International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Student Perceptions Of The Use Of Digital Flipbook Learning Media On Fermentation Material In Culinary Arts Vocational Education

Grandis Tsaniya Aesthetica[1]
[1]State University of Jakarta
Alvina Fadila Maulida [2]
[2]State University of Jakarta
Rina Febriana[3]
[3]State University of Jakarta
Constantinus Rudy Prihantoro[4]
[4]State University of Jakarta
Muhammad Nurtanto[5]
[5]State University of Jakarta

Corresponding
Author:grandis_1514622003@mhs.unj.ac.id,alvina.fadila@unj.ac.id,rinafebriana@unj.ac.id,crudy@unj.ac.id,muhammad.nurtanto@unj.ac.id

Abstract

The integration of digital learning media in higher education vocational education is gaining increasing attention as educators seek innovative approaches to address the complexity of technical courses. Fermentation is consistently identified as the most difficult topic in Food Preservation courses, with 80% of students reporting difficulty understanding microbiological processes, scientific terms, and the application of fermentation concepts. This study aims to examine students' perceptions of Heyzine-based digital flipbooks as a learning medium for fermentation in the Culinary Arts Education Study Program, Jakarta State University. Using a quantitative descriptive approach, data were collected through a four-point Likert-scale questionnaire administered to 42 students who had used digital flipbooks. The research instrument consisted of 16 statements covering four aspects: media characteristics, material quality, visual quality, and perceived benefits. The results showed an average overall score of 3.70 with a feasibility percentage of 92.4%, which is included in the very feasibility category. All four aspects obtained percentages above 91%, indicating that students perceived digital flipbooks as easily

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

accessible, interactive, content-relevant, visually appealing, and useful in supporting both independent and structured learning. These findings imply that digital flipbooks are an effective and contextual learning medium for culinary vocational education, especially for materials that require visualization of complex biological processes.

Keywords: digital flipbook; fermentation; student perception; culinary vocational education; food preservation.

INTRODUCTION

The development of information and communication technology has fundamentally transformed pedagogical approaches in higher education, particularly in vocational programs that require the integration of theoretical knowledge and practical skills. Digital learning media is now a central component of this transformation, offering a more dynamic alternative to conventional teaching methods that often rely on static presentation tools. In vocational culinary education, where students are required not only to master procedural cooking skills but also to understand the scientific principles underlying food processing techniques, the availability of engaging and easily accessible learning media is a fundamental requirement.

Fermentation is a key topic in the Food Preservation course, consistently identified by students as the most difficult. A preliminary needs analysis conducted prior to this study revealed that 80% of students in the Culinary Arts Education Program at Jakarta State University identified fermentation as the most difficult topic in the course. This difficulty stems from several factors: the inability to directly observe the activity of microorganisms, the complexity of the multi-step biochemical transformations, the large number of unfamiliar scientific terms, and the diverse range of fermentation methods that must be understood simultaneously. This situation is exacerbated by the dominant use of PowerPoint (86.7%), which has limitations in presenting interactive content and in-depth concept visualization.

Digital flipbooks emerge as a promising media alternative in this context. They are interactive electronic publications that replicate the sensation of turning the pages of a physical book while integrating multimedia elements such as text, images, illustrations, animations, and embedded videos (Kartikasari et al., 2024). Unlike static e-books or conventional presentations, flipbooks engage learners through multiple sensory channels, supporting Mayer's (2021) dual coding principle, which states that the combination of verbal and visual information enhances cognitive processing and information retention. The ease of access to flipbooks through various

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

devices—smartphones, tablets, and laptops—further supports flexible, self-paced learning outside of class hours (Cahyono, 2023).

Several previous studies have explored the use of flipbooks in various educational contexts. Nafiah et al. (2023) demonstrated a significant increase in elementary school students' learning interest after flipbook integration. Sari et al. (2024) confirmed that flipbook-based e-modules improved students' motivation and mastery of science concepts. Emilia et al. (2024) reported that interactive flipbooks effectively improved students' nutritional knowledge in culinary arts courses. However, no empirical study has specifically examined students' perceptions of the use of digital flipbooks for fermentation materials in culinary arts vocational education. This gap is the novelty of this study.

