Development Of Macromedia Flash-Based Interactive Media In Food Ingredients Knowledge Subjects

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Abstract

This research aims to develop macromedia flash-based learning media on herbs and spices using the 4 D development model. Research data was collected using a questionnaire that was validated by media experts and material experts. Needs analysis shows that macromedia flash media is really needed by teachers and students. Material expert validation obtained 97.77% in the very feasible category. Media expert validation obtained 89.71% in the very feasible category. The results of students' assessments of the acceptability of Macromedia Flash learning media obtained a score of 4.90, including very high acceptability. Based on these data, it can be concluded that the Macromedia Flash learning media is suitable for use in food ingredient knowledge subjects in Spices and Spices. This media is only limited to knowledge of herbs and spices and quizzes are only provided at the end of the material. It is hoped that future researchers will be able to create quizzes and evaluations on each food ingredient knowledge sub-material and can develop broader material.

Keywords: *Job Safety Analysis (JSA), Potential Hazards and Maintenance.*

I. INTRODUCTION

The increasingly rapid development of science and technology (IPTEK) today requires humans to develop insight and abilities in various fields, especially education. In the field of education, technology has an important influence on applying knowledge (Rahadian, 2017) because through the educational process there is a transfer of knowledge and receiving knowledge.Schools are formal educational institutions that are responsible for student education, therefore schools should be able to create comfortable, enjoyable learning conditions and provide opportunities for students to be active in the teaching and learning process, so that quality human resources can be achieved (Moto, 2019). Increasing human resources through education is the key to being able to keep up with developments in science and technology (Lase, 2019). Improving the quality of human resources is a long-term human investment, because every person taking the educational path does not automatically make themselves qualified (Siregar, 2017). Therefore, improvements in the education and learning sector must be carried out proactively, intensively and strategically. One of the most important components in building education and learning is the learning process in schools.Imelda Vocational School Medan is a vocational high school that has a Culinary Education Study Program. Catering is one of the Food Ingredient Knowledge subjects. Knowledge of Food Ingredients is given to students with the aim of providing knowledge and understanding about food ingredients because this subject underlies other subjects.

Therefore, students are expected to have good knowledge and understanding of food ingredients. However, in reality, there are still many students who do not understand food ingredients knowledge material.Based on the results of observations, the learning process for Food Ingredient Knowledge in the Culinary Education Study Program at Imelda Vocational School, Medan, is learning in the form of theory, so the learning material presented must be specific and the learning media used must also be interesting. The obstacles found in the Knowledge of Spices and Foodstuffs subject are students' lack of understanding about various types of herbs and spices because they are often mistaken for similar forms. Apart from that, the learning methods that are often used by teachers can be said to be less varied and tend to be teacher-centred and the use of media in the learning process is also rarely used, which makes some students pay less attention to learning and feel bored. The media that teachers often use in learning the subject Knowledge of Food Ingredients, Herbs and Spices is only PowerPoint media, so that the learning outcomes achieved by

students are still not optimal and tend to be low. Limited supporting media results in the student learning process being less than optimal and attracting less student attention. The lack of media use is also caused by various reasons such as limited teacher time in preparing teaching materials and teachers' lack of habits in developing learning media.

In fact, teachers are required to be able to develop skills in making learning media if they are not yet available so that learning objectives can be achieved well (Nurfadhillah, et al. 2021). Teachers must be able to choose learning media that are appropriate and suitable for use so that the teaching objectives set by the school are achieved (Nurrita, 2018; Batubara, 2020).Media is a means of communication used by teachers or lecturers to channel messages to students in order to achieve educational goals (Nurhasanah, 2021). The use of learning media can foster students' interest in learning new things in the learning material presented by the teacher and illustrate the relevance of many concepts so that students understand the learning material more quickly (Mateer. et al. 2020; Puspitarini & Hanif, 2019). Learning media can encourage students to think concretely and reduce students' use of verbalism within themselves (Rejeki, Adnan, & Siregar, 2020). Learning media will improve the learning process and be able to improve student learning outcomes (Ahyanuardi, et al. 2018; Kim, et al. 2011). Therefore, as a teacher, you must be able to choose learning media that is appropriate and suitable for use so that the teaching objectives set by the school are achieved. One media that can help students in the learning process is Macromedia Flash.Macromedia Flash is software developed by Adobe.

