



Development of Animated Videos on Pasta Material as Learning Media for Class

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ABSTRACTS

This research focuses on the development of animated video learning media on pasta materials, with the following objectives: (1) to develop animated video-based learning media for the topic of pasta in the subject of Food Processing and Presentation; and (2) to assess the feasibility of the developed video based on validation from experts in the fields of content, language, and media. The study employs a Research and Development (R&D) approach using the 4D development model, which consists of the stages: Define, Design, Develop, and Disseminate. However, the research is limited to the development stage, emphasizing expert appraisal for validation purposes. Data collection techniques include interviews, literature reviews, and expert validation checklists. The development process of the animated video media followed three main stages: defining the learning needs and objectives, designing the storyboard and animation flow, and developing the animated content based on established criteria. Validation results from material experts, language experts, and media experts indicate that the animated video is appropriate and suitable for use as a learning medium. Overall, the findings suggest that the animated video effectively supports the teaching of pasta materials in vocational culinary education and meets the standards required for instructional media.

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1. INTRODUCTION

In the 21st century, it is possible that education is not only carried out directly in schools but can also be carried out anywhere thanks to the rapid development of technology. Better yet, the implementation of education can be combined between direct and online teaching. Sanurdi (2020) stated that Hybrid learning is a learning method that combines face-to-face and online teaching. In its application, online learning has disadvantages, one of which is that it can affect students' interest in learning. In line with the results of research conducted by Yunita and Hanifah (2020), it is known that online learning affects students' interest in learning because it is less interesting and makes students easily bored. This becomes a reference for teachers to ensure the learning process can be interesting and effective.

Based on information obtained through teaching experience during PPLSP activities at SMKN 2 Baleendah Bandung in 2020. The results of the needs analysis showed that teachers delivered learning material only via WhatsApp message where the learning media used is conventional learning media. Meanwhile, amidst online learning which is currently being implemented, learning media can make it easier for teachers to deliver learning material and increase students' interest in learning. This affects students' understanding, one of which is the pasta material, only around 80% of students from class XI have difficulty understanding the various forms of pasta and several terms in the material. Therefore, learning media is needed that can attract students' interest in learning, especially in pasta material.

Utilizing technology-based learning media is one strategy that can increase student interest (Novilanti and Suripah, 2021). One technology product is multimedia, learning videos are multimedia products that are easy to use by teachers and students. Learning videos are audio-visual media that are used to stimulate students' thoughts, feelings and motivation to learn by displaying ideas, messages and information. However, according to Aliyyah (2021), conventional learning videos have several weaknesses, including conventional learning videos requiring the provision of material rather than the process of developing the material, production costs tend to be expensive, and require projection equipment to display the video.

Therefore, to attract students' attention from a graphic perspective, apart from conventional learning videos, animation-based learning videos could be an option. In line with the statement by Rosayana and Fitriyani (2021) which states that animated video media can be an option in the teaching and learning process because through animation-based videos, the available information can be conveyed clearly and helps students visualize the information received. The advantages of animated videos based on the results of research conducted by Apriyansyah (2020) show that animation-based learning videos can increase interest in learning and create a sense of enjoyment during the learning process and increase students' understanding of the material presented using animated videos.

Based on previous research, this research develops animated video-based learning media with the latest in the form of animated video learning media for pasta material. The aim of this research is to develop animated video learning media regarding pasta material in the Food Processing and Presentation subject, and to determine the feasibility of the results of animated pasta video products based on the assessment of validators consisting of material experts, language experts and media experts.

2. METHODS

This research is included in the type of research and development (Research and Development) with a 4D development model (Define, Design, Develop, and Disseminate)

which has been modified, namely limiting the development procedure to the Develop stage only at the expert appraisal level or expert assessment of the designs and animated video products produced.

The define stage is the activity of analyzing the needs for developing learning media which includes problem analysis activities and learning component analysis activities. The problem analysis was obtained from the results of interviews with teachers of Food Processing and Presentation subjects. Analysis of learning components was obtained from the activity of analyzing KD 3.6, namely analyzing dishes from potatoes and pasta based on the independent curriculum at the Tourism Vocational School.

The design stage is the activity of designing an animated video by creating a storyboard that is guided by the Media Content Outline (GBIM). The storyboard structure consists of six columns which can be seen in the figure 1 below.

No.	Description	Visual	Audio	Time	Information

Figure 1. Storyboard format design

In column No. shown to give a number for each row filled in. The description column contains the number and description of the scene as well as an explanation of the scene. The visual column contains images and visual explanations that will be displayed. The audio column contains background audio and narration that will be delivered. The time column contains the duration of each scene. The description column contains additional information that is not explained by the other five columns in the storyboard. At this stage the planning continues to the process of creating animated video media which consists of three stages including pre-production, production and post-production.

