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**DEVELOPMENT OF ANIMATED LEARNING VIDEOS  
ON THE FOOD MATERIALS FROM POULTRY**

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**ABSTRACT**

With technological advances and the increasing need for more effective learning methods, animated videos have become a significant tool in conveying complex information more understandably and engagingly for students. This research aims to develop animated video learning media on poultry food and its processed products and determine the feasibility of animated videos. This is a type of Research and Development with a 4D model: 1) define: collect information about the curriculum and syllabus used, 2) design: development design which includes the pre-production stage, namely compiling material, making storyboards, validating scripts and forming a team in making animated videos, 3) develop: implement the storyboard that has been made into an animated video, then the presentation video is tested for suitability by media and material experts. Next, it was tested on potential users, 4) dissemination: product distribution at SMKN 2 Godean to teachers and students of class X Catering. The small-scale research subjects were six students, and the large-scale research subjects were 30 students. The data collection technique uses a questionnaire. Data analysis is quantitative descriptive. The results are 1) research development procedures using a 4D research model to produce animated learning video products, 2) research data obtained: a) material experts 96.72%, b) media experts 96.01%, c) small-scale trials 85, 58 %. d) In large-scale trials, 82.40% of all trials received the "Very Feasible" category.

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**INTRODUCTION**

The development of science and technology in the 21st century has led to the rapid development of education in Indonesia. Education has an essential function in creating a quality society. In essence, education is a process that helps human development in self-improvement so that they can fight all the disturbances and obstacles faced by a country in its progress. Implementing Indonesian education always brings changes that can be improved to meet the needs of the nation's development. According to the Ministry of Education and Culture, the aim of the Merdeka Curriculum currently being implemented is to train students' independent thinking. With the freedom to learn, students can develop their potential according to their talents and interests. This curriculum has a focus and core that needs to be paid attention to, including core competencies and basic competencies that are different from the previous curriculum, changes in learning strategies, differences in the roles played by teachers and the critical goals to be achieved [1]. This curriculum has



advantages in several ways; namely, firstly, it is more straightforward and more in-depth, and the Merdeka Curriculum focuses more on essential material and the development of student competencies in its phases. The learning process is expected to be more in-depth, meaningful, less rushed, and fun; secondly, more independence, schools have the authority to develop and manage the learning curriculum by the characteristics of the educational unit and students; thirdly, it is more relevant and interactive, learning through project activities provides wider opportunities for students to actively explore actual issues such as environmental, health and other issues to support the development of character and competency in the Pancasila Student Profile [2].

The Merdeka Curriculum is a curriculum with diverse extracurricular learning where the content will be more optimal so that students have enough time to explore concepts and strengthen competencies. Teachers have the freedom to choose various teaching tools so that learning can be tailored to students' learning needs and interests. Projects to improve the achievement of Pancasila student profiles are developed based on specific themes determined by the government. The project is not directed to achieve specific learning achievement targets, so it is not tied to subject content [3]. There are several problems teachers face in implementing the Independent Learning Curriculum, namely that many teachers need help understanding how to implement the independent curriculum because teachers' knowledge of the independent curriculum is minimal. Teachers do not have experience with the concept of the Independent Learning Curriculum, there are limited references, so teachers have difficulty finding references for designing and implementing independent learning; teachers still use lecture or assignment learning methods, so learning tends to be observant, limited teaching materials constrain teachers from the center, teachers also experiencing problems in the diagnostic, formative and summative assessment formats which are still created manually because there is no format from the center, and in implementing and strengthening the Pancasila Student Profile [4].

Education in Indonesia is also one of the aspects affected by the Covid-19 outbreak. With restrictions on social interaction, the Indonesian Ministry of Education also issued regulations based on the Circular Letter of the Minister of Education and Culture Number 4 of 2020 concerning the implementing policies and education at critical times for the spread of the virus, namely by closing schools. And changing the system of teaching and learning activities using an online system. Based on the results of the questionnaire, 63% of respondents explained that the application of online learning was not efficient. Access to online learning support that is most widely used is Google Classroom, with 72.9% of users, and is equipped with appropriate features to support the implementation of online learning. The results of the questionnaire prove that the effectiveness of online learning is influenced by economic aspects (38%), social aspects (30%), health aspects (19%), and personality aspects (13%) [5].

