



## Development of E-Dictionary Media in Food Science Courses

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### ABSTRACT

Technological advances require lecturers to be more active in developing learning media so that they can help students participate more actively in learning independently. This research aims to develop e-dictionary-based media in food science courses. The media development model adopts the Brog and Gall procedure. Media validation is carried out by material and media experts. The results of the needs analysis indicate that e-dictionary-based media is highly needed in food science courses. The material expert validation percentage indicates 84% in the good category. The media validation result is 88% in the very good category. The result of limited trials conducted on students is 87% in the very good category. The result of the field trials is 88.25% in the very good category. As a result, it can be concluded that e-dictionary-based learning media is suitable for use in food science courses, especially in the introduction of cooking herbs and spices. With e-dictionary-based media, it is expected that it can become a learning innovation that collaborates with Android cell phone technology.

*Keywords: e-dictionary, internet, food science*

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### INTRODUCTION

Technological advances affect all aspects of human life, including education (Widyastuti, 2020). The use of technology in the education sector can make it easier to convey learning information and make learning activities more effective and efficient (Nasution, 2018; Pakpahan., 2020; Pohan, 2020). With the help of technology, learning can be optimized more effectively according to developments, conditions and community needs (Salsabila, et al., 2020). Technological developments have a very significant influence on the development of learning media. Learning media can be made as interesting as possible with the help of technology so that fun learning can be created.

Learning media is defined as anything that can be used to channel messages or learning content, stimulate thoughts and feelings attention and abilities of students so that they can encourage the learning process teaching (Miarso, 2009). The use of media engages students, helps retain student knowledge, motivates interest in learning material, and illustrates the relevance of many concepts so that students understand learning material more quickly (Mateeret al. 2020; Puspitarini & Hanif, 2019). This is in line with the opinion of (Ahyanuadi, et al. 2018; Kim, et al. 2011) which states that good learning media will be able to improve the student learning process and be able to improve student learning outcomes. Therefore, teachers are required to be more active and creative in developing learning media according to technological advances.

The food science course is one of the productive courses in the culinary education study program. Food science studies the properties and chemistry of the components contained in plant and animal foods, including the nutritional value of these foods.

Based on observations, in food science courses the learning process is still conventional. The use of media has not been maximally implemented in learning. Students tend to feel bored when learning about food science because the media displayed is still just PowerPoint. Many students also still experience difficulties in understanding the components, properties and nutritional value of food ingredients which contain many terms that are difficult to understand. Apart from that, students also very often use the internet to look for

assignments and learning materials. This is the basis for developing e-dictionary media that utilizes the internet so that students can access learning anywhere.

According to Amirian & Heshmatifar (2013) e-dictionary is an electronic tool that offers direct access to the intended information and goes directly to the target information that the user wants to find. Electronic dictionaries in the form of software can be installed on tablets or computers, smartphones and websites (Hamidah, et al. 2021). E-dictionary can be accessed via computer networks such as the internet (Ambarwati & Mandasari, 2020). Electronic dictionaries as learning media can help students learn independently (Golonka, et al. 2014). Dictionaries are not only used to find out the meaning of a word, because dictionaries can be used to choose the right words in the process of writing an essay (Chan, 2009) and used in knowledge bases in natural language processing applications (Thamrin and Sabardila, 2014). In relation to Food Science, a dictionary of Food Science terms can be interpreted as a dictionary that contains various terms in Food Science along with their definitions and meanings. E-dictionary aims to make it easier for dictionary users to search for the words and terms they want easily and quickly.

The advantages of e-dictionary are that it makes learning more fun, is not limited to the same time and space, and encourages independent learning (Indriyani, et al. 2022). According to Ruslan (2016), an Android-based electronic dictionary provides benefits in the form of a faster search process for difficult terms and the application helps optimize the use of smartphones as information and educational tools. Learning carried out at school by utilizing smartphone technology can make it easier to search for terms (Sofiyana, et al. 2020).