The develop stage is the activity of assessing the feasibility of the design and product animation video with pasta material by experts. The assessment was carried out by three experts including material experts, language experts and media experts. The storyboard design that has been created is submitted to material experts and language experts to provide suggestions for input which are then developed into a design that is suitable for production. The pasta animation video product that has been created is submitted to media experts to assess its suitability and the suggestions given are used as a reference for developing pasta material animation video products that are ready to be used in the learning process.

Based on the description above, the development procedure diagram can be seen in the image below.

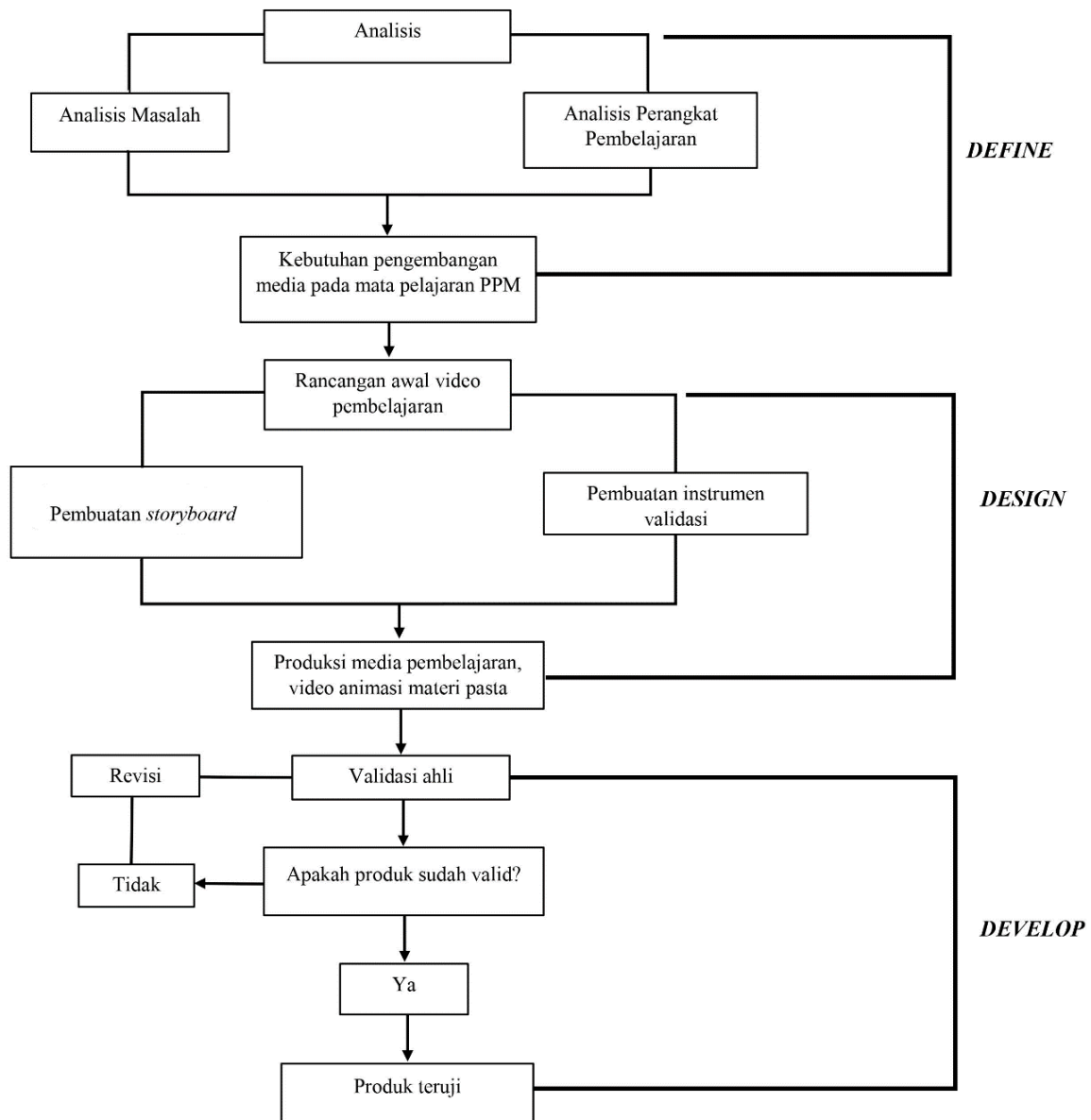


Figure 2. Procedure diagram for developing animation media on paste material.

