Development of Learning Media *Flipbook Digital* Japanese Culinary Material in the Asian Food as Literacy Course *Digital*

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Article Info	Abstract
	This study aims to develop digital learning media in the form of a flipbook containing Japanese cuisine materials for Culinary Education students and to assess its feasibility. The development process implemented the Research and Development (R&D) method with the 4D development model, which consists of four stages: Define, Design, Develop, and Disseminate. Data analysis in this development study took the form of qualitative description. The flipbook has been validated by experts in related fields, resulting in a feasibility percentage of 91% for the material aspect, 96% for the media aspect, and 95% for the language aspect, with all three aspects classified as highly feasible. The flipbook media then underwent a trial phase with Culinary Education students, resulting in an assessment percentage of 92% for the one-to-one test, 93% for the small group test, and 95% for the field test. The resulting data calculation of student response scores to the flipbook was 93.5%, classified as very strong and very positively accepted. Based on the results of the study, it can be conclusively stated that the development of digital flipbook learning media for Japanese cuisine materials is feasible for use and publication to the wider community.

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1. INTRODUCTION

The Culinary Arts Education Study Program is designed to produce graduates who are competent in mastering culinary concepts, theories, and practices, possess entrepreneurial insight, and can apply science and technology (IPTEK) adaptively. One of the compulsory courses supporting these goals is Asian Food, which aims to equip students with an understanding and skills regarding the culinary characteristics of Asian countries, including ingredients, spices, processing techniques, eating patterns, and cultural contexts and specific presentation occasions (Sachriani et al., 2024).

According to the Semester Learning Plan (RPS) of the University of Jakarta Culinary Arts Education Study Program, one of the subtopics in the Asian Food course is East Asian cuisine, which includes Chinese, Korean, and Japanese cuisine. This study focuses on Japanese cuisine, given its uniqueness and complexity, reflecting not only taste but also aesthetic values, philosophy, and the history of the Japanese people.

Japanese cuisine is generally classified into three main categories, namely Diaooku(traditional Japanese cuisine), *yōshoku* (Western-style Japanese cuisine), and *chūka* (Chinese-style Japanese cuisine). These three categories represent the dynamic development of Japanese cuisine, which has evolved through the adaptation of foreign cultures without abandoning its traditional roots (Rath,

2016). Therefore, understanding Japanese cuisine cannot be separated from the historical, social, and cultural contexts that underlie it. Ideally, Japanese culinary studies should not only emphasize technical aspects but also encompass the cultural and philosophical values inherent in each dish.

However, the breadth of this material demands learning strategies that present information comprehensively, engagingly, and easily understood by students. Developing learning media is a relevant solution, especially given the nature of students who are closely connected to digital technology. In this context, digital literacy is crucial, encompassing the ability to access, evaluate, manage, and utilize digital information effectively and responsibly (Fitriyani & Nugroho, 2022).

A needs analysis survey conducted with 35 students taking an Asian Food course revealed that PowerPoint (97.1%) is the most widely used learning medium, followed by instructional videos (37.1%), and e-modules (20%). Furthermore, Japanese cuisine was rated as the most difficult topic to understand (37.1%), particularly regarding the flavor characteristics of distinctive spices such as shoyu, all over, and miso, as well as the limited number of references that cover historical and cultural aspects in depth. Eighty percent of respondents stated the need for the development of learning media, with digital flipbooks being the most popular medium (51.4%).

Flipbook digital is a learning media in the form of electronic books that enable a reading experience similar to a printed book, but enriched with interactive elements such as videos, animations, quizzes, and external links (Diani & Sri Hartati, 2018). Several previous studies have shown that digital flipbooks are effective in culinary learning, but most still focus on visual and procedural aspects and have not yet integrated cultural values and digital literacy comprehensively.

