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Feasibility Test of an Interactive Flipbook-Based E-Module Integrating Instructional Videos and Interactive Quizzes

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Abstract

Instruction in Basic Culinary Skills for Phase E vocational high school students relies on teaching materials in which content, videos, and assessments are provided separately. This separation does not adequately meet the needs of learners who favor visual, audio, and interactive media. This study aimed to examine the feasibility of an interactive flipbook-based e-module that integrates instructional videos and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment. This evaluative study used a quantitative descriptive approach. The e-module was designed using the Canva application and converted into an interactive flipbook format through the Heyzine Flipbooks platform, in accordance with the Learning Outcomes of the Merdeka Curriculum. The research subjects were six validators selected through purposive sampling, comprising three content experts and three media experts. Data were collected through preliminary observation and a validation questionnaire using a 1–4 scale and were then analyzed by calculating feasibility percentages. Suggestions for improvement from the validators were also used as a basis for product revision. The results showed that the e-module achieved feasibility percentages of 95% from the content experts and 93% from the media experts, both in the “very feasible” category. The product was revised in the aspects of the cover, completeness of the table of contents, author profile, culinary technical terminology, and chapter structure based on the validators’ suggestions. This interactive e-module is therefore feasible for use as an alternative digital teaching material in the Basic Culinary Skills course for Phase E.

Keywords: *interactive e-module, flipbook, interactive quiz, culinary vocational education, instructional video*

INTRODUCTION

Technological developments in the twenty-first century have brought digital transformation to many aspects of life, including education. This digital transformation has shifted the educational paradigm from a teacher-centered approach to a student-centered one (Nisa et al., 2023). In this context, digital technology no longer merely serves as a tool for delivering content, but as an instrument for building interactive and immersive learning experiences (Rahayu et al., 2026). Through the implementation of the Merdeka Curriculum, teachers are given the flexibility to design innovative teaching materials tailored to learners’ characteristics and the needs of the workforce (Eprijum et al., 2022).

In learning activities, teaching materials play an important role as guides for teachers and primary references for learners; therefore, their quality also influences the quality of the learning process (Putri et al., 2025). In practice, in vocational high schools, particularly in the Culinary Arts program, the learning process still largely relies on conventional textbooks or printed modules (Putri et al., 2024). Teaching materials dominated by lengthy narrative texts tend to make learners bored and passive, while vocational content that is procedural in nature and often considered difficult requires visual support to be easily understood (Elfira et al., 2025). The Culinary Arts program is a vocational education track that demands a balanced mastery of knowledge, skills, and professional work

attitudes. Understanding basic culinary concepts is a prerequisite to help learners avoid difficulties during practical work and minimize occupational risks (Nikmah & Auliana, 2024). The Basic Culinary Skills course in Phase E plays an important role in the curriculum structure because it serves as the initial theoretical and practical foundation that equips learners with basic competencies in the culinary field (Eprijum et al., 2022), as stipulated in the Learning Outcomes of the Merdeka Curriculum (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).

Based on observations and interviews with the Grade X Basic Culinary Skills teacher at SMK Negeri 6 Semarang on 17 July 2026, teachers have made use of printed books, PowerPoint slides, PDF files, instructional videos, and evaluation platforms such as Quizizz. However, these media were used separately and have not been integrated into a single platform, so that learners must switch between platforms to study the material, watch videos, and complete evaluations. This condition does not fully align with learners' characteristics, who are more drawn to instructional media that combine visual, audio, and interactive elements than to conventional teaching materials. Interactive multimedia has been shown to be effective in increasing the interest, engagement, and creativity of vocational high school learners (Handaru & Pujiriyanto, 2021) and interactive quizzes have been shown to have a positive effect on the learning outcomes of Grade X vocational high school students (Saputra et al., 2024).

In recent years, e-module development has become an important focus in educational technology research. Various studies have shown that interactive e-modules are feasible and effective as instructional media because they offer flexible access and can accommodate diverse multimedia components (Rahmatsyah & Dwiningsih, 2021). In line with advances in digital technology, e-modules are now widely developed in flipbook format, which offers a reading experience similar to a printed book while incorporating multimedia features, allowing images, animation, audio, and video to be integrated to create a more contextual learning experience. In the culinary field, flipbook e-modules have been developed and found feasible for basic seasoning (Putri et al., 2024), Indonesian cakes (Ramadhani et al., 2025), and cookies for Phase F (Inas et al., 2026).

Previous studies show that flipbook e-modules (Putri et al., 2024), interactive instructional videos (Ramasany et al., 2022), and interactive quizzes (Saputra et al., 2024) have each yielded positive learning outcomes. However, most of these studies developed each component separately, so that the potential for integrating multiple multimedia components within a single teaching material has not been fully explored. Regarding the topic of cleaning and sanitizing equipment and spaces, a *flipbook* e-module that already includes instructional videos was developed by Prasysta et al. (2025), however, the e-module was not equipped with an interactive quiz as a means of self-assessment. Thus, no e-module is currently available that combines content, video, and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment developed in accordance with the Phase E Learning Outcomes of the Merdeka Curriculum.

