



Development of Tutorial Video Learning Media on Food Dehydration to Increase Learning Outcomes of Students of Culinary Arts Program

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ABSTRACT

The goals of this research are to: (1) develop tutorial video learning media on food dehydration in Food Technology course; and (2) determine the feasibility of the food dehydration tutorial video learning media according to subject matter and media experts. The research was conducted at Culinary Arts Education Program in the Faculty of Engineering, State University of Medan in February-April 2022. The product of the research is a learning media in the form of tutorial video on food dehydration in the Food Technology course. The video would be used by the lecturers and students, and validated by subject matter and media experts to determine the media feasibility. The product was developed using the ADDIE research and development model. The data was obtained using questionnaire and analyzed descriptively. The results show that the tutorial video learning media on food dehydration can be distributed and implemented in Food Technology course. The material feasibility according to subject matter expert is 89.23% (very feasible) and the media feasibility result according to media expert is 85.88% (very feasible). This means that overall, the feasibility of the learning media is very feasible with an average score of 87.55%. Therefore, the developed learning media can be used by the lecturers and students in Food Technology course in Culinary Arts Education program.

Keywords: *Development, Media, Tutorial Video, Food Dehydration.*

1. INTRODUCTION

Tertiary education is the education level preparing the learners to become citizens with high skills in academics and/or professional in order to apply, develop, and create science, technology, and arts to support national development and increase human welfare. Tertiary education is expected to become the center of learning and education development, as well as maintaining and developing science, technology, and arts. It also is the center for academics who continuously study and serve the community, and carry out researches which increase the welfare of society and the country. One of the developments in technology in tertiary education is by developing learning media so that the learning process becomes active, creative, effective, and fun.

Learning process is the interaction process between the learners and the educators and learning source in a learning environment [1]. Learning process is usually carried out offline in classes, and the lecturer and learners interact to pursue the essence of learning process [1]. Learning process is obstructed if the direct interaction between learners and educators cannot be achieved, such as the pandemic which made the learning process cannot be carried out face-to-face.

The use of learning media is crucial in learning process. Learning media acts as the medium to deliver learning material to the students. One kind of media used to support learning is tutorial video. Tutorial videos are series of live pictures broadcasted by someone, with the content being learning materials or learning steps, in order to make understanding the material easier. Tutorial videos act as a guide or supplementary material for those who need it, including lecturers and students [2]. Tutorial videos can be produced to explain in detail a certain process, how to do certain tasks, exercises, etc. to ease the burden of lecturers in teaching [2].

Media is a channel to deliver learning materials. AECT (Association of Education and Communication Technology) defines media as any form of channel used to deliver messages or information [3]. Apart from being delivery system, media is often referred to as mediator. To sum up, media is a channel to deliver learning messages.

Video is a series of consecutive moving pictures, edited such that it includes visual and audio with certain message or information [4]. Video learning media helps learning process and has several advantages: (1) helps to reach learning effectiveness, especially in subjects which have a lot of practical activities; (2) maximizes the

achievement of learning goals in short time period; (3) stimulates students' interest to learn on their own; (4) students can discuss with their peers; (5) students practices to focus more; (6) increases students' logical thinking; (7) students become more active and motivated to practice the learning; (8) students can replay the video at home easily; (9) helps education to follow the development of technology; (10) increase the structural understanding of the skills in the video [2].

According to Aswasulasikin [5], the strengths of tutorial videos over other learning medias are: (1) tutorial videos clearly demonstrates phenomena and procedures which involves movement; (2) users can play the video at a faster or slower speed so that the material can be understood more clearly; (3) tutorial videos can employ animations to illustrate abstract and moving subjects; (4) tutorial videos pique the interest of the students by using moving pictures, audio, and text; (5) tutorial videos are accessible as the majority of students are smartphone users. On the other hand, some weaknesses of video tutorials are the difficult production process which needs certain skills, and the relatively high cost. However, the technological development of smartphones and computers has made the production cost lower.

In this research, the material delivered in the developed tutorial video is food dehydration process, such as in salted fish, candied fruit, flour from tubers, etc. Dehydration is the process of reducing the moisture level in food to slow down food spoiling due to chemical and biological processes [6]. The dehydration process depends on the structure of the food and dehydration parameters: moisture content, dimension, temperature of dehydrator, surface flow, and moisture balance.

Food dehydration can be defined as methods to expel water or moisture content in certain food using thermal energy so that the moisture balance and air condition are normal, or moisture content equal to water activity value which is safe from microbiological, enzymatic, and chemical spoilage [7]. There are several factors to consider in dehydration, namely the temperature, heat transfer, mass transfer, water bond, method of dehydration, conditions, physical form of the dehydrated substance, production scale, special specifications, and dehydration time [7].

Based on the observation in August 2021 in Culinary Arts Education program, the Food Technology course learning process, specifically the food dehydration chapter, was carried out online.