The food science e-dictionary can be used by lecturers and students anywhere, anytime, and without time limits. The food science e-dictionary was developed because of the need for information in searching for important terms, chemical properties and food components which still use many foreign terms that are difficult for first semester students to understand. Apart from that, it takes longer if you have to search for terms using conventional printed books. Students also very often use Android or smartphones to search for assignments or learning materials. Therefore, to make it easier for students to search for food science terms, researchers developed an e-dictionary for food science courses that can be accessed via smartphone.

The aim of this research is to develop e-dictionary-based learning media in food ingredients courses, especially in cooking herbs and spices.

## METHOD

The type of research in this research is Research and Development (R&D). R&D is the process of developing a new product or improving a previously existing product (Zakaria, et al., 2020). The development model used adopts the Borg and Gall development model. This method is applied in the process of developing and validating educational products (Borg & Gall, 1983 in Gustiani, 2019).

The subjects of this research were 30 odd semester students in the culinary education study program at Medan State University. The object of the research is e-dictionary-based media in food science courses. This research was conducted in the culinary education laboratory at Medan State University in March 2023.

According to Sugiyono (2019), there are 10 steps in developing Borg & Gall, namely gathering information, planning, developing initial products, initial field testing, revising the product, field testing, revising the product, field testing, revising the final product, and implementation. This research adopted the Borg & Gall Development Procedure. The stages carried out in this research are:

- a. Planning; The planning stage is carried out by reviewing, searching for data, and analyzing the needs of students and teachers needed to plan the development of e-dictionary media in the Food Science course.
- b. Develop preliminary form of product; At this stage, the design and initial product/media prototype development based on e-dictionary in the food science course is carried out. After that, the product was developed by creating an e-dictionary website and developing food science learning materials.
- c. Main product revision; This stage is validated by material and media experts. The validation results become the basis for improving e-diction media.

d. Implementation; At this stage, trials were carried out on 22 students of the culinary education study program.

The research instruments used in this research are a needs questionnaire and a material validation assessment questionnaire, product validation and a student assessment questionnaire regarding e-dictionary media. The measurement uses a Likert scale which is used to measure the attitudes and opinions of a person or group towards social events.

**Table 1. Likert Scale Score**

Answer	Score
Strongly agree	5
Agree	4
Disagree	3
Don't agree	2
Strongly Disagree	1

Source: (Riduwan, 2016)

The questionnaire assessment score uses a 1-5 Likert scale. The techniques used in analyzing data are first validated with media and material validators. The calculation of validation results is carried out as follows:

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

Note:

P : Feasibility presentation

$\sum$  : Total Score

N : Maximum Total Score

## RESULTS AND DISCUSSION

This research was developed by adopting the Brog & Gall development model, namely planning, Develop preliminary form of product, Main product revision and implementation. In the first stage, namely planning, an analysis of media needs is carried out. The results of the analysis of students' needs for e-dictionary media obtained 94% with the strongly agree category and the teacher needs analysis obtained 98% strongly agree. Based on the results of the analysis of student and teacher needs, it shows that e-dictionary media is really needed to help students and teachers understand terms, chemical properties and components of food ingredients in food science learning.

The next stage is Develop preliminary form of product. At this stage, design and initial product/prototype development is carried out and e-dictionary media materials and websites are developed for food science courses. The product developed is a learning product in the form of a website-based E-Dictionary in the introduction of herbs and spices. This lesson contains material for each type of spice and seasoning along with pictures and explanations.

This E-Dictionary has 3 items whose functions are Menu, Home, Search which supports the website in conveying the material that has been presented. The display is accompanied by the website name BUMCOOK.com by clicking <https://www.bumcook.com/>.

