Development of a Snack Box Flip Book for Culinary Business Management Course

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Article Info	Abstract
	The use of instructional media in the *Culinary Business Management* course within the *Culinary Education Program* at Unimed remains limited to PowerPoint presentations and general business management textbooks. Students are struggling to effectively determine Snack Box menus and design practical activities. Therefore, students need a practical learning medium that can support in planning their practical work. The objectives of this study are: (1) To produce a Flip Book-based learning media on Snack Box material; (2) To analyze the feasibility of the Snack Box Flip Book according to material experts and media experts; (3) To analyze student satisfaction with the Snack Box Flip Book. The research method used is Research and Development (R&D) with a 4-D approach. Data collection techniques include needs analysis observation, feasibility test questionnaires, and student satisfaction questionnaires regarding the Snack Box Flip Book. The conclusions are: (1) The development of the Snack Box Flip Book was carried out using the 4-D model, consisting of the following stages: (a) Define, (b) Design, (c) Develop, (d) Disseminate; (2) The feasibility test results from material and media experts obtained a score of 3.32, categorized as feasible; and (3) The student satisfaction assessment resulted in a score of 3.44, categorized as very satisfied. The use of the *Snack Box* Flip Book offers the benefit of enabling students are creatively and independently determine Snack Box menus and implement them in practice with results that meet established standards.

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INTRODUCTION

Education is a fundamental necessity in human life, serving as the foundation for intellectual growth and societal advancement. Through education, progress in science and technology can be achieved, enabling individuals to innovate and develop new approaches to improving educational quality (Irfan et al., 2023). Within the educational system, learning constitutes a crucial component aimed at creating a conducive learning environment and providing opportunities for students to achieve optimal learning outcomes (Mubai et al., 2020; Mubai et al., 2023).

The learning process requires the integration of instructional media as a supportive tool to ensure effectiveness and efficiency. Instructional media serve as pedagogical aids that facilitate the delivery of subject matter, making it easier for students to comprehend complex concepts (Mubai et al., 2020). In the context of teaching and learning activities, media play a pivotal role in optimizing communication between educators and learners (Mubai et al., 2021; Huda et al., 2021). Moreover, engaging and well-designed media can enhance students' learning motivation, improve their understanding of the material, and support the attainment of learning objectives.

This is particularly relevant in the Culinary Business Management course at Culinary Education Program, Universitas Negeri Medan (Unimed), where practical skills, creativity, and conceptual understanding must be integrated to achieve instructional goals. One of the key topics in this course is the *Snack Box*, which combines culinary craftsmanship with aspects of menu planning and presentation. A snack box is a packaged assortment of light meals, typically presented in a container such as a cardboard or plastic box, consisting of various types of snacks including traditional cakes, cookies, bread, pastries, or beverages, arranged for convenient transportation and consumption. Common components of a snack box may include traditional cakes (e.g., *lemper, risoles, kue lapis, bolu kukus*), *kletikan* (e.g., *sus kering, kuping gajah, kacang telur*), bread or pastries (e.g., shredded meat buns, donuts, fruit pies, puff pastries), pudding cups,

assorted fruits, and beverages (e.g., bottled water, tea, juice). Snack boxes are commonly served as refreshments at events such as seminars, meetings, social gatherings, birthday parties, weddings, and religious ceremonies. The advantages of serving snack boxes include practicality, hygiene, variety in food selection, and aesthetically pleasing presentation. When designing a snack box, several aspects should be considered, including flavor combinations, texture variation, balanced portion sizes, food durability, diversity of shapes and colors, and attractive packaging arrangements.

The rapid advancement of technology and digitalization has created significant opportunities for the development of more interactive and engaging instructional media. One such medium that has gained increasing attention in the field of education is the *Flip Book*. A Flip Book is an interactive digital learning resource designed to resemble a printed book that can be opened and flipped through virtually, yet enhanced with visually dynamic elements such as text, images, audio, and video. Its primary advantage lies in its realistic book-like appearance combined with an attractive design, flexibility, and accessibility through various electronic devices.