RESEARCH METHODS

Research Design

This study used a quantitative descriptive design, which is appropriate for systematically measuring and describing the characteristics of a phenomenon through numerical data (Creswell & Creswell, 2018). This approach was chosen because the primary objective of the study was to capture students' evaluative responses to the developed media, not to test causal relationships or intervention effects.

Participants

Participants in this study were 42 undergraduate students of the Culinary Arts Education Program, Faculty of Engineering, Jakarta State University, who had taken the Food Preservation course. All participants were selected purposively based on their previous involvement with fermentation materials and willingness to use a digital flipbook during the evaluation session.

Research Instruments

Data were collected using a structured perception questionnaire developed specifically for this study. The instrument consisted of 16 statements distributed into four aspects: (A) Media Characteristics, covering ease of use, interactivity, suitability of facilities, and suitability of cognitive level; (B) Material Quality, covering suitability of learning outcomes, coverage of fermented material, coherence of presentation, and accuracy of language; (C) Visual Quality, assessing design appearance, text readability, image clarity, and relevance of illustrations; and (D) Perceived Benefits, measuring the contribution of flipbooks to learning motivation, ease of

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

understanding of the material, and their value as innovative learning resources.

Each item was rated on a four-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. The four-point scale was used intentionally to encourage students to provide focused assessments and avoid the tendency to choose a middle ground (Sugiyono, 2023).

Data analysis

Data were analyzed using descriptive statistics by calculating the average score and percentage of feasibility for each item and each aspect. The feasibility percentage was calculated using the formula: Xi = (ΣS / Smaks) × 100%, with interpretation criteria: 81–100% = Very Feasible, 61–80% = Feasible, 41–60% = Quite Feasible, and below 40% = Not Feasible (Ashari & Puspasari, 2024).

RESULTS AND DISCUSSION

Student Perceptions of Media Characteristics

The media characteristics aspect evaluates students' perceptions of the operational and functional dimensions of digital flipbooks, including ease of access, interactivity, compatibility with available devices, and suitability to students' cognitive levels. Results from 42 respondents are presented in Table 1.

Table 1. Student Perceptions of Media Characteristics (n = 42)

No.	Statement	Total Score	Average	Eligibility (%)
1	Digital flipbooks are easy to access and use.	161	3.83	95.8%
2	Navigation buttons work fine without any issues	160	3.81	95.2%
3	Media supports student involvement in learning	156	3.71	92.9%
4	Media according to available facilities	154	3.67	91.7%

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

5	Media according to students' cognitive level	154	3.67	91.7%
	Average Aspect	785	3.74	93.5%

The media characteristics aspect obtained an average score of 3.74 with a feasibility percentage of 93.5%, which is included in the very feasibility category. The highest scores were obtained in the ease of access (3.83; 95.8%) and navigation functions (3.81; 95.2%), which confirms that Heyzine-based flipbooks can be accessed effectively via smartphones and laptops without requiring additional application installation. The absence of significant technical obstacles allows students to fully concentrate on the learning content without being distracted by operational problems.

Ease of access is a crucial element in digital learning. Heinich et al. (2002) stated that easily accessible learning media will increase the efficiency of learning time and allow students to customize their learning process to suit their individual needs. In this context, the ability of flipbooks to be opened anytime and anywhere via links or QR codes makes them a highly relevant alternative for students with busy schedules. This aligns with Syafi'ah and Nugraha (2024), who assert that digital flipbooks eliminate the access barriers typically associated with printed materials or specific hardware-based media.

The scores for suitability with available facilities and cognitive suitability (3.67 and 91.7%, respectively) indicate that the media was designed with students' real-world conditions in mind, both in terms of device limitations and academic understanding. The alignment between media characteristics and user profiles is an important determinant of the effectiveness of digital learning media (West et al., 2007).

