criteria</b>						<b>Very Worthy</b>	

Based on the results of the media expert validation assessment table, it is known that the average percentage of achievement obtained from 4 aspects which includes 15 statements in the questionnaire, is 87.1%. Therefore, the interactive module based on the QR Code developed has a possible interpretation.

#### Material Expert

Material expert of validity assessment of the interactive module based on QR Code is one of the lecturers at Universitas Muhammadiyah Jakarta in Indonesia. The following are the results of the media expert validation.

**TABLE 11  
MATERIAL VALIDATION**

<b>Media Expert Validation</b>							
<b>No</b>	<b>Aspect</b>	<b>Indicator</b>	<b>Score</b>	<b>Total score</b>	<b>Maximum score</b>	<b>Percentage (%)</b>	<b>Validation criteria</b>
1	Material Quality	1	5	28	30	93.3	Very Worthy
		2	4				
		3	5				
		4	5				
		5	5				
		6	4				
2	Language	7	4	16	20	80	Worthy
		8	4				
		9	4				
		10	4				
3	Implementation	11	5	22	25	88	Very Worthy
		12	4				
		13	4				
		14	4				
		15	5				
<b>Percentage of All Aspects</b>						<b>87.1%</b>	
<b>All Aspects Validation Criteria</b>						<b>Very Worthy</b>	

Based on the material expert validation assessment table results, it is known that the average percentage of achievement obtained from 4 aspects, including 15 statements in the questionnaire, is 87.1%. Therefore, the interactive module based on the developed QR Code can be interpreted.

## CONCLUSION

Based on the data from the post-test result of college student's interest in learning, it is known that the experimental treatment of interactive modules based on QR codes is greater than the pretest of college students' interest before teaching. Therefore, the learning media interactive module based on QR Code affects the increasing learning interest of college students at Universitas Muhammadiyah Jakarta in Indonesia.

This media has been proven valid and very practical to use so that the lecturer can use it as a media in the learning process of entrepreneurship. The learning media interactive module based on QR Code can affect increasing students' interest in entrepreneurship course learning because the teacher can guide college students to access material for inbound and outbound marketing through the QR Code contained in the interactive module. Incorporating technology in the form of a QR Code can be a unique attraction for college students accessing interactive modules.

The limitations of this study include only college students at Universitas Muhammadiyah Jakarta in Indonesia. This interactive module based on QR Code can be implemented as entrepreneurship course learning media to determine the effect of interactive module based on QR Code in increasing the learning interest of college students in higher education throughout Indonesia area. The researchers suggest that further research cover Indonesia to comprehensively determine the effect of learning media in increasing college students learning interest.

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