According to parents, children's learning outcomes are not as good as if they study at school. It is difficult at home to manage time between children and parents, especially if the parents work and have children more than two who cannot learn independently. An assessment is carried out to see the results of distance learning. The assessment method used depends on the learning objectives, determines the assessment tools, and provides opportunities for reflection to students [6].

Faced with this pandemic, online teaching is becoming a solution to continue developing academic curricula. As an advantage, the flexibility of schedules and spaces



stands out. As cons, the socialization factor can be highlighted due to the lack of social interaction with classmates and teachers, the lack of technological knowledge necessary to face this type of teaching, and the quality of technological means and tools [7]. Human memory is generally 20% of what is seen and 30% of what is heard, but the ability to remember is up to 50% of what is seen and heard and 80% of what is seen, heard, and done together. Multimedia can present information that can be seen, heard and done, so the media can be used effectively in learning activities. The video has two aspects that make the media easy to convey something, namely the video is composed of a row of images and has sound, these two aspects work together and produce a video, therefore humans can easily understand the material conveyed by the video because humans see and hear simultaneously. Learning animation videos are cartoon animation videos that can be filled with subject matter and can be used as learning media because they have interesting characteristics, seem funny, and are suitable for alternative learning media other than lectures. [8].

Students who use the distance learning method have better results when compared with students who use conventional direct learning methods. [9]. More benefits of online learning are students can do online learning based on the ability to manage learning time, learning motivation, and student discipline, it is supported by a good internet network, technology literacy skills as well as the ability to find learning resources. The support capacity of students in online learning is obtained optimally starting from the support of parents, easy communication with lecturers, interesting learning methods and media. The problem factor in online learning is that it requires a lot of internet quota, and lecture tasks are considered excessive, requiring more time and effort management. [10].

Microsoft PowerPoint is a computer program devoted to presentations. PowerPoint is widely used by businesspeople, educators, students, and students because it is not complicated to use and some many designs or templates will make presentations more attractive. PowerPoint has various functions, starting from creating and managing various slides and making presentations attractive because it is supported by display templates, animations, videos, audio, images and even 3D images and makes presentations easier. [11]. Adobe Premiere Pro is video editing software for creating images, audio, and video sequences. Video production houses, television media, advertising, broadcasting, and video content companies widely use Software Video editing. Compared to software for other editing, Adobe Premiere is a video editing software that is easy to understand from its interface and features. [12]

In the subject of knowledge of foodstuffs, there are basic competencies 3.2, namely analyzing food ingredients from poultry and their processed products and 4.2, namely checking the quality of food ingredients from poultry and their processed products. Basic competence regarding poultry and its processed products was chosen as development material because it was found that the teaching and learning process was still fully guided by educators, students were still unable to play an active role during class learning. This is contrary to the 2013 curriculum used, the 2013 curriculum has the goal of reducing the Teacher-Centered Learning (TCL) learning method, namely all learning uses the lecture method, and the most learning resources are educators to become Student-Centered Learning (SCL), namely students must be pro-active in finding their learning resources and developing these learning resources. The learning model used by teachers develops following by situation and condition in this world, utilization of Teacher-Centered



Learning (TCL) model start showing some problems like, student became passive in learning, the learning process is only in the form of knowledge transfer, teacher only focusing on completing the curriculum targets from the textbook, not focusing on knowledge that obtained by student [13].

The student-centered learning model has several advantages, such as: (a) students participate more actively in the learning process. Each student has the opportunity to visit another group to obtain information and simultaneously as a speaker (resource) in their group in the presentation. (b) Learning becomes more interactive and fun. (c) it can be applied to all classes. (d) Students are more confident in expressing their opinions. (e) Learning can be carried out anywhere and anytime using smartphone technology. (f) the better utilization of smartphone technology [14].

In addition, the facilities available in each class at SMKN 2 Godean, such as speakers and projectors are not used optimally by educators in carrying out teaching and learning activities, the learning resources used are limited to textbooks and the knowledge possessed by educators. This strengthens why this research and development was carried out at SMKN 2 Godean.