This software can be used for animation, games and internet enrichment applications that can be run on devices that have the Adobe Flash Player application (Khairani & Febrinal, 2016; Masykur, et al. 2017). Projects created by flash consist of images, text, video, simple animations, and other effects. This application is also equipped with an action script feature for creating animations which can help make learning media more attractive and coding (programming language) is not too difficult to learn for beginners who use the Macromedia Flash 8 application to create learning media. Based on this, Macromedia Flash is a more meaningful medium for students, fun, not boring, interesting, and students can become more active in the learning process because it can make the learning experience more meaningful (Mayana, 2021).The development of interactive media in learning the subject Knowledge of Food Ingredients, Spices and Spices using Macromedia Flash also aims to produce interactive learning as a learning medium which is expected to develop student activity and understanding and provide students with different experiences in learning so that students become more enthusiastic. and motivated in learning.

II. METHODS

This research was conducted at SMK Imelda Medan, Culinary Education Study Program. The time of the research was October-December 2022 in the Odd Semester of the 2022/2023 Academic Year. This research is Research & Development (R&D) research. This research uses a 4-D development model. The 4D model is a development model developed by Thiagarajan (Dwianto, et al., 2017). The development model consists of 4 stages, namely define, design, develop. and dissemination (Sugiyono, 2015). This research is only limited to the Development stage. The research steps are described as follows:

1. Define

Needs analysis is carried out by first analyzing the state of learning media as the main information in learning and the availability of media. This is done so that the development of Macromedia Flash media is carried out in accordance with the needs of teachers and students.

2. Design

This stage involves creating a storyboard as a guide in developing the appearance of Macromedia Flash so that the work process is well structured. Apart from that, at the design stage, an initial design is also made which includes preparing instruments (tests and questionnaires), media selection and initial design of macromedia flash media.

3. Development

At this stage, the Macromedia Flash-based learning media display is created using the Macromedia Flash application. After the media is finished, the media is validated, the media is revised and the media is

tested. Media validation was carried out by material experts and media experts and trials were carried out on 30 students to see the suitability of the media.The data collection technique used in the research is by using a questionnaire. Questionnaires were given to teachers and students. Media suitability questionnaires were given to 2 material experts and 1 media expert, and media acceptability questionnaires were given to 30 students. Data collected from media experts and material experts was analyzed using descriptive statistical techniques. The formula used is as follows.

$$P = \frac{\sum}{N} X\ 100\%$$

Information:

P : Eligibility presentation

$\sum$: Total score

N : Maximum total score

The scale in this research refers to the Likert Scale. where each is made using a scale of 1-5 answer categories given a score or weight, namely the number of scores or weights between 1 and 5. Then the final step concludes the calculation results based on aspects with the criteria in the table below, namely:

Table 1. Scoring category

No	Intervals	Category
1	81% - 100%	Strongly agree
2	61% - 80%	Agree
3	41% - 60%	Disagree
4	21% - 40%	Don't agree
5	0% - 20%	Strongly Disagree

Source: Riduwan (2016)

III. RESULT AND DISCUSSION

Development of interactive media Macromedia Flash in food knowledge subjects using a 4D development model consisting of Define, Design, Development and Disseminate. In this research, the stages are only limited to the development stage.The first stage in developing this media is define. At this stage, a needs analysis was carried out by distributing a questionnaire via g-form to 2 effective teachers and 20 students.