Data collection was carried out and used in this research, including through interviews, literature studies and expert validation sheets. Interviews are used to analyze learning media development needs. Literature studies were carried out to gather information can be used for learning media that will be developed. The expert validation sheet is used to find out the assessments and suggestions given by material experts, language experts and media experts.

The data analysis technique in this research uses qualitative data analysis techniques. Data in the form of suggestions and comments are processed into meaningful sentences to obtain the necessary information.

3. RESULTS AND DISCUSSION

3.1. Research Result

3.1.1. Define stage

In the Define stage, a comprehensive needs analysis was conducted to identify the requirements for developing effective learning media. This involved problem analysis

through interviews with teachers of the Food Processing and Presentation subject at SMKN 2 Baleendah Bandung. Additionally, an analysis of learning components was performed, focusing on Competency Standard KD 3.6, which pertains to analyzing potato and pasta dishes, as well as student competency achievement indicators based on the syllabus and lesson plans for the subject. The analysis revealed a necessity to transition from conventional learning media delivered via WhatsApp messages to animated videos to enhance students' interest in pasta material through visual and auditory means. This finding aligns with research indicating that animated learning videos can significantly boost student motivation and learning outcomes (Pertiwi et al., 2023).

3.1.2.Design stage

The Design stage involved creating an animated video on pasta material, followed by the development of validation sheets for material experts, linguists, and media experts. The design process began with the creation of a Media Content Outline (GBIM), which served as a guideline for preparing the storyboard. The storyboard comprised six columns: number, description, visual, audio, time, and additional information. The development of the animated video media encompassed three stages: pre-production, production, and post-production. Pre-production activities included character design, storyboard creation, narration recording, and background music selection. Production involved creating background layouts and animating processes using applications such as Powtoon and VN. Post-production consisted of compositing each created scene, editing, and sound design, which entailed adding audio narration and background music to produce a complete animated video on pasta material with a duration of 11 minutes. The utilization of applications like Powtoon in developing learning media has been shown to effectively enhance student engagement (Tetriyani et al., 2024).

3.1.3.Development stage

The Development stage was carried out through expert appraisal to assess the feasibility of the animated pasta video product based on material, linguistic, and media aspects. The feedback obtained from experts served as a reference for refining the animation media products. Expert validation is a crucial step in the development of learning media to ensure quality and effectiveness (Silva et al., 2023).

3.1.4.Material validation results

The first validation is carried out by material experts on the storyboard design that has been created. The purpose of this validation is to see and assess whether the paste material that will be delivered is completely included in the storyboard or not. Based on the validation results, it was concluded that the storyboard design needed improvement. Suggestions given by material experts include improvements to the indicators of "material density" and "image suitability" to the material. Next, stage two validation was carried out on the pasta animation video design. As a result of this validation, the material expert provided suggestions for improvements to the pasta image, namely that the pasta color should be made more contrasting. Based on the results of the second stage of validation, all pasta images were changed to pasta images with more contrasting colors. The revised pasta animation video design was then validated again by material experts. Material expert validation ensures that the content delivered in learning media aligns with curriculum objectives and standards (Agustin & Nawiyah, 2024).

Table 1. Feasibility of Animation Videos Based on Material Experts

Indicator	Category
Content suitability	Worthy
Collapse of matter	Worthy
Material coverage	Worthy
Concept compatibility	Worthy
Image suitability	Worthy
Dialogue/narrative suitability	Worthy
Ease of understanding	Worthy

The results of the third stage of validation by material experts were that all assessment indicators for the animated pasta video product were declared suitable for use in learning.

3.1.5. Language validation results

The aim of this language validation is to obtain an assessment based on the linguistic aspects of the pasta animation video design that is created. Language validation is essential to ensure clarity, grammatical correctness, and the effectiveness of instructional language in learning media (Silva et al., 2023).

From the results of validation by language experts, it can be concluded that there are suggestions for improvement in the indicators "accuracy of terms" and "ability to encourage students' curiosity". Next, validation was carried out again to improve the pasta animation video design. The results of the second stage of validation, linguist experts suggest improvements should be added to the introductory questions to enter the pasta material. Based on the results of the second stage of validation, the author changed the narrative text in scene 5. The pasta animation video design which had been improved was then validated again by a linguist.

Table 2. Feasibility of Animation Videos Based on Linguistic Experts

Indicator	Category
Language suitability	Worthy
Accuracy of terms	Worthy
Ease of understanding the flow of the material	Worthy
Ability to encourage curiosity	Worthy
Accuracy of rules	Worthy

The results of the third stage of validation by language experts were that all the assessment indicators for the animated pasta material video product were declared suitable for use in learning.