## METHOD

This research is research and development (R&D) with 4D models. Research and development aims to produce new products through the development process, and 4D models are Define, Design, Develop, and Disseminate [14]. This research was conducted at the Department of Food and Fashion Education Faculty of Engineering, Yogyakarta State University and SMKN 2 Godean from November 2019 – March 2023. The subjects of this study were two people as material experts, one media expert, and (prospective media users) as many as 36 students from 10<sup>th</sup> grade culinary SMKN 2 Godean.

The define stage aims to collect information about the curriculum and syllabus that will be used. Interviews and observations are used to collect the necessary data, such as curriculum analysis, material analysis, and the goals and characteristics of students in the school. The design stage is a design in development that includes the pre-production stage, namely compiling material, making storyboards, script validation, and team formation in making animated videos on poultry learning and their processed products. The development stage is carried out by implementing the storyboard, which has been made into an Animation video. Then the video presentation will be tested for feasibility by media experts and material experts. Furthermore, the media that has been developed is tested on prospective users, namely 10<sup>th</sup> grade culinary SMKN 2 Godean. The dissemination stage is carried out by presenting products at SMKN 2 Godean to teachers and students of 10<sup>th</sup> grade culinary SMKN 2 Godean.

The research instrument consisted of a due diligence questionnaire by material experts totaling 16 items covering aspects of use, objectives and benefits, materials and learning, a due diligence questionnaire by media totaling 21 items covering aspects of use, benefits, visual and audio, as well as a due diligence questionnaire by prospective users totaling 22 items covering aspects of learning, materials, benefits, media, and usage.

Data collection techniques were carried out by observation, interviews, preliminary analysis, curriculum analysis, characteristics analysis, material analysis, objective analysis,



and questionnaires to assess the feasibility of learning animated video media from various aspects of assessment. The instrument used is a product feasibility test questionnaire.

The data analysis technique used is a quantitative descriptive analysis technique. In the questionnaire using a Likert scale, the score range is 1-4 with a value of 1 meaning Very Unworthy (STS), a value of 2 means Unworthy (TS), a value of 3 means Worthy (S) and a value of 4 means Very Worth it (SS) [9]. The formula calculates the percentage of eligibility in the feasibility percentage scale:

$$\% \text{ eligibility} = \frac{\sum \text{score}}{\sum \text{maksimum score}} \times 100$$

Then the results of the feasibility percentage values are converted from quantitative data to qualitative data as reference in Table 1.

Table 1. Quantitative Data Conversion into Qualitative

Value Intervals	Rating Category
>80%	Very Worth it
66-80%	Worthy
56-65%	Unworthy
<56%	Very Unworthy

## RESULTS AND DISCUSSION

### Results

Define stage observations and interviews were carried out with subject teachers, and it could be known that the learning method used in the subject of knowledge of foodstuffs still uses the lecture method and the media book. Media limitations lead to less optimal learning because students lack concentration and don't listen to explanations from educators. Based on this analysis, it is necessary to develop interesting learning media that can support teaching and learning activities. Animated videos are felt to increase concentration and absorption of learning material.

In the design stage, the pre-production or planning process is carried out by preparing material according to basic competence and core competence, making Storyboards and scripts for dubber from beginning to end, and creating animation assets to be used. The basic competence taken is material 3.2, namely analyzing food ingredients from poultry and their processed products, and basic competence 4.2, namely checking the quality of food ingredients from poultry and their processed products. After determining basic competence, create a Storyboard which will be used as a benchmark and plan to make learning animated videos.

In the development stage, the production of learning media is carried out concerning the Storyboard media design along with the material that has been validated. Making learning animation videos using Microsoft PowerPoint and Adobe Premier applications. The following is the result of the development of an animated video learning food ingredients from poultry and their processed products:

a. Welcome page.

In this section, the first time the learning animation video is played, an opening page will be presented which, contains the title of the learning animation video, the Yogyakarta State University logo, and the developer's name.





Figure 1. Homepage

b. Poultry Definition Page

In this section, contains the material understanding of poultry and the classification of poultry.

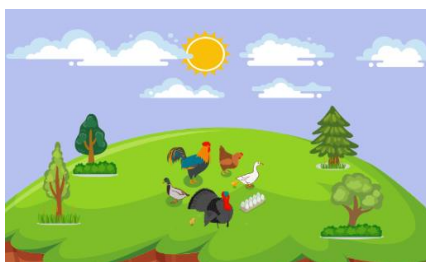


Figure 2. Poultry Typing Page

c. Poultry Carcass Page

The poultry carcass page contains the definition of carcass, differences between filled and empty carcasses, and carcass components. On this page, examples of filled and empty carcass component drawings are given.