To address this gap, the present study develops an interactive *flipbook*-based e-module that integrates instructional videos and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment for Phase E, developed in accordance with the Learning Outcomes of the Merdeka Curriculum. This integration allows learners to receive content in a structured manner, deepen their understanding through video visualization, and immediately assess their mastery of concepts through quizzes (Kandriasari et al., 2024). Before being applied in learning, digital teaching materials need to be tested for feasibility by content experts and media experts to ensure their quality in terms of content, presentation, visual design, and interactivity (Pujiastuti et al., 2024). Therefore, this study aims to assess the feasibility of an interactive *flipbook*-based e-module integrating instructional videos and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment for Phase E in the Culinary Arts program, based on assessments by content and media experts.

METHOD

This study used an evaluative research method with a quantitative descriptive analysis approach oriented toward product feasibility testing. The evaluative method was chosen because the study focused on assessing the quality of a learning product based on feasibility criteria established before the product is implemented in learning. Sugiyono (2019) explains that the descriptive method aims to provide a factual and systematic depiction of the object under study without being intended to draw generally applicable conclusions. In line with this view, the validators' assessment scores were described quantitatively to depict the product's feasibility level, while the validators' suggestions and

comments were collected to identify the parts of the product that needed to be revised. The object of this study was an interactive *flipbook*-based e-module integrated with instructional videos and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment for Phase E vocational high school learners in the Culinary Arts program. The product was designed using the Canva application to arrange the layout, illustrations, and typography, and was then converted into an interactive *flipbook* format via the Heyzine Flipbooks platform so that instructional videos and interactive quizzes could be embedded directly on the e-module's pages. The research participants were validators selected using purposive sampling. Purposive sampling refers to the selection of participants based on particular considerations and criteria (Sugiyono, 2019). The validators consisted of six experts, comprising three content experts and three media experts. Content feasibility covered the alignment of the content with the Learning Outcomes, the accuracy of the content, and language use (Asrory et al., 2022). Media feasibility, meanwhile, focused on the aspects of visual design, typography, and interactivity (Badaruddin et al., 2026).

Data were collected using a validation questionnaire. Preliminary observation was conducted at SMK Negeri 6 Semarang on 17 July 2026 through classroom observation and interviews with the Grade X Basic Culinary Skills teacher to obtain information for the needs analysis, covering learner characteristics, the teaching materials used, and learning conditions. The results of the preliminary observation were used to design the e-module product. The validation questionnaire was administered at the feasibility-testing stage to obtain the content experts' and media experts' assessments of the product being developed. Both questionnaire instruments had been validated by an instrument expert and were considered suitable for use. The data collected through the validation questionnaire used a 1–4 rating scale (Koo & Yang, 2025). The data were analyzed quantitatively by calculating the scores obtained from the validation questionnaire to determine the feasibility percentage. The suggestions and feedback provided by the validators were reviewed and used as the basis for product revision. The feasibility percentage was calculated using the formula:

$$P = \sum \frac{X}{Xi} \times 100\%$$

Note:

P : Feasibility percentage

$\sum X$: Total score obtained

$\sum Xi$: Maximum possible score

The calculated percentage was then interpreted based on the feasibility criteria. The feasibility criteria are presented in Table 1.

Table 1. Feasibility level criteria for the e-module

Percentage (%)	Category
81-100	Very feasible
61-80	Feasible
41-60	Fairly feasible
21-40	Less feasible

(Valentri et al., 2024)

RESULTS AND DISCUSSION

This study developed an interactive *flipbook*-based e-module developed using the Canva application and converted into an interactive digital format using the Heyzine Flipbooks platform. The product was compiled based on the Learning Outcomes of the Basic Culinary Skills course for Phase E of the Merdeka Curriculum, with the core topic of Cleaning the Kitchen Area and Equipment. The e-module was designed as a single digital platform that combines content explanations, instructional videos, and interactive quizzes, so that learners can study concepts, observe procedural demonstrations, and assess their understanding without switching platforms, in line with the principle of integrated multimedia in culinary vocational learning proposed by Kandriasari et al. (2024). The resulting e-module interface is presented in Figure 1.



Figure 1. Appearance of the e-module in flipbook

Content Expert Validation

The content validators were three teachers from SMK Negeri 6 Semarang. The results of the content feasibility test are presented in Table 2.

Table 2. Content expert validation

Validator	Percentage (%)	Category
Validator 1	97	Very feasible
Validator 2	97	Very feasible
Validator 3	90	Very feasible
Average	95	Very feasible

Media Expert Validation

The media validators were three lecturers from Universitas Negeri Semarang. The results of the media feasibility test are presented in Table 3.

