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Development of Website-Based Learning Media on Basic Competencies of Tuber Processing

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A B S T R A C T

Learning about tuber processing is important in agribusiness learning, but this learning is often less interesting and less interactive. Therefore, this research was conducted to develop website-based learning media as an alternative to increasing the effectiveness and efficiency of learning. It is hoped that the use of technology in learning can motivate students, improve tuber processing skills, and enrich student learning experiences. Learning that takes place online during a pandemic makes the learning process more challenging because of the difficulty of conditioning the learning process. The role of learning media is important to make learning more interesting which is expected to improve student learning outcomes. This study aims to determine the feasibility of website-based learning media on the basic competence of tubers processing. The development of this website-based learning media uses the ADDIE method which consists of five stages, namely: (1) Analysis; (2) Design (Design); (3) Development (Development); (4) Implementation, and (5) Evaluation. The results showed that the feasibility of website-based learning media on the basic competence of tuber processing was declared "Very Eligible" by media and materials experts, declared "Fair" by linguists, and declared "Very Eligible" by students. This research recommends related to the development of website-based learning media to improve tuber processing skills in students. The implication is that the use of technology in learning can increase the effectiveness and efficiency of learning. In addition, website-based learning media can be accessed from anywhere, anytime, and increases student activity in learning.

A R T I C L E   I N F O

1. INTRODUCTION

The subject of the Production of Vegetable Products is productive in Vocational High School with the Agribusiness Processing Agricultural Product Skills program. After following this subject, students are expected to be able to apply the principles of food processing, packaging, business planning, and marketing and have the skills to continue education(Ali, et al., 2020; Alqahtani, 2016) at a higher level and develop science and technology in the field of processing agricultural products. Basic Competence (KD) applying the basic principles of tuber processing is one of the competencies that must be mastered in the subject of vegetable product production. Students are expected to be able to process tubers into various processed products according to regional potential with predetermined yield criteria for each processed tuber.

The COVID-19 pandemic (Permana, et al., 2019; Permana & Wijaya, 2017) has caused learning at *SMKN Pertanian Pembangunan* Cianjur to be conducted online via WhatsApp and Google Classroom using PowerPoint media. The results of observations during the Education Unit Field Introduction Program (PPLSP) in 2020, showed that there were still 45% of students who scored below the KKM. Learning resources that are difficult to access are thought to be one of the causes of student learning difficulties.

The development of learning media is an alternative to help provide learning resources for students. Interactive learning media can be used as an effective teaching medium with multimedia facilities in the form of images, sounds, and animations so that students can more easily understand the material presented (Sari, et al., 2018). Through interactive learning media, it is hoped that every student can carry out the learning process without any time limit and when students do not understand, they can interact directly with the teacher through the learning media (Mweene, 2020).

One form of interactive learning media is a website(Anisah et al., 2021; Azman et al., 2020). One of the advantages of website-based learning media(Estriyanto, 2016; Flynn et al., 2016; Gowrie Vinayan et al., 2020) is that it can be accessed easily by anyone, anytime and anywhere as long as the internet provider device is available (Sari, et al., 2018). Several studies have shown that website-based learning media can improve student learning outcomes (Santoso, Pudjawan, and Suwatra, 2016).

The development of website-based learning media is applied to Basic Competence (KD) applying the basic principles of processing tubers (Ferdiansyah, et al., 2020). The development of learning media is carried out using the ADDIE method. Media validation was carried out by media experts and material experts to determine the feasibility of learning media. Website-based learning media is expected to help students understand the material so that it can improve student learning outcomes.

2. METHODS
2.1. Learning Media Development

The development of website-based learning media uses the ADDIE method which consists of five stages, namely: (1) Analysis; (2) Design (Design); (3) Development (Development); (4) Implementation, and (5) Evaluation. The analysis is carried out to find out the problem and potential problem-solving. Furthermore, the design of learning media is carried out based on a website using website software and making flowcharts. Media development is done by making storyboards.