Figure 3. Poultry Carcass Page

d. Personal Hygiene page

On the page Personal Hygiene and handling of poultry carcasses contains an explanation of Personal Hygiene and handling before processing or touching poultry carcasses.



Figure 4. Personal Hygiene Page

e. Poultry Processing Techniques Page

The poultry carcass processing techniques page contains descriptions of various processing techniques including Boiling, Roasting, Grilling, Sauteeing, and Deep Frying.



Figure 5. Poultry Processing Techniques Page

f. Poultry Pages Unfit for Sale and Consumption

The page on poultry that is not fit for sale and consumption contains material about poultry that is not fit for sale and consumption but is sometimes circulated in the community, for example: poultry containing formalin, poultry died yesterday and poultry filled with water so it looks fat.



Figure 6. Page Poultry Unfit for Sale and Consumption

g. Poultry Carcass Handling Page

The poultry carcass handling page contains material on how to handle poultry carcasses to avoid bacterial contamination. The bacteria found in poultry carcasses are *Salmonella*, *Staphylococcus Aureus*, *Campylobacter Jejuni*, *Listeria Monocytogenes*, and *Escherchia Coli* (*E. Coli*).



Figure 7. Poultry Carcass Handling Page

h. Poultry Carcass Storage Page

The Poultry Carcass Storage page contains material on how to store poultry carcasses properly and correctly.



Figure 8. Poultry Carcass Storage Page

i. Evaluation Page

On the evaluation page there are questions and answers to review the material available in the videos that have been watched by students.

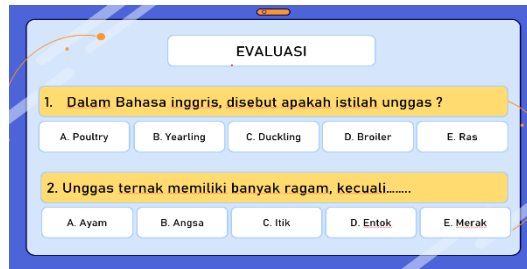


Figure 9. Evaluation Page

j. Closing Page

On the closing page there is a thank you note and an animated human waving.

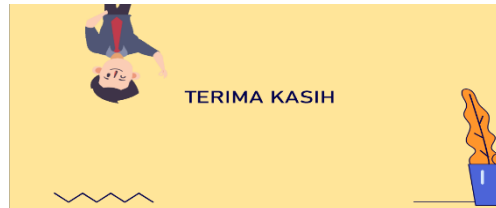


Figure 10. Closing Page

k. Reference Page

The reference page contains reading resources and materials for developing learning animation videos.



Figure 11. Reference Page

After production, there is a post-production stage. Post-production is the final activity, containing editing activities, and finalizing the results of learning media that have been made in accordance with Storyboards. After the development of the animated video is complete, the next stage is media validation. After the experts have stated that it is feasible, the media can be used for Developmental Testing/further trials. Product trials were carried out in two stages, namely small-scale trials on 6 students and then large-scale trials on 30 students in 10<sup>th</sup> grade culinary SMKN 2 Godean.

a. Material Validation Data Analysis

Material validation data analysis aims to test the validity of the material according to the input of experts.

Table 2. Due Diligence Test Results by Material Experts

Assessment aspect	Percentage (%)	Eligibility Level
Learning	100.00%	Very worth it
Material	92.50%	Very worth it
Objectives and benefits	97.50%	Very worth it
use	96.88%	Very worth it
Average	96.72%	Very worth it

Based on the table above, learning aspects get a percentage of 100%, material aspects get a percentage of 92.50%, aspects of objectives and learning get a percentage of 97.50%, and aspects of use get a percentage of 96.88%, the overall average percentage is 96.72%





and is included in the very feasible category so that it can be used as material in the development of learning animated videos.

#### b. Media Validation Data Analysis

Media validation data analysis aims to test the validity of the media according to expert input.