3.1.6. Media validation results

Media validation ensures that the technical quality, design consistency, and user engagement of learning media meet the required standards (Silva et al., 2023). The learning media product handed over to media experts is in the form of animated video

media with paste material which has been created based on the results of the completed validation process with material experts and media experts. There are two aspects of assessment, namely the presentation aspect and the audio-visual aspect which are assessed by media experts. The results of validation by media experts can be concluded that in general it is good, but there are still several notes that need to be improved, especially for the motion cinematic aspect. Apart from that, the appearance of the "mascot" which was initially shown, as the video progresses, its existence seems to be "forgotten". Based on the validation results, the animated video product is improved according to the suggestions given. The animated video product with pasta material was then validated again by media experts.

Table 3. Feasibility of Animation Videos Based on Media Experts

Indicator	Category
Sequence of presentation	Worthy
Simple and charming	Worthy
Presentation of characters and visualization of materials and tools	Worthy
Audio (narration, sound effects, background)	Worthy
Visual (design layout, typography, color, animation)	Worthy

The results of the second stage of validation by media experts were that all assessment indicators for animated pasta video products were declared suitable for use in learning.

3.2. Discussion

The successful implementation of animated video media in vocational subjects like Food Processing and Presentation also highlights the broader trend of digital transformation in education. Studies have shown that the integration of multimedia elements—such as animations, interactive graphics, and simulations—can significantly bridge gaps in conceptual understanding, particularly in fields requiring procedural knowledge (Ally & Wark, 2020; Pérez-Mateo et al., 2022). In vocational contexts, where visual demonstration of procedures is crucial, animated media serves as an effective bridge between theoretical instruction and practical skill development. This aligns with the findings of Marini et al. (2023), who emphasize that multimedia-supported instruction enhances students' ability to visualize processes and sequences critical in technical disciplines.

Moreover, the independent accessibility of animated videos supports the principle of self-regulated learning, an essential competence for vocational students as they prepare for lifelong learning and dynamic work environments. Research by Lin et al. (2021) suggests that digital media tools encourage learner autonomy by allowing students to review complex materials at their own pace, thereby reinforcing mastery. Additionally, such resources accommodate differentiated instruction strategies, enabling students with diverse learning needs to engage with content in ways that suit their individual cognitive styles (Ghergulescu & Muntean, 2021). This inclusivity is critical in vocational education, where student populations often present a wide range of abilities and prior knowledge.

Despite these advantages, the development of animated educational media must also carefully consider cognitive load theory. Extended or overly dense animations can

unintentionally overload students' working memory, leading to reduced learning efficiency (Sweller, Ayres, & Kalyuga, 2021). Future developments should focus on optimizing the balance between informative richness and cognitive simplicity to maximize educational impact. Strategies such as segmenting information, using signaling cues, and embedding self-assessment elements within animated modules have been found to effectively mitigate cognitive overload and promote deeper learning (Yang & Qian, 2023).

Furthermore, the next stage of media development could incorporate interactive learning analytics. Embedding analytics into animated video platforms would allow educators to monitor students' engagement patterns, assess learning progress, and personalize interventions based on real-time data (Martin et al., 2020). Such an approach aligns with current movements toward evidence-based teaching practices, enhancing the precision and responsiveness of vocational education.

In sum, the development of animated video media on pasta material provides not only an immediate enhancement of learning experiences in the culinary arts but also serves as a model for broader digital innovation in vocational education. Continued research should explore the integration of interactivity, adaptive feedback mechanisms, and analytics to maximize the pedagogical potential of animated learning media. Thus, the current project lays an important foundation for future advancements in creating more engaging, inclusive, and effective vocational learning environments.

4. CONCLUSION

Based on the findings and discussion, it can be concluded that the development of animated video media for pasta material in the Food Processing and Presentation course has proven to be a pedagogically viable and effective tool for enhancing vocational learning. Developed through a structured Research and Development (R&D) process—including the stages of definition, design, and development—this media successfully addresses previously identified challenges related to student engagement and comprehension by integrating audiovisual elements tailored to students' cognitive and developmental needs. Validation by subject matter experts, language experts, and media specialists confirmed that the content is accurate, linguistically appropriate, and visually engaging, aligning with curricular objectives and students' learning preferences. The use of animation not only facilitates self-directed learning but also enriches the teaching process, offering flexibility in terms of time and place of access. Although minor limitations, such as video duration, were noted, the product demonstrates strong potential to support innovative teaching strategies in vocational education and serves as a foundation for further research and development in media-enhanced learning environments.

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