Previous studies have demonstrated the positive impact of Flip Books on student learning. For instance, the use of Flip Books has been shown to improve students' skills (Sucini et al., 2022), enhance visual literacy, and facilitate faster and deeper comprehension of the subject matter (Hadiapurwa et al., 2021). Additionally, Flip Books have been reported to increase students' learning motivation and assist teachers in delivering content creatively (Pratama & Lestari, 2023). Furthermore, Flip Books serve as an alternative solution to support student learning in the era of the Fourth Industrial Revolution by creating a more engaging, communicative, and interactive learning environment while strengthening students' understanding of the material presented by educators (Amanullah, 2020).

The objectives of this study are: (1) to develop a Flip Book-based instructional medium on the topic of *Snack Box* that can be utilized by anyone, particularly undergraduate students

enrolled in the Culinary Business Management course; (2) to evaluate the feasibility of the Flip Book *Snack Box* material based on assessments by subject matter experts and media experts; and (3) to measure student satisfaction with the Flip Book *Snack Box* material.

The expected outcome of this research is the production of a feasible and practical Flip Book-based instructional medium on *Snack Box* preparation, which can be used by students as an independent learning resource. In the Culinary Business Management course, this Flip Book is intended to encourage students to independently and creatively design *Snack Box* menus and implement them in practice to meet established standards. Moreover, the Flip Book *Snack Box* can serve as a standard teaching material for the course in every semester and can also be utilized by anyone, at any time, as a practical guide for *Snack Box* preparation in the culinary business sector.

METHOD

The development model used in this study is the 4-D model. This model was developed by Sivasailam Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974. The 4-D model is a development model that can be used to create various types of learning media (Arkadiantika et al., 2020). Initially, Thiagarajan, Semmel, and Semmel modified the model into four stages: analysis, design, evaluation, and dissemination. After undergoing further development during training, the model became known as the Four-D model, which consists of four stages: define, design, develop, and disseminate (Haviz, 2013). The data collection techniques used in this study includes: 1) Observation, to conduct a needs analysis; 2) Feasibility questionnaires, assessed by three subject matter experts and three media experts; and 3) Student satisfaction questionnaires, administered to 35 students regarding the Flip Book on *Snack Box* material.

The questionnaire used in this study was a closed-ended questionnaire using a Likert scale format, where respondents rated items by selecting values in the provided columns (Sugiyono, 2009).

The data analysis technique employed was mean score analysis (Kadir, 2015), used to calculate the results of both the feasibility tests and student satisfaction levels with the Flip Book on *Snack Box* material. The feasibility criteria for the Flip Book are presented in Table 1, and the student satisfaction criteria are shown in Table 2.

Table 1. Flip Book Feasibility Criteria

Feasibility Score	Classification
$3.25 < \bar{x} \le 4.00$	Highly Feasible
$2.50 < \bar{x} \le 3.25$	Feasible
$1.75 < \bar{x} \le 2.50$	Less Feasible
$1.00 < \bar{x} \le 1.75$	Not Feasible

Table 2. Student Satisfaction Criteria for the Flip Book

Satisfaction Score	Classification
$3.25 < \bar{x} \le 4.00$	Very Satisfied
$2.50 < \bar{x} \le 3.25$	Satisfied
$1.75 < \bar{x} \le 2.50$	Less Satisfied
$1.00 < \bar{x} \le 1.75$	Not Satisfied

RESULT AND DISCUSSION

Result
Defining Stage

The first step undertaken in this study was the analysis of the Semester Learning Plan for the Culinary Business Management course. Subsequently, a needs analysis was conducted with students from the Culinary Education Program Unimed through in-class discussions and the assignment of practical menu design tasks. The results of this analysis indicated that 65% of the 80 participating students demonstrated an understanding of the types of food items suitable for inclusion in a snack box. However, 70% of students were still unable to design an ideal snack box menu composition or determine the appropriate selling price for such products. According to student feedback, the current learning process relied primarily on PowerPoint presentations, in which not all materials were fully explained. Moreover, PowerPoint files required relatively large storage space—particularly on mobile devices—thereby limiting accessibility.

Based on these findings, students expressed the need for a more practical and accessible

learning resource that could be used anytime and anywhere. In response, the researchers carried out a concept analysis to determine the content and structure to be incorporated into the Flip Book. Finally, a learning objectives analysis was conducted to align the expected learning outcomes for the Snack Box topic with the design and development of the Flip Book, ensuring that it effectively supported the course goals in Culinary Business Management.