Table 2. Analysis of Learning Media Needs

Respondent	n	%	Classification
Teacher	2	≥50%	Need
Student	20	≥50%	Need

Based on the results of the questionnaire data in Table 2, it can be concluded that teachers and students of the Imelda Vocational School Medan Culinary Education Study Program need macromedia flash media in the learning process. From the results of the needs analysis, students really need media that can help students understand food ingredient knowledge, especially Knowledge of Spices and Seasoning Food Ingredients so that students can differentiate between various types of spices and herbs that are almost similar in shape. Apart from that, with the presence of Macromedia Flash media, students know the proper use of herbs and spices.The design stages in this research are the preparation of instruments (tests and questionnaires), media selection and initial design (storyboard) of macromedia flash media. The software used is Macromedia Flash 8. Macromedia Flash learning media contains text, images, audio and video. The final result of the media developed is Macromedia Flash media which has been validated by material experts and media experts.Macromedia Flash which has been developed then goes through validation and revision stages. Validation aims to assess the suitability of the learning media to needs and revision aims to correct things that are less suitable according to the experts' assessment. Validation is carried out by material experts and media experts. The following are the results of validation by material experts.

Table 4. Media Expert Assessment Results

Validation	%	Classification
Stage I Validation	81,42	Very Worth It
Stage II Validation	89,71	Very Worth It

From table 4 above it is known that the validation results in stage I obtained 81.42% in the very feasible category, however there were several revisions in the aspects of writing color, background color selection, in the evaluation section and in each material it would be better to add animation. Based on suggestions from the validator, it was then revised and continued with phase II validation, obtaining 89.71% in the very feasible category. This means that the media is very suitable for use in the learning process. Media that is said to be very appropriate is media that provides good aspects of the benefits and functions of the media (Mawaddah, 2019). After the media has been validated by material and media experts, the media is then tested by 30 students. This trial was carried out to see students' acceptance of the media that had been developed. Based on the results of this research, in Table 5 you can see the results of students' media acceptability assessment

Table 5. Media Acceptance Results

Information	Acquisition	Category
Total Score	4213	Very Acceptance
Mean Score	4,90	High

From the data in table 5 it is known that from 30 students a total score of 4213 was obtained with a mean score of 4.90 which shows that acceptability is very high. This means that the media developed can be accepted by students and is suitable for use in the process of learning about spices and herbs.Macromedia flash-based interactive media development was developed using the 4D model recommended by Thiagarajan which consists of define, design, develop and disseminate. The results of research on the development of interactive media based on Macromedia Flash are very suitable for use in food knowledge subjects. The media developed has taken into account learning aspects. Macromedia flash-based learning media is one of the interactive media so that the media makes it easier for users (students) to access the media (Ayu & Dharmono, 2020).

acromedia flash media has advantages including: (1) the media can be used anywhere and at any time; (2) attractive media display, where the material is displayed with several animations, as well as giving quizzes and summaries; (3) has interactive and consistent navigation buttons to make it easier for students to explore each slide easily, (4) this program also has an autorun file and runs immediately because it has been published in .exe format. so the Macromedia Flash program does not need to be installed first on the computer that will be used, (5) it can be used for independent learning. These advantages make Macromedia Flash media suitable for use in the process of learning food knowledge. Relevant research shows that the macromedia flash media developed is interesting and suitable for use as learning media (Handayani, et al. 2018; Akmalatussaniyah, 2023; Masitoh, et al., 2024; Rianda, et al. 2024). This is in line with the research results of Nugroho, et al (2017) that using learning media assisted by Macromedia Flash results are effective, practical, easy to understand and valid. Apart from that, Macromedia flash media also has a very high acceptability value (Musarofah, 2019; Anggita, 2020). This shows that the level of user (student) acceptance is very high. Students can use Macromedia Flash media to help improve learning outcomes (Ardana, 2024)

IV. CONCLUSION

Based on the results of this research, it can be concluded that Macromedia Flash learning media is suitable for use in food ingredient knowledge subjects on Spices and Spices. This research was developed using a 4D development model consisting of define, design, develop. and dissemination. Macromedia flash media was validated by material experts, obtaining 97.77% in the very feasible category. Media expert validation obtained 89.71% in the very feasible category. The results of students' assessments of the acceptability of Macromedia Flash learning media obtained a score of 4.90, including very high acceptability. The material on Macromedia Flash media is displayed with several animations, as well as giving quizzes and summaries. This media is only limited to knowledge of herbs and spices and quizzes are only provided at the end of the material. It is hoped that future researchers can create quizzes and evaluations on each food ingredient knowledge sub-material and can develop broader material.

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