2.2. Evaluation of Learning Media

The evaluation was carried out in two stages, first by distributing validation sheet instruments to media experts, material experts, and linguists, and second, by distributing student response sheets, after the learning media was revised (Mandviwalla, et al., 2015). Analysis of the validation sheet data from experts and student response questionnaire sheets was carried out by calculating the percentage of answers using the formula (Hidayat, et al., 2018). The feasibility instrument for the learning material aspect was prepared using a validation sheet from the BNSP standard in 2008.

3. RESULTS AND DISCUSSION
3.1. Learning Media Development

Based on the results of observations and interviews, it is known that almost all students have smartphones so that students can access the internet. The design of learning media begins with making flowcharts and storyboards. The flowchart is presented in Figure 1.
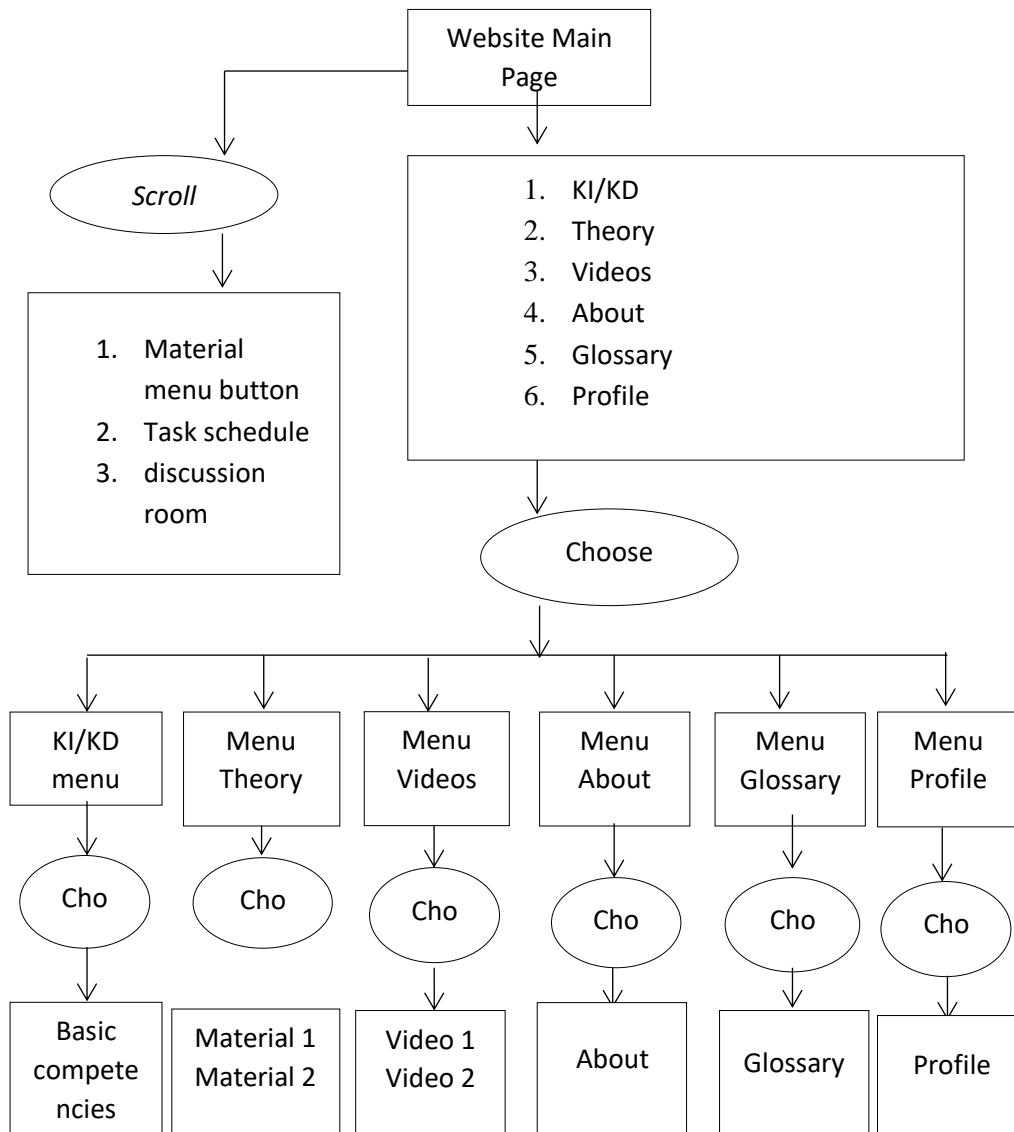
Figure 1. Flowchart of website-based learning media development