Design stage

This stage involved the planning and structuring of the Flip Book content, which included compiling the material scope from various references and designing the overall visual layout of the product. The front cover design incorporated key information such as the Flip Book title (Snack Box), the course name (Culinary Business Management), the author's name, as well as illustrative images of assorted snacks and packaging boxes. The finalized front cover design of the Flip Book is presented in Figure 1.

Figure 1. Cover of Snack Box Flip Book

The scope of content presented in the *Snack Box* Flip Book included: (1) definition of snack box, (2) benefits of snack box, (3) production techniques, (4) ingredients used, (5) equipment, (6) packaging, (7) menu management, and (8) calculation of selling price. Each subtopic was complemented by relevant images to clarify the material and enhance visual appeal. The first draft of the *Snack Box* Flip Book was compiled based on this structure. The back cover design provided a brief description of the Flip Book's content and purpose. The overall development process utilized several digital tools, including Canva for graphic design and Heyzine Flipbook for digital publication formatting.

Development stage

Following the completion of the design stage, the development stage was initiated. This stage began with the review of the first draft by subject-matter experts and media experts. The feedback provided during this review process was used to revise the content and produce the second draft. Subsequently, the second draft underwent a further validation process by both media and subject-matter experts to ensure its quality and suitability. The results of the *Snack Box* Flip Book feasibility assessment are presented in Table 3.

Table 3. Feasibility Test Results of the Snack Box Flip Book by Media and Subject Matter Experts

No	Aspect	Validator						Average Score	Description
		Media Experts			Subject Matter Experts				
		1	2	3	1	2	3		
1.	Graphical Feasibility	3.20	3.19	3.21				3.20	Feasible
2.	Content Feasibility				3.50	3.50	3.30	3.42	Highly Feasible
3.	Presentation Feasibility				3.22	3.20	3.20	3.31	Highly Feasible
4	Language Feasibility				3.60	3.40	3.44	3.20	Feasible
5.	Contextual Assessment				3.33	3.30	3.30	3.48	Highly Feasible
	Overall Average Score							3.32	Highly Feasible

Based on Table 3, the Snack Box Flip Book falls into the "highly feasible" category ($3.25 < \bar{x} \leq 4.00$), with the language feasibility aspect receiving the highest score, followed by content feasibility. This indicates that the Snack Box Flip Book is suitable for use by students.

Disseminate stage

The finalized and validated product was then disseminated to students of the Culinary Education Program by uploading it to the Sipda Unimed Learning Management System (LMS). Students were able to independently study the Snack Box Flip Book outside of scheduled class hours. During theoretical learning sessions, students consulted with the instructor regarding menu designs to be practiced, based on the explanations provided in the Snack Box Flip Book. Menu designs that met the established standards were subsequently implemented in practical sessions during the following class meeting. In addition, students enrolled in the Culinary Business Management course also provided satisfaction ratings for the *Snack Box* Flip Book. The results of this satisfaction assessment are presented in Table 4.

Table 4. Student Satisfaction Results for the Snack Box Flip Book

No	Aspect	Score	Description
1.	Visual Appeal	3.29	Very Satisfied
2.	Content Clarity	3.51	Very Satisfied
3.	Ease of Use	3.58	Very Satisfied
4.	Learning Motivation	3.33	Very Satisfied
5.	Language Usage	3.47	Very Satisfied
	Average Student Satisfaction Score	3.44	Very Satisfied

Based on the results presented in Table 4, students expressed a very high level of satisfaction ($3.25 < \bar{x} \leq 4.00$) with the *Snack Box* Flip Book. The highest-rated aspect was *ease of use*, followed by *clarity of content, language usage, learning motivation,* and *visual appeal.*

DISCUSSION

The development of the *Snack Box* Flip Book for the *Culinary Business Management* course was carried out using the 4-D model, which consists of four stages: *define*, *design*, *develop*, and *disseminate*. This study resulted in an instructional media product designed as a teaching resource for the course, validated by both content and media experts, and subsequently tested with 35 students of Culinary Education Program Unimed to obtain feedback on user satisfaction.