Based on these problems, this research aims to develop a learning media flipbook on digital Japanese culinary arts as a complement to learning in the Asian Food course. Development was carried out using the model of Four-D (4-D), which is systematic and structured, with the hope that the resulting media can increase students' understanding of Japanese culinary arts holistically while strengthening digital literacy in the learning process.

2. METHOD

The development model used in this study is the 4-D model developed by Thiagarajan, Semmel, and Semmel in 1974. The 4-D model is a systematic and structured development model and is effective for developing various forms of learning media, particularly text-based and visual media such as modules and digital books (Arkadiantika et al., 2020). This model consists of four main stages: *define*, *design*, *develop*, and *disseminate*, which are interconnected to produce learning products optimal (Siagian & Tamba, 2023). The selection of the 4-D model is based on the characteristics of digital flipbooks, which require coherent, concise, and easy-to-understand material, as well as the design of attractive and communicative visual displays. Furthermore, the 4-D model provides space for formative evaluation through validation by material experts, media experts, and linguists, as well as limited user trials, thus enabling continuous product improvement before dissemination. With clear stages and a systematic revision mechanism, the 4-D model is considered suitable for the development of digital flipbooks. Flipbook digital Japanese culinary material as a learning medium that is appropriate, informative, and supports strengthening students' digital literacy.

In the development research of digital media flipbooks, Japanese culinary material uses

qualitative data analysis methods. All data regarding product development responses will be obtained from validation results by material experts, media experts, and language experts, as well as all responses from students participating in the trial. one-to-one, small group, and field test, which will then be examined using a qualitative descriptive approach. Qualitative analysis techniques were used to process the data collected through the questionnaire, using a Likert-scale assessment instrument with a score range of 1 to 4.

The assessment score data will be applied to a calculation formula to obtain a final product feasibility score. The resulting feasibility percentage is then interpreted into a sentence to assess the media's feasibility.

3. RESULTS AND DISCUSSION

This development research produces products in the form of flipbook *digital* Japanese culinary materials that can be used as a source of literacy, a digital addition to the Asian Food course. The research location was at Jakarta State University. Development of learning media flipbook digital. This is intended for students of the Culinary Arts Education study program who are currently taking the Asian Food course. Flipbook digital Japanese culinary materials are developed using a method, research, and development using a 4-D model with the following stages.

At the level defined of a learning needs analysis was conducted, including student characteristics, material analysis, and learning challenges in the Japanese culinary sub-topic. The analysis showed a high level of student interest in the Japanese culinary material, at 74.3%.

However, this high interest has not been matched by easy access to learning materials. 100% of students stated they need digital learning media. This percentage underpins the need to develop digital-based learning media that are easily accessible, interactive, and support students' digital literacy.

Flipbook digital completed materials must go through a validation stage by validators, Material Experts, Media Experts, and Language Experts who are experts in their fields to ensure that the media is suitable for use. After making a series of improvements based on the validators' comments and suggestions, the validation results obtained a feasibility percentage of 91% from Material Experts, 96% from Media Experts, and 95% from Language Experts. The assessment from Material Experts shows the suitability of the material with the learning outcomes of the course listed in the RPS. In addition, the completeness of the content and the presentation of the material using a variety of supporting media make the flipbook digital Japanese culinary materials contribute to increased readability and comprehension of the material. Research Amalric et al. (2023) showed that short educational videos that combine audiovisual elements are capable of activating relevant cognitive networks in material processing. This reinforces the fact that adding illustrations, animations, and videos in flipbook digital can help students understand practical steps more concretely.

Validation by media experts shows that the visual appearance, layout, color selection, and navigation of the flipbook are considered very good and support user comfort. Research by Kalalo et al. (2021) found that the application of flipbook interactive in blended learning significantly improves student learning outcomes compared to conventional methods, which shows that the interactive experience of flipbook digital contributes to learning motivation and learning effectiveness.