Learning media is developed based on the storyboard that has been made previously. After the development, the learning media were validated by material experts, media experts, and linguists. Furthermore, improvements were made based on suggestions from experts. Website-based learning media was created with the help of the website software. The appearance of the website is presented in Figure 2. The main page of the website contains the names of subjects, basic competencies, and majors in Agribusiness Processing of Agricultural Products (APHP) (Figure 2A). Feature on the main page of the website which consists of a menu button to the material, task schedule, and discussion room (Figure 2B-2D). The menu display on the website can be seen in the upper right corner of the main website page. The menu on the website contains the main page, KI/KD, materials, videos, questions, glossary, and profiles(figure 2E). The KI/KD menu contains the Basic Competencies and Core Competencies of the material (Figures 2F and 2G). The material menu consists of 2 choices of submenus, including the material for processing cassava tape and processing chips. The content can be scrolled by the user (Figures 2H and 2I) while the video menu is presented in Figure 2J. The question menu contains practice questions that can be done by students. After working on the questions, the scores obtained will appear (Figure 2K-2M). The glossary menu contains the meaning of words that the user may not know (Figure 2N). The collected words are arranged alphabetically to make it easier for users. The profile menu contains the developer's identity and contact (Figure 2O).
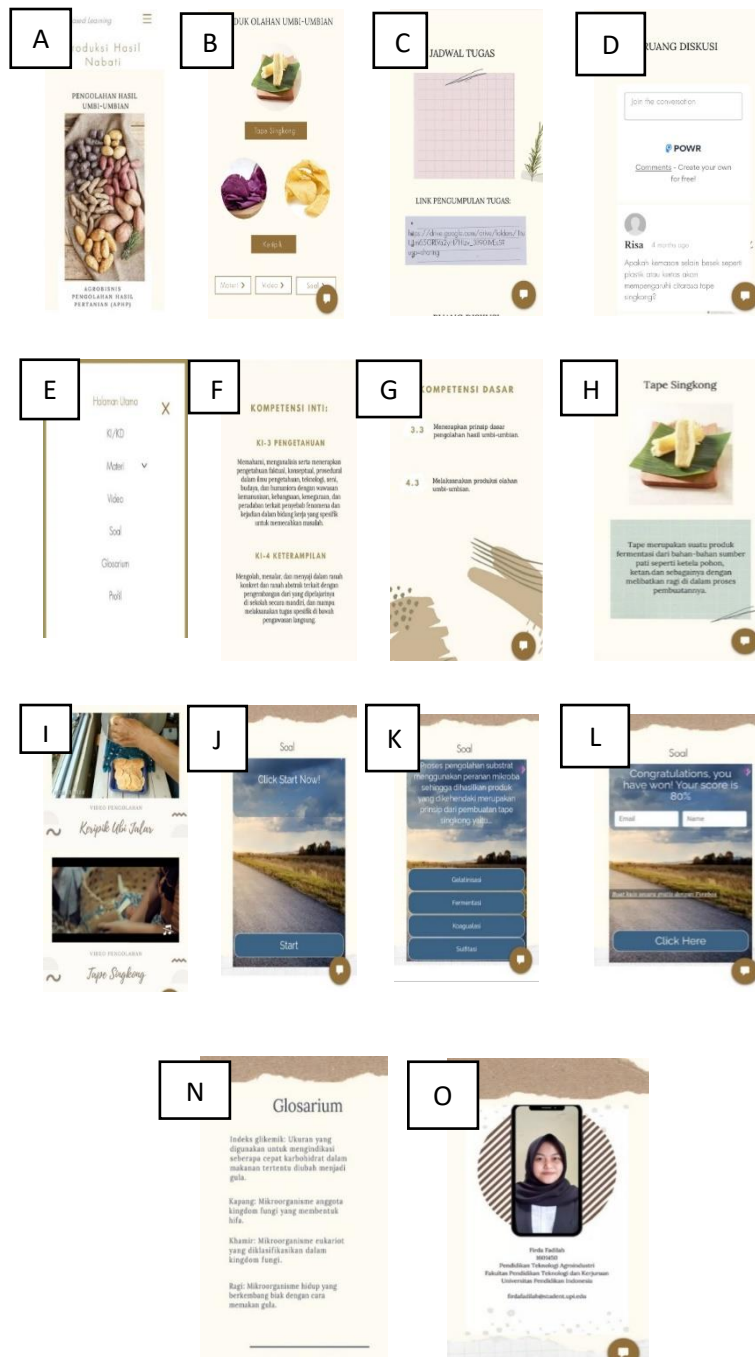
Figure 2. website-based learning media development