In the define stage, a needs analysis was conducted by reviewing the semester program plan and discussing learning challenges with students. The findings revealed that 65% of the 80 students understood the types of food suitable for *Snack Boxes*, yet 70% were still unable to design an ideal *Snack Box* menu or determine its selling price. Students reported that previous learning activities relied heavily on PowerPoint presentations, which were incomplete in content, offered limited encouragement for independent study, and required substantial storage space—especially on mobile devices. They expressed the need for self-study materials that were practical, accessible anytime and anywhere. Although studies by Mardiana et al., (2025) and Nugroho et al., (2024) demonstrated that Canva-based PowerPoint in physics courses and problem-based learning-integrated PowerPoint in vocational mechanical engineering increased motivation and learning outcomes, these methods were not well

aligned with the learning preferences of culinary education students. By contrast, the study by Emilia and Rassy (2024) found that a Flip Book on culinary entrepreneurship significantly improved learning outcomes among culinary and nutrition students.

The design stage involved preparing the instructional content and designing the Flip Book layout. The material covered definitions, benefits, preparation techniques, ingredients, equipment, packaging, menu management, and pricing for *Snack Boxes*. Each subtopic was accompanied by relevant images to enhance clarity and engagement. This approach is supported by Sudarwan (2016), who emphasized that visual aids in learning help clarify information, strengthen memory, and improve comprehension. Similarly, Anggraini (2024) found that visual media in introducing Indonesian cuisine to BIPA students increased motivation and facilitated understanding.

The development stage focused on product evaluation by content and media experts. Initial drafts were reviewed and revised based on expert feedback before final validation. The results indicated that the *Snack Box* Flip Book met the "very feasible" category ($3.25 < \bar{x} \le 4.00$), with *contextual relevance* rated highest, followed by *content quality*, *presentation quality*, *graphic quality*, and *language quality*. The media expert deemed the cover design, content layout, color scheme, typography, and imagery appropriate, awarding a score of 3.20. The content expert confirmed that the material aligned with the curriculum, was logically and sequentially presented, and employed clear, communicative language to foster student reasoning. Similar findings were reported by Rahmagandi et al. (2024), whose Flip Book development aligned with learner needs and was rated "very feasible" by eight validators, scoring 91.16% for presentation and 97.33% for content quality.

In the dissemination stage, the Flip Book was trialed with students to assess satisfaction levels, yielding an overall "very satisfied" rating ($3.25 < \bar{x} \le 4.00$). Students highlighted the ease of use, which enabled practical access to information amidst other academic commitments. The clarity of content and language facilitated rapid comprehension and

menu design for practicum activities. The visually appealing yet simple layout, supported by illustrative images, further motivated students to engage in independent learning. These results align with prior research, including Dinanti et al. (2024), who reported a 92.3% satisfaction rate with a digital Flip Book for Indonesian cake and pastry production; Maulina and Shofiyah (2021), who found that Flip Book–based e-modules offered interactive and engaging learning experiences that enhanced motivation and mastery; Ayuardini (2023), who highlighted the role of digital media in improving learning outcomes and supporting independent study; and Syifa et al. (2024), who documented high effectiveness (89.6%), efficiency (87.5%), practicality (91.6%), and implementation (90%) scores for Flip Book–based instruction.

Overall, the development of the *Snack Box* Flip Book, supported by evidence from this and previous studies, demonstrates its significant positive impact on student learning. However, its effectiveness depends on alignment with learner needs, adherence to established quality standards, and prior validation by expert reviewers.

CONCLUSION

The conclusions of this study are as follows: (1) The development of the Snack Box Flip Book was carried out using the 4-D model, which consists of the following stages: (a) Define, which includes identifying needs, student characteristics, and the learning environment; (b) Design, which involves determining the scope of the material, as well as designing the cover and content; (c) Develop, which includes production, revisions, and feasibility testing by subject matter and media experts; (d) Disseminate, which involves distributing the developed learning media through the SIPDA LMS at Unimed and collecting student satisfaction evaluations; (2) The feasibility test conducted by subject matter and media experts resulted in a score of 3.32, falling into the feasible category; (3) The student satisfaction assessment yielded a score of 3.44, indicating a high level of satisfaction. These results demonstrate that the Flip Book effectively meets students' needs for practical, engaging,

accessible, and motivating learning materials, and supports independent learning.

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