The lecturer used Power Point slides to deliver the material. In order to increase students' understanding of food dehydration, new learning media needs to be developed to support conventional media used in delivering the material. One of the media that can be developed in this subject is tutorial videos. Tutorial videos have several advantages over the slides, including clarity of the steps of processing raw material to the processed material and the employment of video and audio. Tutorial videos are also easily accessible with video player apps on smartphones and computers. Tutorial videos are series of moving pictures that are shown during the learning process to increase understanding of a subject as a guide or supplementary materials for learners [8]. Tutorial videos can be applied to subjects which concern how to make or do something which involves sequential steps.

Based on the above, there is a need to carry out this research titled "Development of Tutorial Video Learning Media on Food Dehydration to Increase Learning Outcomes of Students of Culinary Arts Program".

The purpose of developing this product is to: (1) Produce tutorial video learning media on food dehydration in the Food Technology course; (2) Determine the feasibility of the developed tutorial video learning material according to subject matter expert and media expert.

2. RESEARCH METHOD

The research was carried out in Culinary Arts Education program in Faculty of Engineering, State University of Medan, in February-April 2022. The product of this research and development study is a tutorial video learning media on food dehydration in the Food Technology course. The ADDIE model (Analysis, Design, Development, Implementation, Evaluation) was used to develop the media.

3. RESULTS AND DISCUSSIONS

3.1. Needs Analysis of Lecturers and Students.

A needs analysis was carried out in order to obtain preliminary information and data before developing the media. The analysis was carried out on lecturers' and students needs.

As can be seen in Table 1, 100% of lecturers state that they need tutorial video on food dehydration.

Table 1. Responses to Lecturers' Needs Analysis

Score	n	%	Classification
≥50%	2	100	Need

Similarly, students needs of learning media were also analyzed. They also state that they need the development of tutorial video learning media on food dehydration. This can be seen in table 2 below.

Table 2. Responses to Students' Needs Analysis

Score	n	%	Classification
≥50%	2	100	Need

3.2. Product

In this research, the tutorial video was created using the application *filmorago*. The tutorial video was developed based on a created storyboard. In order to develop an interesting tutorial video, it is important to pay attention to the background, font, color, and music choices. The developed media also includes text, pictures, audio, and video. The product helps lecturer to deliver information on food dehydration in Food Technology course and also the students to understand the course material.

The product is also very accessible and easy to use. Simply by tapping the video on the phone or pressing enter/double-clicking on computer, the video is played automatically. Users can fast forward to the desired part by clicking on the progress bar or pause and stop as desired by pressing space or tapping the screen..

3.3. Product Feasibility

The developed tutorial video learning media was then tested for validity and revised. The validity test was performed to determine whether the media suited the needs of students. The validity test was carried out by one (1) subject matter expert and one (1) media expert. The product was then revised to improve and fix the parts that the experts deem unsuitable.

3.4. Subject Matter Expert Validity Test Result

The subject matter expert validity test was carried out to test the completeness, truthfulness, and structure of the learning material. The validator of this test is a lecturer of Food Technology course in Culinary Arts Education program at State University of Medan. In stage I, the subject matter expert gave the developed tutorial video a validity score of 69.23%, as can be seen in Table 3. As such,

in stage I, the material in the tutorial video on food dehydration is in the Feasible category.

Table 3. Subject Matter Expert Validity Test – Stage I

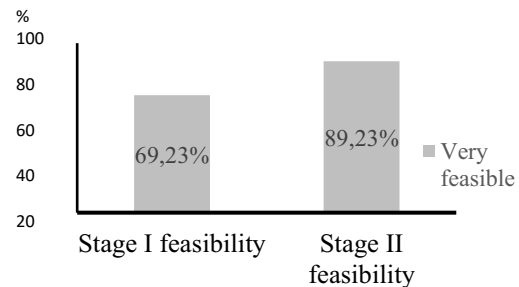
Aspect	Score (%)	Category
Learning material	69.23	Feasible

Based on the result of the test, revision was carried out and the product was tested again. The result of stage 2 subject matter validity test can be seen in Table 4 below. The subject matter expert gave the revised tutorial video a score of 89.23%, or in other words it is Very Feasible.

Table 4. Subject Matter Expert Validity Test – Stage II

Aspect	Score (%)	Category
Learning material	89.23	Feasible

Therefore, the tutorial video's material feasibility according to the subject matter expert is 69.23% (Feasible) in stage I and 89.23% (Very Feasible) in stage II. There is an increase in feasibility in terms of learning material after the revision as can be seen in Figure 1.

**Figure 1.** Learning Material Feasibility Score

3.5. Media Expert Validity Test Result

The media expert validity test was carried out to test the quality of the media, appearance, and suitability of the media. The media expert is a lecturer in Family Wellness Education program, Faculty of Engineering, State University of Medan. In stage I, the media expert gave the developed tutorial video a validity score of 75.29%, as can be seen in Table 5. As such, in stage I, the media in the tutorial video on food dehydration is in the Feasible category.