Student Perception of Material Quality

The material quality aspect examines the extent to which students perceive the flipbook content as relevant, accurate, well-organized, and linguistically appropriate. Table 2 presents a breakdown of the results for this aspect.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Table 2. Student Perceptions of Material Quality (n = 42)

No.	Statement	Total Score	Average	Eligibility (%)
1	The material is in accordance with the learning outcomes of the course	160	3.81	95.2%
2	The material covers the subject of fermentation in its entirety.	156	3.71	92.9%
3	The material is presented in a sequential and logical manner.	150	3.57	89.3%
4	The language used is effective and easy to understand.	154	3.67	91.7%
	Average Aspect	620	3.69	92.3%

The material quality aspect obtained an average score of 3.69 with a feasibility percentage of 92.3%, which is in the very feasibility category. The item of conformity with learning outcomes obtained the highest score (3.81; 95.2%), indicating that students perceived the content as structured with clear objectives and directly relevant to the competencies targeted in the Food Preservation course.

Content relevance is a key driver of learning motivation in the context of vocational education (Schunk, 2020). In this regard, presenting fermentation material with examples of products widely known to Indonesian students—such as tempeh, yogurt, sticky rice tape, and kimchi—plays a crucial role in strengthening the connection between theoretical concepts and actual culinary practice. This contextualization approach aligns with Ausubel's principle of meaningful learning, as summarized by Schunk (2020), which emphasizes that new information is more easily assimilated when linked to existing knowledge or experience.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

The score for coherence of material presentation (3.57; 89.3%) was the lowest in this aspect, but still in the very adequate category. This value reflects that some students still felt the need for further adjustments to the flow of presentation of the fermentation concept so that transitions between sections of the material could be felt more smoothly. Clark and Mayer (2016) emphasized that structural coherence in content presentation is a determining factor in the quality of learning media, because a logical flow makes it easier for students to build a complete cognitive scheme. Meanwhile, the score for language accuracy (3.67; 91.7%) indicates that the use of communicative language and the inclusion of a glossary of technical fermentation terms successfully helped students overcome the terminology barrier that had previously been a major obstacle.

Student Perception of Visual Quality

The visual quality aspect assesses students' evaluation of the aesthetic and functional features of the flipbook, including overall design appearance, text readability, image clarity, and the relevance of illustrations and animations. Table 3 presents the results.

Table 3. Student Perceptions of Visual Quality (n = 42)

No.	Statement	Total Score	Average	Eligibility (%)
1	The use of color and layout supports readability	154	3.67	91.7%
2	The font type and size can be read clearly	149	3.55	88.7%
3	Supporting images for the content of the material are clearly visible	154	3.67	91.7%
4	Illustrations and animations are relevant to the material being presented	156	3.71	92.9%
	Average Aspect	613	3.65	91.2%

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

The visual quality aspect obtained an average score of 3.65 with a feasibility percentage of 91.2%, which is included in the very feasibility category. The highest score was obtained for the relevance of illustrations and animations (3.71; 92.9%), while font readability obtained the lowest score (3.55; 88.7%) although still in the very feasibility category.

The high relevance scores for illustrations and animations indicate that the visual elements embedded in the flipbook were perceived as integral to the delivery of fermentation material, not merely decorative ornaments. This is particularly significant given the abstract nature of microbial activity in the fermentation process, which cannot be directly observed in the classroom. The fermentation process video accessed through the Google Drive link in the flipbook proved to be a bridge between theoretical concepts and concrete images that students could perceive. This finding aligns with Mayer's (2021) multimedia theory, which states that learners achieve deeper understanding when words and images are combined coherently and explain each other.

The font readability score (3.55; 88.7%), although still very decent, indicates that consistency of font size and type still needs to be considered in the development of similar media in the future. Clark and Mayer (2016) emphasized that appropriate typographic design—including sufficient font size, adequate line spacing, and consistent writing style—plays a direct role in reducing extraneous cognitive load so that students' working memory capacity can be fully allocated to content processing.

Student Perception of Perceived Benefits

The perceived benefits aspect measures the extent to which students perceive digital flipbooks as a medium capable of increasing learning motivation, supporting the process of understanding the material, and serving as an innovative learning resource. Table 4 presents the results.