Meanwhile, the results of validation by linguists show that the use of the language flipbook is

communicative, clear, and appropriate to the characteristics of the students. This is in line with Jazeri (2016), who emphasized that a communicative approach through the use of language that is contextual and close to the students' learning experiences can encourage better understanding because it links new information with existing knowledge. Thus, the choice of language in flipbook digital plays an important role in supporting the effectiveness of delivering Japanese culinary material.

Based on these results, learning media of flipbook digital Japanese culinary material is stated to be in the very suitable category on the suitability scale table, and can proceed to the user trial stage.

User trials consist of three groups, namely trials one-to-one (3 students), small group (7 students), and field test (30 students). Trial one-to-one shows that the flipbook. The percentage of eligibility was 92%, with a very adequate category. Student respondents provided comments and suggestions, namely that the paragraphs were too dense on one page. The flipbook, the animation used in the background, is too striking, so it looks too busy; there are images that have not been included in one of the materials, and the selection of animation must be considered to suit the cognitive needs of students. The assessment results show that the media characteristics aspect scored lower than other aspects, with an average of 3.47. This is due to the dependency of the flipbook on the network, causing the flipbook to take a long time to open.

Table 1. Trial Results *One to One*

No.	Evaluation Aspects	Amount	Rate-rate
1.	Media Characteristics	52	3,47
2.	Material	47	3,92
3.	Visual	44	3,67
4.	Benefit	34	3,78
	Amount	177	14,83
	Rate-rate	44,25	3,71

Trial results of a *small group* show that the *flipbook* achieved a feasibility percentage of 93%, categorized as very feasible. Student respondents provided comments and suggestions, one of which concerned the use of color. They felt that the combination of dark pink as a background color with black text in the table of contents lacked contrast, making the text appear less appealing.

It was somewhat difficult to read. However, the majority of students gave positive feedback on other aspects, such as the relevance of the material to the images displayed and the easy-to-follow flow of the presentation.

Table 2. Trial Results of *Small Group*

No.	Evaluation Aspects	Amount	Rate-rate
1.	Media Characteristics	131	3,74
2.	Material	106	3,79
3.	Visual	103	3,68
4.	Benefit	78	3,71
	Amount	418	14,92
	Rate-rate	104,5	3,73

The next trial stage was carried out on large groups. *(field test)* which obtained a feasibility

percentage of 95% with a very feasible category. Respondents gave positive comments, namely, the presentation of the material in a *flipbook*. It is systematically structured and easy to understand. Furthermore, the selection of supporting illustrations is considered very helpful in clarifying the material. Visual display flipbook. It was also considered very interesting and increased students' motivation to read. The results of the development of the learning media flipbook are considered very useful, because it can be practically accessed anywhere.

Table 3: Trial Results Field *Test*

No.	Evaluation Aspects	Amount	Rate-rate
5.	Media Characteristics	560	3,73
6.	Material	463	3,86
7.	Visual	467	3,89
8.	Benefit	342	3,80
	Amount	1832	15,28
	Rate-rate	458	3,82

The student respondents' statements align with research by Asbah et al. (2025), which shows that the use of interactive and engaging learning media significantly increases student interest, motivation, engagement, and attention during the learning process. Thus, the respondents' subjective experiences are supported by empirical evidence that engaging with media does have a direct impact on increasing learning interest.

After going through a series of validation tests and feasibility tests, data was obtained that the learning media of *flipbook digital,* the Japanese culinary material in the Asian Food course as a whole, is very suitable for use to support learning activities.

4. CONCLUSION

This research produced a learning media flipbook *digital* Japanese culinary material in the Asian Food course was developed using the 4D model. Validation results by Material Experts, Media Experts, and Language Experts show that flipbook *digital* is in a very suitable category for use as a learning medium. The results of the trial with students showed a positive response, where the Flipbook *digital* helps improve understanding of Japanese culinary material and supports independent learning. Thus, *flipbook digital* can be utilized as a supporting learning media to enrich learning experiences and strengthen literacy *digital* students of the Culinary Arts Education study program.

5. ACKNOWLEDGMENTS

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