After the website is created, it is validated by experts to determine the feasibility of learning media before it is implemented in the learning process. The results of the media expert's validation stated that of the 20 indicators used 7 indicators were declared very feasible and 13 indicators were declared feasible (Figure 3).
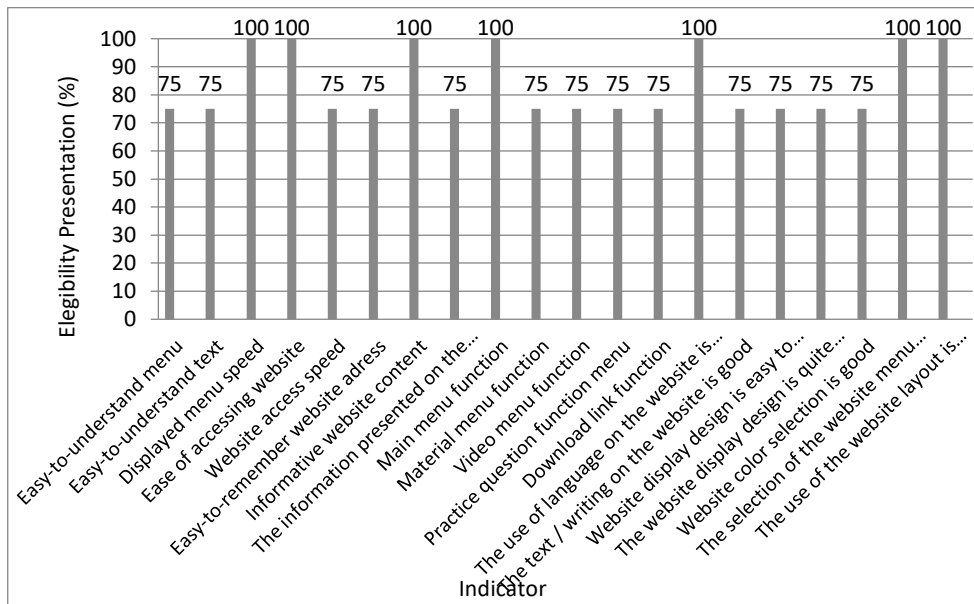
Figure 3. Results of Media Expert Validation on Web-Based Learning Media