Table 4. Student Perceptions of Perceived Benefits (n = 42)

No.	Statement	Total Score	Average	Eligibility (%)
1	Media increases students' learning motivation	152	3.62	90.5%
2	Media helps to understand the material more easily	155	3.69	92.3%

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

3	Media can be used as a new learning resource	159	3.79	94.6%
	Average Aspect	466	3.70	92.5%

The perceived benefits aspect received an average score of 3.70 with a feasibility percentage of 92.5%, categorized as very feasible. The item with the highest score was the value of flipbooks as a new learning resource (3.79; 94.6%), reflecting students' appreciation for the availability of a digital alternative to the PowerPoint presentations that have dominated fermentation learning.

The motivational dimension is highly relevant in the context of vocational education. Deci and Ryan (2000) assert that intrinsic motivation grows when students experience a sense of competence, autonomy, and relevance in their learning activities. Digital flipbooks, by enabling self-paced navigation and presenting fermentation material in a familiar Indonesian culinary context, directly support these motivational states. Students who previously felt overwhelmed by the complexity of fermentation concepts can now approach the material through a more concrete and interactive approach.

The score for support for understanding the material (3.69; 92.3%) confirmed that the flipbook successfully functioned as an effective learning scaffolding tool. The integration of text, images, and videos in a single platform allowed students to obtain multiple representations of the same concept, thereby enhancing information processing and retention (Mayer, 2021). Furthermore, the flipbook's ubiquitous smartphone access allowed students to independently review the fermentation process outside of class hours, supporting the development of independent learning as a core competency of higher vocational education (Zimmerman, 2002).

Overall Recapitulation of Student Perceptions

Table 5 presents a recapitulation of the overall student perceptions of the four aspects evaluated, based on data from 42 respondents.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Table 5. Summary of Overall Student Perceptions (n = 42)

Aspect	Number of Grains	Total Score	Average	Eligibility (%)	Category
Media Characteristics	5	785	3.74	93.5%	Very Worthy
Material Quality	4	620	3.69	92.3%	Very Worthy
Visual Quality	4	613	3.65	91.2%	Very Worthy
Benefits Felt	3	466	3.70	92.5%	Very Worthy
Overall	16	2,484	3.70	92.4%	Very Worthy

Overall, students' perceptions of the digital flipbook on fermentation obtained an average score of 3.70 with a feasibility percentage of 92.4%, which is included in the very feasibility category. All four evaluated aspects obtained percentages above 91%, with a relatively narrow range between 91.2% (visual quality) and 93.5% (media characteristics), indicating the consistency of students' positive perceptions across all dimensions studied.

The consistent high scores across all four aspects indicate that flipbooks are not perceived favorably from a single perspective, but are accepted holistically as a functional, informative, aesthetic, and useful learning medium. This is important because the effectiveness of digital learning media cannot be determined solely by technical aspects; it must encompass the quality of the content, the visual experience, and the tangible impact felt by users (Mayer, 2021; Clark & Mayer, 2016).

In the context of culinary vocational education, these findings have significant implications. Fermentation, previously perceived as the most abstract and challenging topic in Food Preservation courses, can now be presented through a medium that visualizes invisible biological processes, contextualizes concepts within local culinary practices, and provides flexible learning

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

access. The flipbook's ability to integrate videos of fermentation processes, photographs of local fermented products, a glossary of technical terms, and assessment questions into a single interactive platform makes it a comprehensive pedagogical tool for this context.

The findings of this study align with existing literature. Sari et al. (2024) found significant improvements in motivation and conceptual mastery after using a flipbook-based e-module. Emilia et al. (2024) confirmed the effectiveness of interactive flipbooks in improving nutrition knowledge among culinary arts students. Muzaki (2025) in a similar study reported an average positive perception of 4.13 from students who used flipbooks on the topic of food security. This study expands this evidence base by presenting empirical data from the specific context of fermentation in higher education culinary arts vocational education, an area that has not been widely studied independently.

CONCLUSION

This study examined the perceptions of 42 Culinary Arts Education students toward a digital flipbook developed for fermentation in the Food Preservation course at Jakarta State University. Based on data analysis from a 16-item questionnaire covering four aspects, the average overall score was 3.70 with a feasibility percentage of 92.4%, which is categorized as very feasible.