Table 5. Media Expert Validity Test – Stage I

Aspect	Score (%)	Category
Media	75.29	Feasible

Based on the result of the test, revision was carried out and the product was tested again. The result of stage 2 media validity test can be seen in Table 4 below. The media expert gave the revised tutorial video a score of 89.23%, or in other words it is Very Feasible.

Table 6. Subject Matter Expert Validity Test – Stage II

Aspect	Score (%)	Category
Media	85.88	Feasible

Therefore, the tutorial video’s material feasibility according to the media expert is 75.29% (Feasible) in stage I and 85.88% (Very Feasible) in stage II. There is an increase in feasibility in terms of learning material after the revision as can be seen in Figure 2.

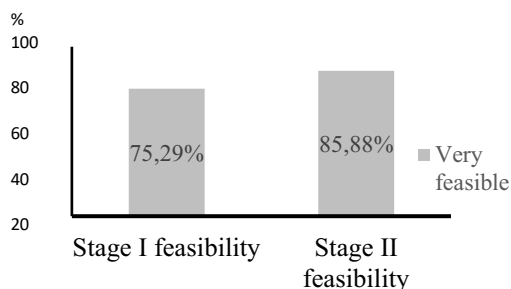


Figure 2. Learning Material Feasibility Score

3.6. Learning Media Feasibility According to Subject Matter and Media Experts

The feasibility of the tutorial video on food dehydration according to subject matter and media experts can be seen in Table 7 below. According to the subject matter expert, the material in the tutorial video got a score of 89.23% (very feasible category). According to the media expert, the media in the tutorial video got a score of 85.88% (very feasible). Therefore, with an average score of 87.55%, the tutorial video learning media is considered very feasible to use in Food Technology course.

Table 7. Learning Media Score according to Subject Matter and Media Experts

Expert	%	Category
Subject matter expert	89.23	Very Feasible
Media expert	85.88	Very Feasible
Average	87.55	Very Feasible

3.7. Discussion

The development of tutorial video learning media on food dehydration was a media developed by paying attention to factors affecting the learning process. The research and development study was carried out in order to create a product in the form of learning media, to be used by the lecturers of Culinary Arts Education program at State University of Medan. The research was carried out using the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). Analysis, design, and development stages were performed in this study. During the development, several steps were prepared, including the initial video concept, opening, learning material (title, materials needed, and process), and closing. These steps served as the plan to create a good tutorial video and were all prepared well. The subject matter and media experts would then validate the media in two stages. The whole process was meant to obtain data for revision in order to create useful and feasible learning media.

The results show that the subject matter expert gave a score of 69.23% on the material aspect (feasible) in stage I. According to the subject matter expert, a revision was needed. After revising the tutorial video learning media, the expert retested the tutorial video and gave a score of 89.23% on the material aspect (very feasible) in stage II. Meanwhile, the media expert gave a score of 75.29% on the media aspect (feasible) in stage I. The media expert also stated that a revision was needed. After the revision, the media expert retested the product and gave a score of 85.88% on the media aspect (very feasible) in stage II.

According to the subject matter and media experts, the developed product is very feasible to use in the classroom with an average feasibility score of 87.55. This result is in line with Pramudito Aria [9] who shows that the developed tutorial video on how to use a lathe was very feasible to use as learning media according to the subject matter and media experts. Furthermore, Utomo Adhi Yoga [10] also finds that the developed tutorial video as learning material in the ignition system chapter is very

feasible according to subject matter and media experts. Similarly, Fathoni Achmat Siddik [11] finds that the developed tutorial video on operating systems was very feasible to use as learning media according to subject matter and media experts. In addition, Pratama Agung Wijaya [12] also finds that the developed tutorial video as learning media in drawing conical gear using autocad is very feasible according to subject matter and media experts. The finding of this research is also in line with Wulandari Ria Apriani [13] who finds that the developed tutorial video as learning media in oriental foods course is very feasible according to subject matter and media experts. Furthermore, Putrianti Desinta [14] also finds that the developed tutorial video as learning media on making expressive fabric creation is very feasible according to subject matter and media experts. In addition, Muthiah [15] finds that the developed tutorial video as learning media on making straight skirts is very feasible according to subject matter and media experts. Similarly, Kumbara Brama [16] finds that the developed tutorial video as learning media in video editing subject for grade 10 of SMK is very feasible according to subject matter and media experts. Furthermore, Nurjanah Siti [17] also finds that the developed tutorial video as learning media on fiqh is very feasible according to subject matter and media experts. Furthermore, Warno Kusminarko [18] also finds that the developed tutorial video as learning media in fashion technology subject is very feasible according to subject matter and media experts.

4. CONCLUSIONS

Based on the results, it can be concluded that: 1) tutorial video learning media on food dehydration can be distributed and implemented in Food Technology course; 2) The feasibility from subject matter expert is 89.23% (very feasible) and from media expert is 85.88% (very feasible). Overall, the feasibility score from subject matter and media experts is 87.55% (very feasible)

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