The website must meet 5 requirements to achieve ideal usability, namely easy to learn, efficient in use, easy to remember, low error rate, and user satisfaction after use (Hasrat, et al., 2021). The results of validation by material experts show that the website is easily accessible, and informative, with a good choice of language, layout, and layout. This fulfills the requirements of the website as a learning medium stating that the web must meet learnability requirements, which is related to how easy an application or website is to use. measured by the use of available functions and features. Klett (2002) adds visual communication aspects to interactive multimedia that must be communicative, visual displays such as layout design, typography, attractive colors, and interactive layouts. Media experts provide suggestions on the functionality aspect to add a menu button on the main page that is directly connected to the processing product material so that improvements are made by adding a material menu button on the main page. The material expert advised on aspects of the suitability of the material with the SK and KD, namely the completeness in conveying the material by adding a glossary feature so that improvements were made by adding a glossary feature.
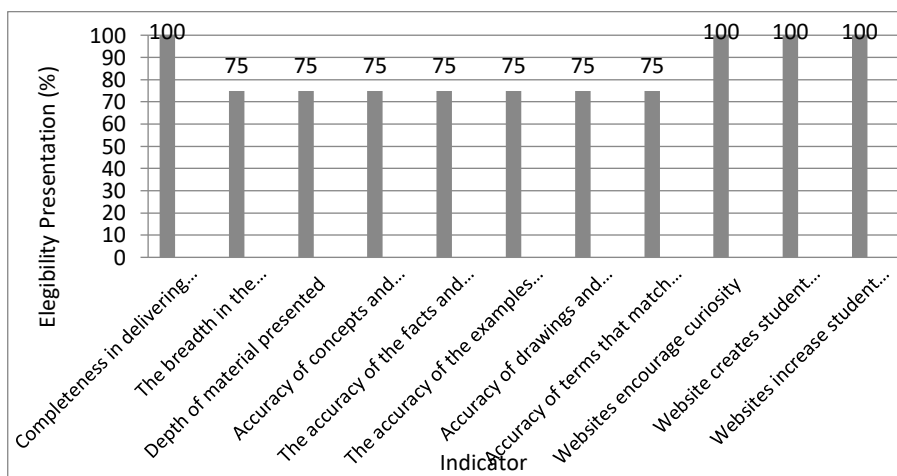

Figure 4. Results of Material Expert Validation on Web-Based Learning Media

The results of the validation of linguists stated that of the 12 indicators used, 11 indicators were declared feasible and 1 indicator was declared inappropriate (Figure 5). Language selection is very important in making learning media. Thamarana (2015) explain that learning media must use communicative language involving the use of new and different assumptions about two basic questions about what to learn and how to learn.

The value for the standard indicator of the term is declared inappropriate because there is a non-standard usage. Puspitarini (2019) explains that learning media must have a straightforward meaning, namely the sentences used to represent the content of the message or information to be conveyed by following the correct grammar in Indonesian. Linguists provide advice on aspects of the use of terms, symbols, and icons, so that the standardization of terms is improved, consistency of italics in foreign or Latin languages, and the use of punctuation marks.
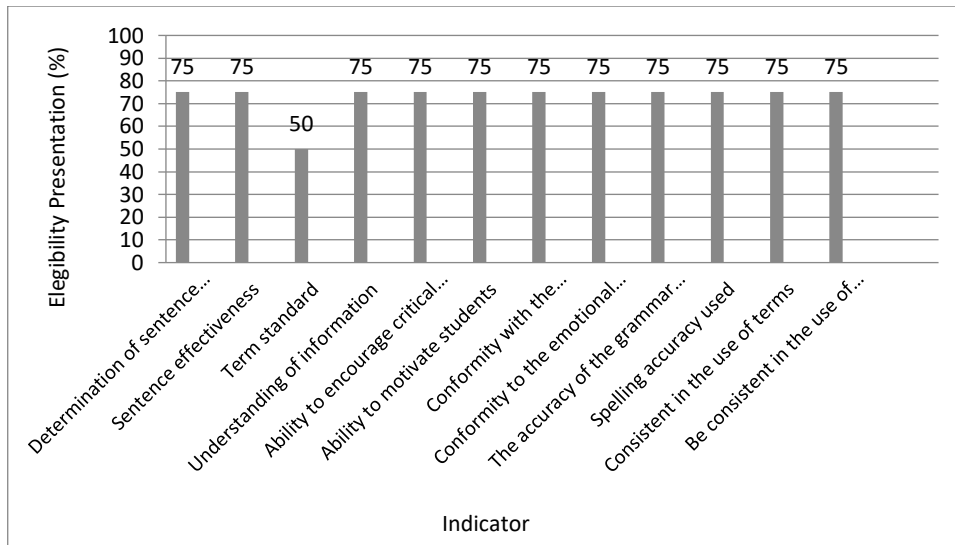