Table 3. Due Diligence Test Results by Media Experts

Assessment aspect	Percentage (%)	Eligibility Level
Visual	94.44	Very worth it
audios	100.00	Very worth it
Use	95.83	Very worth it
Benefit	93.75	Very worth it
Average	96.01	Very worth it

Based on the table above, the visual aspect gets a percentage of 94.44%, the audio aspect gets a percentage of 100.00%, the usage aspect gets a percentage of 95.83%, and the benefit aspect gets a percentage of 93.71%, overall has an average percentage of 96.01% and is included in the very feasible category so that it can be used as a learning medium.

#### c. Small Scale Data Analysis (6 students)

Small-scale trials were carried out after passing the validation of material experts and media experts. A small-scale trial was conducted on 6 10<sup>th</sup> grade culinary students at SMKN 2 Godean. Students are asked to view the video that has been made and then fill out the form provided online.

Table 4. Small Scale Trial Results

Assessment aspect	Percentage (%)	Eligibility Level
Learning	81.94	Very worth it
Material	85.00	Very worth it
Media	88.02	Very worth it
Use	87.50	Very worth it
Benefit	85,42	Very worth it
Average	85.58	Very worth it

Based on the table above, the Learning aspect gets a percentage of 81.94%, the Material aspect gets a percentage of 85.00%, the Media aspect gets a percentage of 88.02%, the usage aspect gets a percentage of 87.50%, and the benefits aspect gets a percentage of 85.42% overall has an average percentage of 85.58% and is included in the very feasible category so that it can be used as a learning medium and continued to the next stage.

#### d. Large Scale Data Analysis (30 Students)

Large-scale trials were carried out after passing the validation of material experts, media experts and small-scale trials. The large-scale trial was conducted on 10<sup>th</sup> grade culinary SMKN 2 Godean. Students are asked to view the video that has been made and then fill out the form provided online.

Table 5. Results of Large-Scale Trials

Assessment aspect	Percentage (%)	Eligibility Level
Learning	81.39	Very worth it
Material	81.33	Very worth it
Media	83,44	Very worth it
Use	81.67	Very worth it
Benefit	84,17	Very worth it
Average	82.40	Very worth it



Based on the table above, the learning aspect gets a percentage of 81.39%, the material aspect gets a percentage of 81.33%, the media aspect gets a percentage of 83.44%, the usage aspect gets a percentage of 81.67%, and the benefits aspect gets a percentage of 84.17 overall has an average percentage of 82.40% and is included in the very feasible category so that it can be used as learning media.

The disseminate or dissemination stage is the final stage of the 4D development model. The purpose of this stage is to disseminate animated video learning media learning food ingredients from poultry and their processed products in the subject of food ingredients knowledge which is done by uploading video files to the YouTube page, then the link is distributed via WhatsApp to educators who teach food science subjects at SMKN 2 Godean so that educators can use it for students in the following year by sending the link and students can view it anytime and anywhere.

#### Discussion

The development of animation learning videos for food ingredients from poultry and their processed products in the subject of knowledge of food ingredients was developed using PowerPoint and Adobe Premiere applications with 4D development models: a) Define, b) Design, c) Development, and d) Disseminate. The product development results are animated videos learning food ingredients from poultry and their processed products with a duration of 11.42 minutes, size 710,396 MB, and using the Mp4 format. The dissemination results via YouTube get 40 views and 7 likes, then on the Instagram page get 20 likes.

The feasibility of the animated video learning food ingredients from poultry and their processed products based on the results of the material expert's assessment obtained a value of 96.72%, which was included in the very feasible category, the media expert's assessment obtained 96.01% in the very feasible category, the assessment of small-scale trials obtained an average of 85.58% in the very feasible category and the large-scale assessment with a value of 82.40% in the very feasible category. Based on the results of the assessment, can confirm that students can the ability to do online learning based on the ability to manage learning time, learning motivation, student discipline, it is supported by a good internet network, technology literacy skills as well as the ability to find learning resources [11]. This result can confirm students who use the distance learning method have better results when compared with students who use conventional direct learning methods [10].

### CONCLUSION

The results are 1) research development procedures using a 4D research model to produce animated learning video products, 2) research data obtained: a) material experts 96.72%, b) media experts 96.01%, c) small-scale trials 85, 58 %. d) In large-scale trials, 82.40% of all trials received the "Very Feasible" category. The conclusion of research is the learning media for learning animated videos on food ingredients from poultry and their processed products are categorized as very feasible and can be used as learning media.



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