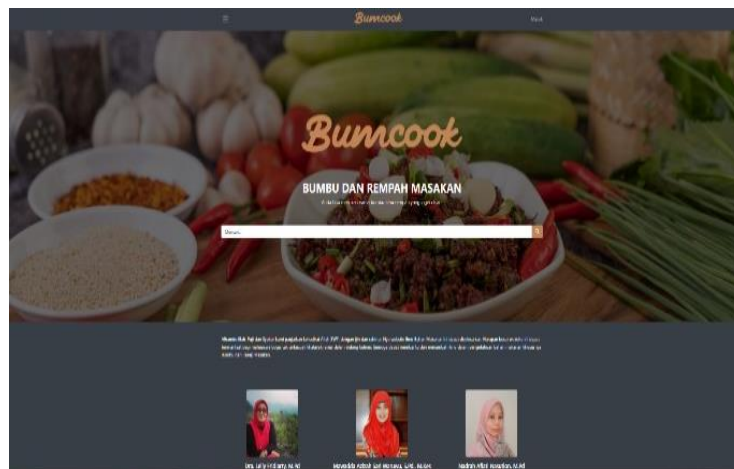


Figure 1. Initial appearance of the E-Dictionary website

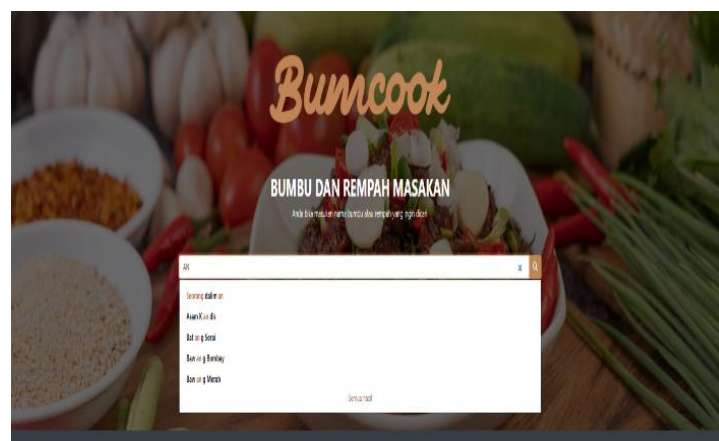


Figure 2. E-Dictionary Search Display



Figure 3. Material display

After the e-dictionary has been developed, the next stage is Main product revision. At this stage validation is carried out by material experts and media experts. Material expertise is carried out by 2 lecturers

who teach food science courses. Media expertise is carried out by 2 people who are experts in the fields of IT and media design.

Validation by material experts covering aspects of appropriateness of content, presentation and language obtained an average of 84% in the good category.

**Table 2. Material Expert Validation Results**

Aspect	Percentage (%)	Category
Eligibility of content	80,33	Good
Presentation	83	Good
Language	85	Very good
Usefulness	88	Very good
Average	84	Good

From the data above, it is known that the appropriateness aspect of the content is 80.33% in the good category, the presentation aspect is 83% in the good category, the linguistic aspect is 85% in the very good category and the usefulness aspect is 88% in the very good category. The results of the material expert validation show that the e-dictionary is suitable for use in learning.

Media expert validation covering aspects of presentation quality, graphics and attractiveness obtained an average of 88% in the very good category.

**Table 3. Media Expert Validation Results**

Aspect	Percentage (%)	Category
Presentation	88	Very Good
Graphics	86	Very Good
attractiveness	90	Very Good
Average	88	Very Good

The results of media expert validation show that the presentation aspect received 88% in the very good category, the graphic aspect obtained 86% and the attractiveness aspect obtained 90%.

Based on the validation results of material experts with an average of 80.33% in the good category and the validation results of media experts with an average of 88% in the very good category, it shows that the e-dictionary media is suitable for use in learning food science, especially the introduction of cooking herbs and spices. The results of the validation of e-dictionary materials and media are results that have undergone revision.

The validated media was then tested on 30 students. The trials were carried out in two stages, namely limited trials and field trials. Limited trials were carried out by 8 students and field trials were carried out by 22 students.

**Table 4. Results of limited trials**

Category	Percentage (%)	Category
Material Quality	86	Very good
Display Quality	85,87	Very good
Usefulness	89,13	Very good
Average	87	Very good

The results of limited testing on the material quality aspect obtained 86% in the very good category, the display quality was 85.87% in the very good category and the usability aspect was 89.13 in the very good category. The overall limited trial results obtained 87% in the very good category.