Figure 5. Analysis of the Calculation of Linguistic Expert Validation Results

The implementation of website-based learning media is carried out in class XII APHP at SMKN Agriculture Pembangunan Cianjur. The results of the student responses stated that of the 9 indicators used 6 indicators were declared very feasible and 3 indicators were declared feasible. The analysis of the calculation of student responses is presented in Figure 6. Students provide suggestions on the aspect of the display of learning media in the form of adding transition effects on the website display so that improvements are made to the addition of transition effects.
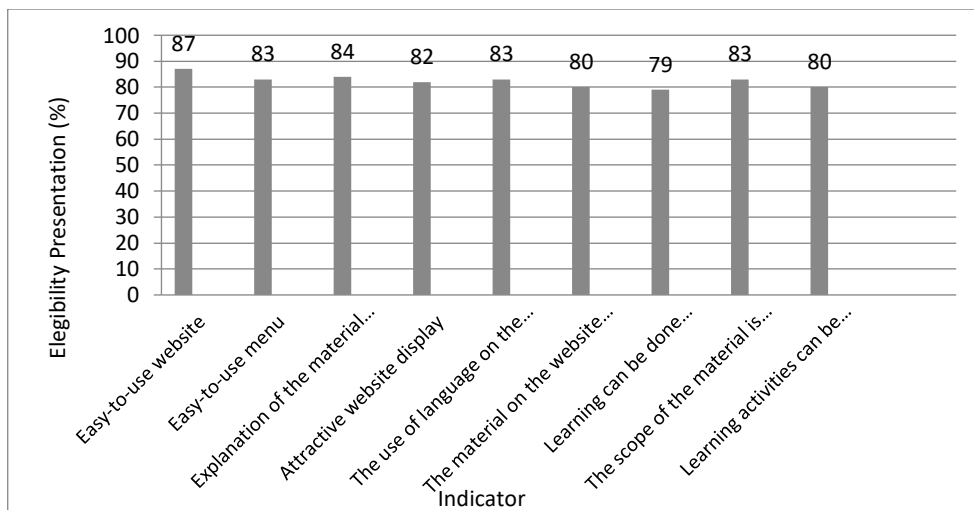

Figure 6. Student Responses to Web-Based Learning Media

Web-based learning media are then improved according to input from material experts, media experts, language experts, and students. The repaired website can be accessed on smartphones with the link https://productionhasilnabat.wixsite.com/mysite/video-pembelajaran. The development of website-based learning media on the basic competencies of tuber processing is expected to help provide learning resources for students. Interesting and interactive learning media are also expected to increase students' learning motivation which in turn can improve student learning outcomes.

4. CONCLUSION

The role of learning media is important to make learning more interesting which is expected to improve student learning outcomes. The results showed that the feasibility of website-based learning media in the basic competencies of processing tubers was declared "Very Eligible" by media and material experts, declared "Enough" by linguists, and declared "Very Eligible" by students. The use of technology in learning can increase the effectiveness and efficiency of learning. In addition, website-based learning media can be accessed from anywhere, anytime, and increases student activity in learning.

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