



Development of Digital Teaching Materials in Creative Project Subjects

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Abstract: This research aims to produce valid, practical and effective digital teaching materials for the Creative Projects and Entrepreneurship subjects in Class XI of SMK Negeri 2 Padang. Also, to see students' interest in learning using Digital Teaching Materials. The design of this digital teaching material uses the heyzine flipbook application. This research uses the Research and Development (R&D) method using the ADDIE development model with the stages of Analysis, Design, Development, Implementation and Evaluation. The research results show that the development of digital teaching materials has met the criteria of being valid, practical and effective for use in learning. The validation results from language experts were 97%, material validation was 94.91% and media experts were 87.20% in the very valid category. The assessment of teacher practicality was 89.17% and student practicality was 82.06%, which fell into the very practical category. With an effectiveness of 75.83%, it falls into the effective category and can improve student learning outcomes. Also, students' interest in learning was 87.39% in the very good category. So, it can be concluded that digital teaching materials are suitable for use in learning Creative Projects and Entrepreneurship.

Keywords: Creative and Entrepreneurship Projects; Digital Teaching Materials; Heyzine Flipbook

Introduction

Education is a crucial aspect for human life, where the quality of human resources is created from an educational institution (Akareem & Hossain, 2016). Efforts that can be made to achieve educational goals can be achieved through a good and planned educational process. The education process according to Permedikbud Number 59 of 2014 is a process that provides opportunities for students to develop their potential into the ability to think rationally and academic excellence by giving meaning to what they see, hear, read and learn to apply in everyday life. At the vocational school level, one of the lessons taught to students is related to entrepreneurship education. This is based on seeing that the number of entrepreneurs in Indonesia is still not optimal. The entrepreneurship ratio in Indonesia only reaches 3.74% of the total population of Indonesia.

This is relatively low compared to other countries, such as Thailand 4.26%, Malaysia 4.74%, and Singapore reaching 8.76%. Where some developed countries have an entrepreneurship ratio above 12% (Hamdan et al., 2022). So, the government is trying to provide learning in the Merdeka curriculum that will be useful for vocational school students. Where vocational school graduates are expected to not only produce work-ready graduates, they are also encouraged to become entrepreneurs (Handayati et al., 2020). So that vocational school students are not only ready to work, but they are also ready to become job providers. This learning is called Creative and Entrepreneurship Project (PKK). Where this subject is a learning vehicle for students through a project-based learning approach to actualize and express the competencies mastered in the activity of making products or services in a creative and economically valuable manner (Sorici et al., 2023).

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In reality, learning about Creative Projects and Entrepreneurship has not been carried out optimally. There are a number of problems regarding learning, such as the learning process is still conventional, face-to-face learning time is limited and creative and entrepreneurial project learning is still dominated by teaching materials in the form of printed books which are also limited in quantity. The role of the teacher is very necessary in the learning process. In improving learning, teachers are required to make learning more innovative and creative, encouraging students to learn optimally both in independent learning and in classroom learning (Almusaed et al., 2023).

Teachers are expected to be able to use efficient tools even though they are simple and unpretentious, which is a must to achieve what is expected. How teachers can guide their students in learning, make learning effective and enjoyable and make students active in learning. In order to help the PKK learning process, what teachers can do is provide interesting variations in teaching materials. Selecting, appropriate teaching materials in the learning process can also increase students' interest in learning (Abadiyah et al., 2018). If the learning process is interesting, it will affect students' enthusiasm in receiving the material presented by the teacher. Teaching materials must be able to provide direct experience to students so that they have an impact on students' interest in learning (Ong & Quek, 2023). Also, teachers using interesting learning media will increase students' interest in learning.

Interest in learning is an important foundation for someone to carry out activities well. Interest can not only influence a person's behavior but also a person's but can also encourage them to keep doing and getting something (Wong et al., 2020). It is hoped that if students are serious about studying there will be a desire to become an entrepreneur so that after graduating students will not only work but can open up employment opportunities. An educator must be able to integrate technology into the learning process to make it more interesting for students. A creative and innovative teacher must be able to develop learning materials in digital format. Learning with digital technology can help teachers to provide more interesting learning (Haleem et al., 2022).