**Table 4. Field trial results**

Category	Percentage (%)	Category
Material Quality	87,08	Very good
Display Quality	88	Very good
Usefulness	89,68	Very good
Average	88,25	Very good

From the data above, the results of field trials include the material quality aspect which obtained 87.08% in the very good category, the appearance aspect obtained 88% in the very good category, and the usability aspect obtained 89.68 in the very good category. The overall results averaged 88.25% in the very good category. The results of limited trials and field trials show that e-dictionary media is very suitable for use in learning food science, especially the introduction of food spices and herbs.

## DISCUSSION

Advances in educational technology contribute to facilitating learning problem solving (Hanum & Suprayekti, 2019), one of which is the development of e-dictionaries in learning. Electronic dictionary-based media is an electronically packaged dictionary that can be accessed via the internet network and can be opened on tablets or computers, smartphones and websites.

In this research, an e-dictionary was developed based on students' needs in the food science learning process. The results of the needs analysis state that e-dictionary-based media is really needed in food science courses. Electronic dictionaries can be used as mediators of online and offline learning. Lecturers and students can open the application on their cellphones and then easily search for keywords for each food ingredient, then they will immediately get an explanation of the keywords that students are looking for. Culinary education students can use electronic dictionaries when they study food science independently.

The development of electronic dictionary media as an innovative learning media in food science learning really helps students understand material, terms, components and chemical properties of food ingredients. Apart from that, learning becomes faster and more interesting so it doesn't cause boredom because it is equipped with pictures and explanations for each material item. Electronic dictionaries can make it easier for students to understand terms, chemical properties, food components when studying food science, especially spices and food ingredients. This is in accordance with the validation results of material experts who obtained 84% in the good category. The results of this validation are assessed based on aspects of content suitability, presentation aspects, linguistic aspects, and usefulness aspects. Judging from the validation results of material experts, it shows that the material in e-dictionary media is suitable for use in learning. This is in line with the opinion of Mawaddah et al., (2019) who state that media that is said to be appropriate is media that provides good aspects of the benefits and functions of the media. The media assessment carried out by media experts received 88% in the very good category. This media assessment is based on several aspects, namely, presentation aspects, graphic aspects and attractiveness aspects. Based on the media validity results, it can be seen that the e-dictionary media is very suitable for use. Media really attracts attention and motivates students in learning food science. Using appropriate media in the learning process is an alternative in increasing students' interest in learning (Indriyani, et al. 2022). Students can understand difficult terms, chemical properties and food components with fun learning media. Students use their Androids to access learning anytime and anywhere as long as there is an internet network available.

The results of this research are in line with the research results of Wulandari (2022) which stated that the e-dictionary media developed was declared valid and practical for use as a learning medium. The research results of Rahmi & Hendri (2023) also stated that the learning multimedia developed, namely E-Dictionary, was declared valid, practical and effective for use in the learning process.

## CONCLUSIONS AND RECOMMENDATION

Based on the results and discussion of research on e-dictionary-based media development in food science courses, it can be concluded as follows: this research is R&D research. The focus of the research is producing e-dictionary media in food science courses. The results of the student needs analysis obtained 94% in the strongly agree category and the teacher needs analysis obtained 98% strongly agreeing that the development of e-dictionary media was carried out. Material expert validation results obtained 84% in the good category, media expert validation results obtained 88% in the very appropriate category. The results of the limited trial obtained 87% in the very good category. The results of the field trials obtained 88.25% in the very good category. Thus, the development of e-dictionary-based media is very feasible and effective for use in learning food science, especially material regarding the introduction of food herbs and spices. E-dictionary makes it easier for students to learn terms, components and chemical properties of food ingredients. However, this e-dictionary is not equipped with an interactive quiz menu that can determine the extent to which students have mastered food science. Therefore, it is recommended that in future research you can complete an interactive menu such as using a quiz application in the e-dictionary.

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