The four evaluated aspects—media characteristics (93.5%), material quality (92.3%), visual quality (91.2%), and perceived usefulness (92.5%)—were all in the very good category. Students perceived the digital flipbook as easily accessible and functional, containing content relevant to learning outcomes, presenting visualizations that support understanding of the fermentation process, and being useful as an innovative learning resource that supports independent learning.

For culinary arts vocational education, these findings underscore the strategic value of developing subject-specific digital media. Flipbooks containing contextual fermentation material, complete with videos of the fermentation process, documentation of local fermented products, a technical glossary, and evaluation questions, successfully address learning needs that have not been met by conventional PowerPoint-based methods. Educators and curriculum developers in similar vocational programs are encouraged to explore digital flipbooks as a complement or alternative to the static media that has traditionally dominated.

For further research, it is recommended to examine the actual impact of digital flipbook use on learning outcomes through a pretest-posttest design. A longitudinal study assessing students' knowledge retention and changes in attitudes toward fermentation materials would provide more comprehensive insights. Furthermore, comparing perceptions between groups

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

using flipbooks and those using conventional methods would strengthen the scientific argument regarding the superiority of this medium in the context of vocational education.

REFERENCES

Ashari, M., & Puspasari, D. (2024). Development of digital-based learning media in vocational education. Indonesian Journal of Vocational Education, 12(1), 45–59.

Cahyono, D. (2023). The use of digital flipbooks as interactive learning media in higher education. Journal of Educational Technology, 25(2), 100–115.

Clark, R.C., & Mayer, R.E. (2016). e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning (4th ed.). Wiley.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE.

Deci, E.L., & Ryan, R.M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Emilia, E., Pratiwi, C., & Haryana, NR (2024). The effectiveness of an interactive flipbook on nutrition knowledge in Mandailing culinary on students' ability to plan a balanced menu using local food ingredients. Journal of Ecohumanism, 3(6), 898–909. https://doi.org/10.62754/joe.v3i6.4060

Heinich, R. (Ed.). (2002). Instructional media and technologies for learning (7th ed.). Merrill Prentice-Hall.

Heyzine.com. (2023). Heyzine flipbooks: Create stunning digital publications. https://heyzine.com

Izhatullaili, I., & Ilmatus Sadiyah. (2025). Innovation of digital flipbook learning media to increase student learning motivation. Journal of Digital Education, 4(1), 12–28.

Kartikasari, G., Nurhayati, F., & Pratama, R. (2024). Characteristics of digital flipbook media in 21st-century learning. Journal of Learning Innovation, 10(1), 33–47.

Mayer, R.E. (2021). Multimedia learning (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781316941355

Muzaki, H. (2025). Student perceptions on the use of flipbooks as a learning medium to increase food safety awareness. ISCE: Journal of Innovative Studies on Character and Education, 9(1), 210–226.

Nafiah, N., Ghufron, S., Hartatik, S., Mariati, P., & Rulyansah, A. (2023). The effect of flipbook-based digital books on elementary school students' interest in learning. World Journal on

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Educational Technology: Current Issues, 15(4). https://doi.org/10.18844/wjet.v15i4.7833

Sari, IP, Rohmani, R., & Nisa', K. (2024). Analysis of the effectiveness of using flipbook-based e-modules in science learning in elementary schools. IJORER: International Journal of Recent Educational Research, 5(6). https://doi.org/10.46245/ijorer.v5i6.615

Schunk, D.H. (2020). Learning theories: An educational perspective (8th ed.). Pearson.

Sugiyono. (2023). Educational research methods: Quantitative, qualitative, and R&D approaches (4th ed.). Alfabeta.

Syafi'ah, R., & Nugraha, AW (2024). Development of a digital flipbook module for undergraduate students of Science Education. EDUPROXIMA (Scientific Journal of Science Education), 6(1). https://doi.org/10.29100/.v6i1.5001

West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. Educational Technology Research and Development, 55(1), 1–26. https://doi.org/10.1007/s11423-006-9018-1

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. Theory Into Practice, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License