Many studies have proven that digital technology has a positive impact on learning (Okoye et al., 2023). So, one ways teachers can solve this problem is to take advantage of developments in technology and informatics in the field of education, namely digital teaching materials. Digital teaching materials are also independent teaching materials using an electronic format that are designed coherently to achieve certain learning goals and are connected by links for navigation

in each activity, thus making students more interactive. Apart from that, it is also equipped with pictures, videos and other animations to give students a rich learning experience. The advantages of digital teaching materials are that they can be used anytime and anywhere and their interactive nature makes digital teaching materials more popular with students in the learning process. This is important to do in order to achieve optimal learning (Nurhikmayati & Jatisunda, 2019)

Flipbooks are practical and can increase students' enthusiasm and interest in learning because they can visualize the concepts in lessons into three-dimensional images (Hardiansyah & Mulyadi, 2022). So, with digital teaching materials using Heyzine flipbooks, teachers can design, create and adapt their own learning materials according to the characteristics of students and their needs for achieving the material being taught. Also, the teaching materials that researchers will develop use a contextual approach where these digital teaching materials link lesson material to real life experienced by students in accordance with the surrounding environment in everyday life. Contextual really helps teachers in presenting learning materials that have been designed which are related to real situations so that students are encouraged to apply them in everyday life (Afni & Hartono, 2020).

The contextual learning approach is a principle which states that learning will be more meaningful if students experience it themselves. By using teaching materials through a contextual approach, the Creative and Entrepreneurship Project learning taught by the teacher can be more effective and easier for students to understand because its application is based on the real conditions of the environment around the students. So, there is a need for the availability of teaching materials in digital form in order to broaden horizons and attract students' interest in learning about Creative Project and Entrepreneurship subjects (Chen et al., 2021). This need needs to be met because the teaching materials used in the current learning process are still conventional in nature, making students bored. Researchers are not only limited to developing teaching materials, but researchers also have the aim of influencing students' interest in learning in Creative Project and Entrepreneurship subjects. The learning process will be more effective and efficient if assisted by digital teaching materials.

Method

This research is research and development (R&D). Where R&D is a research method used to produce certain products, and test the effectiveness of these products (Kasmawati et al., 2023). The development

model used in this research is the ADDIE development model.

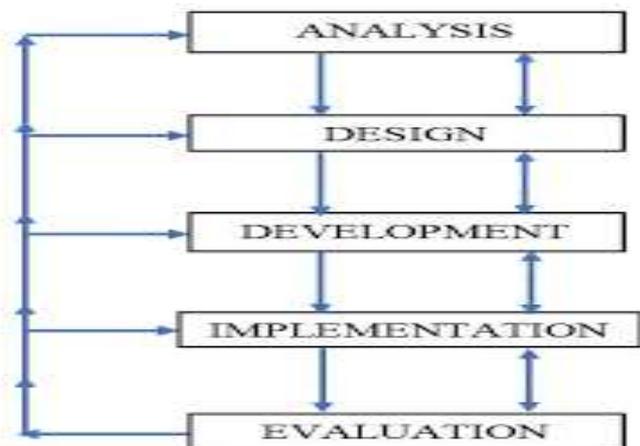


Figure 1. Flow of ADDIE Research Objectives

According to (Widyastuti & Susiana, 2019), the ADDIE model is a systematic learning design, selected based on consideration of a model and systematically developing the theoretical basis for learning design. The stages in this model are analysis, design, development, implementation and evaluation. Data collection instruments consist of validation instruments by language experts, materials and media, practical instruments to be filled in by teachers and students, learning interest questionnaires and tests in the form of objective questions. Then the technical data analysis consists of a validity questionnaire and a practicality questionnaire and student interest in learning using a Likert scale. Meanwhile, effectiveness is based on student learning outcomes.

Result and Discussion

The product developed in this research is digital teaching materials for Creative Project and Entrepreneurship subjects using the ADDIE development model which consists of several stages, namely, Analysis Design, Development, Implementation, and Evaluation (Ananda et al., 2023). The form of research design chosen was posttest-only control group designs. Small group trials were carried out on class XI Marketing 2 students at SMK Negeri 2 Padang, totaling 24 people. After revising the product, a large group trial was carried out using digital teaching materials in class XI BDP 1 SMK Negeri 2 Padang with 30 people as an experimental class. Meanwhile, the control class in this research was class XI BDP 3 students at SMK Negeri 3 Padang. This control class was chosen because students come from the same skill competency at the same grade level.

This research and development has several

objectives, including producing products in the form of digital teaching materials for learning creative projects and entrepreneurship in class use of digital teaching materials in PKK learning. This is because based on observations made, teaching materials for PKK subjects are only in simple form, namely printed books provided by schools and these books are also limited (Hendri et al., 2021). Where the printed book cannot be taken home by students so they cannot repeat the lesson either at home or at school because after learning the book is returned to the teacher. Also in the book the existing material does not provide examples related to everyday life, making the material less understood by students.