Table 3. Media expert validation

Validator	Percentage (%)	Category
Validator 1	98	Very feasible
Validator 2	95	Very feasible
Validator 3	84	Very feasible
Average	93	Very feasible

In accordance with the planned research stages, the product's feasibility was tested by six expert validators before its use in learning, since digital teaching materials need to be declared feasible in terms of content, presentation, visual design, and interactivity before being implemented (Pujiastuti et al., 2024). The feasibility test results showeded that the content experts gave a feasibility rating of 95%, while the media experts gave a feasibility rating of 93%, as presented in Table 2 and Table 3 based on the criteria of Valentri et al. (2024), both fall into the "Very Feasible" category. This category is consistent with the results of the flipbook e-module study on basic seasoning material by Putri et al. (2024). This consistency supports the view that the flipbook format is suitable and feasible as an alternative culinary instructional medium. Although both aspects fall into the "Very Feasible" category, the e-module product was nevertheless revised based on the validators' suggestions for improvement collected through the open-ended comment column of the questionnaire, as presented in Table 4.

Table 4. Validator improvement suggestions

Revised Section	Validator's Suggestion	Improvement
E-module cover	The size of the visual elements was not proportional and the color of the elements covered important parts.	The size of the visual elements was adjusted proportionally and the color of the elements was aligned with the background.
Table of contents	Page numbers and detailed subsections were not yet included.	Page numbers were added for each chapter/subsection, along with subsection details

Revised Section	Validator's Suggestion	Improvement
Author identity page	No information about the author was included.	An "About the Author" page was added, containing educational background and institutional affiliation.
Culinary technical terminology	The technical terms used in the culinary field did not yet meet the standard.	The terms were adjusted to conform to the standard in the culinary field.
Content structure	Main chapters and subsections were not yet clearly distinguished.	The chapter and subsection structure was made clearer to avoid confusing users

The high feasibility level in the content aspect indicates that the e-module content aligns with the subject matter, is based on appropriate references, is presented in an engaging manner, and is relevant to the context of kitchen work. This is important because the Merdeka Curriculum gives teachers the flexibility to develop teaching materials (Eprijum et al., 2022). The validators' suggestion to align technical terminology with standards in the culinary field strengthens the e-module's relevance, since mastery of terminology is part of the professional work readiness demanded by vocational education (Nikmah & Auliana, 2024).

The high level of feasibility in the media aspect indicates that the integration of instructional videos, interactive quizzes, and the *flipbook* format is well suited to the characteristics of learners who are more drawn to media that combine visual, audio, and interactive elements than to conventional, text-dominated teaching materials (Elfira et al., 2025). The media feasibility also confirms the advantage of the Heyzine Flipbooks platform, which allows the e-module to be equipped with multimedia features and accessed flexibly across various devices (Putri & Hakim, 2025). The revision suggestions concerning the cover, layout, and page structure indicate that visual communication requires particular attention in media evaluation, consistent with the findings of Badaruddin et al. (2026) that the feasibility of visual design, including typography and composition, needs particular attention in graphic instructional media. Thus, the combination of multimedia elements in this e-module not only increases visual appeal but also has the potential to reduce boredom and passivity among learners that have previously arisen from the use of printed modules dominated by lengthy narrative text.

The integration of instructional videos and quizzes in this e-module allows learners to receive content in a structured manner, deepen their understanding through video visualization, and assess their mastery of concepts through quizzes (Kandriasari et al., 2024). This suggests that digital technology can function as a tool for building an interactive and adaptive learning experience, not merely as a tool for delivering content (Rahayu et al., 2026). This is in line with the study by Nisa et al. (2023) which notes the shift in learning from teacher-centered to student-centered, as learners are given the flexibility to access, study, and evaluate their own understanding independently through a single digital platform.

CONCLUSION

This study developed an interactive *flipbook*-based e-module integrated with instructional videos and interactive quizzes on the topic of Cleaning the Kitchen Area and Equipment for Phase E vocational high school learners in the Culinary Arts program. The e-module was designed using the Canva application and converted into *flipbook* format via the Heyzine Flipbooks platform in accordance with the Learning Outcomes of the Merdeka Curriculum, bringing content, videos, and assessments together within a single digital platform. Based on the feasibility test results, the e-module achieved a feasibility percentage of 95% from the content experts and 93% from the media experts. These results indicate that the e-module meets the criteria of content alignment with the Learning Outcomes, content accuracy, and language use, as well as the criteria of visual design, typography, and interactivity. The validators' suggestions, which included improvements to the cover, completeness of the table of contents, addition of an author profile, adjustment of culinary technical terminology, and restructuring of the chapters, were incorporated into the revisions, resulting in a final product that is ready for use in learning. Thus, this interactive e-module can serve as an alternative digital teaching material supporting the implementation of the Merdeka Curriculum in culinary vocational education.

DECLARATION OF GENERATIVE AI

The authors declare that no generative AI or AI-assisted technologies were used in the writing process of this manuscript.

CONFLICTING INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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