At the development stage, researchers ensure that digital teaching materials have content that is appropriate to the learning material and have an attractive appearance and clear interactions. After implementing the design, a validity test was carried out by linguists, material experts and media experts on digital teaching materials (Zutiasari & ., 2021); (Utami et al., 2022). As a rule of research and development, in research and development the product being developed must meet the criteria of being valid, practical and effective. To create a more transparent quality concept, there are three quality criteria for a product, namely validity, practicality and effectiveness (Pakurár et al., 2019)

Based on the validation results of language experts, material experts and media experts on the development product for Digital Teaching Materials for PKK SMK learning, it is known that the Digital Teaching Materials that have been designed are very feasible by making improvements according to the validator's suggestions. The validity assessment in this research was carried out on 2 validators for each expert and carried out twice. Degree instrument validation is to show where a test measures what it wants to measure (Elangovan & Sundaravel, 2021). The teaching materials developed are said to be suitable for use in the learning process if they meet construct validity and content validity. The basic key to obtaining high construct validity is the accuracy, suitability and truth of the previously prepared construct (Taber, 2018). Content validity in digital teaching materials is the suitability of the content of the learning media with the basic competencies being studied and the media's ability to visualize macroscopic, sub-microscopic and symbolic aspects and enable students to learn at different speeds (Ningrum et al., 2021).

Table 1. Analysis of Validation Results by Linguistic Expert Validators

Aspect	Validation 1		Validation 2	
	T1	T2	T1	T2
Sentence Structure	21	24	23	24
Language style	23	24	25	25
Amount	44	48	48	49
Average	88%	96%	96%	98%
Total Average		92%		97%

Based on the assessment carried out by language experts, the average score obtained by the first validator at stage 1 was 88% and at stage 2 it was 96% so that the average of 92% fell into the very feasible category. In the second validator, at stage 1 it was 96% and at stage 2 it was 98% so that an average of 97% fell into the very feasible category. So, it can be concluded that digital teaching materials for language validation can be said to be very feasible and can be continued for research.

Table 2. Analysis of Validation Results by Material Expert Validators

Aspect	Validation 1		Validation 2	
	T1	T2	T1	T2
Material Feasibility	6	10	8	10
Material Completeness	16	19	17	20
Accuracy of Material	13	15	13	13
Material Presentation Techniques	13	14	12	14
Amount	48	58	46	55
Average	80%	96.60%	76.60%	91.60%
Total Average		88.30%		84.10%

Based on the assessment carried out by material experts, the average score obtained by the first validator in stage 1 was 80% and in stage 2 it was 96.60% so that the average of 88.30% fell into the very feasible category. In the second validator, at stage 1 it was 76.60% and at stage 2 it was 91.60% so that an average of 84.10% fell into the very feasible category. So, it can be concluded that digital teaching materials in material validation can be said to be very feasible and can be continued for research.

Table 3. Analysis of Validation Results by Media Expert Validators

Aspect	Validation 1		Validation 2	
	T1	T2	T1	T2
Cover design (Cover)	12	12	14	15

Aspect	Validation 1		Validation 2	
Contents	12	12	15	15
Graphic	28	28	35	35
Usefulness	16	16	19	20
Technology	18	20	23	24
Amount	86	88	106	108
Average	78.10%	80%	96.30%	98.10%
Total Average		79.05%		97.20%

Based on the assessment carried out by media experts, the average score obtained by the first validator at stage 1 was 78.10% and at stage 2 it was 80% so that the average was 79.05% in the feasible category. In the second validator, at stage 1 it was 96.30% and at stage 2 it was 98.1% so that an average of 97.20% fell into the very feasible category. So, it can be concluded that digital teaching materials in media validation can be said to be very feasible and can be continued for research. In this research, a practicality test was carried out on teachers of Creative Projects and Entrepreneurship subjects at SMK Negeri 2 Padang. Also, to students in class XI Marketing 2 as a limited trial class and class XI Marketing 1 as an experimental class at SMK Negeri 2 Padang. Practicality in educational evaluation is the convenience of evaluation instruments in preparing, using, obtaining results and the ease of storing them (Dwivedi et al., 2023). To measure the level of practicality related to the development of instruments in the form of learning materials (Poernomo et al., 2019); (Sumarni et al., 2018). According to (Margot & Kettler, 2019), he believes that to measure practicality by looking at whether teachers and other experts consider that the material is easy and can be used by teachers and students.

Regarding teacher practicality, it was given to 2 teachers for creative project and entrepreneurship subjects. Teacher 1 got a practicality score of 85% which is in the very practical category and teacher 2 got a practicality score of 90% which is also in the very practical category. So, the average teacher practicality score is 87.50% and falls into the very practical category. Meanwhile, the practicality of students, for the limited trial class, the practicality value was 74.17%, which was included in the practical category and in the experimental class, the practicality was 82.06%, which was included in the very practical category. Where the value given by students shows that the product being developed can be used easily and is liked by users. So that digital teaching materials for learning creative projects and entrepreneurship for class XI SMK can be accepted and liked by users.

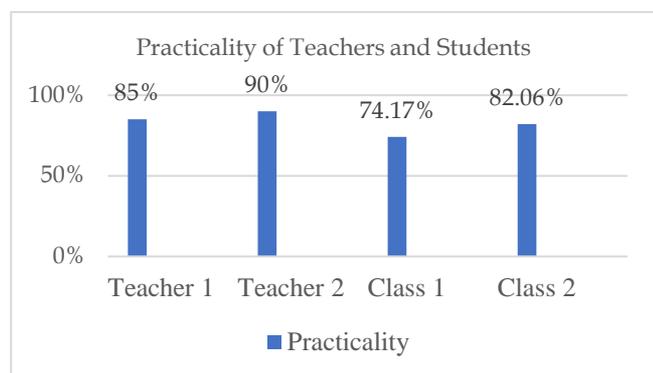


Figure 2. Practicality of Teachers and Students

Table 4. Results of T Test Analysis

	Experiment	Control
Mean	75.83	68.59
Variance	151.86	205.21
Observations	30	32
Pooled Variance	179.43	
Hypothesized Mean Difference	0	
Df	60	
T Star	2.12	
P (T<=t) one tail	0.01	
T Critical one-tail	1.67	
P (T<=t) one tail	1.03	
T Critical one-tail	2.00	

The effectiveness results were obtained by looking at the data obtained from the t-test results, in the experimental and control classes the results were obtained T Count > T Table where 2.12 > 2,000 and the probability was < 0.05. So, there is a significant difference between the learning outcomes of students who use digital teaching materials and students who do not use digital teaching materials. Research and learning development for a product can be said to be effective if the product provides results in accordance with the objectives set by the developer. In the experimental class which used digital teaching materials the average student score was 75.83%, while in the control class which did not use digital teaching materials the average student score was 68.59%. It can be concluded that the teaching materials for learning creative projects and entrepreneurship for class XI SMK are very effective for use in learning.

Table 5. Student Interest in Learning

Indicator	Experimental Class		Control Class	
	Mean	TCR %	Mean	TCR %
Happiness	4.35	87	4.06	81.25
Involvement	4.37	87.46	4.15	83.12
Interest	4.47	89.50	4.25	85
Attention	4.28	85.60	4.26	85.25
Average	4.36	87.39	4.18	83.65

In this research, students' interest in learning can be seen in the results of the questionnaire that was given to students. Interest in learning is an attitude of obedience to learning activities, both regarding planning study schedules and taking the initiative to carry out these efforts seriously. Where from the calculation results it can be seen that students who study using digital teaching materials can see that their interest in learning is 87.39%, which is included in the very good category.

Meanwhile, students who study without being treated using digital teaching materials have an average student interest in learning of 83%, which is included in the very good category. It can be seen that he already has a good interest in learning. However, there are still differences in the learning interests of students who use digital teaching materials and students who do not use digital teaching materials. So it can be concluded that the use of digital teaching materials can foster students' interest in learning in experimental classes (Reichert-Schlax et al., 2023); (Sailer et al., 2021).

Conclusion

Digital teaching materials for Creative Projects and Entrepreneurship subjects were successfully prepared and developed using the ADDIE development model. These digital teaching materials can be said to be valid, practical, effective and can foster students' interest in learning. Judging from the language aspect, it is 97%, from the material aspect it is 94.10% and the media aspect is 90.85%, which is included in the very valid category. Then, teacher practicality was 82.06% and student practicality was 82.06%, indicating that the digital teaching materials developed were very practical to use. The effectiveness of the digital teaching materials developed can improve student learning outcomes in PKK subjects. Where the average student learning outcomes in the experimental class was 75.83%, which was considered effective. The use of digital teaching materials can increase students' interest in learning by 87.39% and is included in the very good category. So it can be concluded that digital teaching materials can be used as one of the teaching materials in Creative Projects and Entrepreneurship subjects.

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Author Contributions

Conceptualization; C. Y., S. E.; methodology; C. Y.; validation; S. E.; formal analysis.; C. Y.; investigation.; S. E; resources; C. Y; data curation: S. E.; writing—original; C. Y; draft preparation; S. E; writing—review and editing; C. Y; visualization: M. I. M. All authors have read and agreed to the

published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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