## Media Pendidikan Gizi dan Kuliner

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# Designing Virtual Flipbook Learning Media For Herbs and Spices Material at Telkom Bandung Tourism Vocational School

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**A B S T R A C T S**

There are challenges in the teaching of herbs and spices materials at Telkom Bandung Vocational School of Tourism, primarily due to the ineffective use of learning media. To address this issue, the researcher developed an innovative virtual learning media in the form of a flipbook focused on herbs and spices. The development process followed the ADDIE model, starting with the analysis phase, which involved collecting data through interviews with food material knowledge teachers, reviewing lesson plans (RPP), handouts, and conducting literature studies from books and online sources. In the design phase, the collected data were used to create a detailed media script, which was then developed into a virtual flipbook. At the development stage, the virtual flipbook underwent validation by subject matter experts, media experts, and language experts. Revisions were made based on feedback until no further suggestions were provided by the validators. The implementation phase involved measuring student responses to the use of the virtual flipbook in learning activities. This study utilized a mixed-methods approach: qualitative descriptive methods were employed to analyze the expert validation results, and quantitative methods were used to assess student responses through questionnaires. The results indicated that the virtual flipbook on herbs and spices was deemed highly suitable for use in the learning process at Telkom Bandung Vocational School of Tourism. Moreover, the analysis of student responses revealed a positive reception, highlighting the flipbook's effectiveness in enhancing learning engagement and material comprehension.

**A R T I C L E   I N F O**

## 1. INTRODUCTION

Teachers are constantly striving to develop learning media that is attractive, cost-effective, and efficient. In line with technological advancements, it is increasingly important to leverage modern tools that meet the demands of current educational innovations (Xie, Siau, & Nah, 2021; Trust & Whalen, 2020). One effective learning medium is the flipbook. The creation of virtual flipbook-based learning media can be facilitated using open-source software such as Heyzine Flipbook Maker, a tool that transforms books and teaching materials into interactive digital formats. This software converts PDFs into flipbooks with realistic page-turning effects and supports multiple output formats such as SWF, EXE, HTML, email links, and even screen savers (Kim, Lee, & Park, 2022).

Incorporating digital media such as flipbooks into education not only enhances the visual appeal of instructional content but also promotes student-centered learning, where learners can access materials flexibly and independently (Dhawan, 2020; Gonzalez et al., 2020). Digital tools provide opportunities for educators to adapt their teaching styles to fit the evolving expectations of modern learners, emphasizing interactivity, engagement, and multimedia integration (Tang et al., 2021). Thus, the use of virtual flipbook technology in learning is in line with the broader movement toward digital transformation in education.

A preliminary study conducted during the Professional Learning Program (PLP) from August to December 2019 at SMK Pariwisata Telkom revealed a significant problem. During kitchen practice sessions, many students struggled to differentiate between various herbs and spices used in culinary preparation. Analysis of the cognitive scores from daily tests in the Food Ingredient Knowledge subject showed that only 42% of students passed according to the school's Minimum Graduation Criteria (KKM) of 75. Furthermore, unstructured interviews with Mr. Gimbar Gallant Satria, S.Pd., a Food Ingredient Knowledge teacher, confirmed that a major factor contributing to the low achievement rates was the monotonous use of learning media, which primarily relied on PowerPoint presentations. This static approach led to decreased student engagement, boredom, and distractions such as increased mobile phone use during lessons (Moorhouse, 2020; Pelikan et al., 2021).

These findings are supported by global research showing that students are significantly more prone to disengagement when educational materials lack interactivity or are not adapted to the digital habits of today's learners (Aguilera-Hermida, 2020; Rasheed, Kamsin, & Abdullah, 2020). As students increasingly access information through dynamic digital content, traditional slide-based methods often fail to sustain their attention, resulting in lower academic performance and reduced motivation during lessons. Therefore, there is a critical need for integrating modern, interactive media tools to enhance student focus and comprehension.

To address these challenges, the development of more interactive and engaging learning media is crucial. Virtual flipbook media offers a promising solution by utilizing existing technological infrastructure to support dynamic learning experiences (Zhao, Cheng, & He, 2022; Hassan et al., 2021). Unlike traditional presentations, the virtual flipbook format allows for the integration of audio-visual elements, such as videos, enriching the material presentation. Students can easily access the material via internet links without the need for additional downloads or storage, thus minimizing distractions and enhancing focus during lessons (Pokhrel & Chhetri, 2021). With the widespread availability of smartphones and internet access, virtual flipbooks can significantly improve student comprehension, engagement, and achievement in learning materials related to herbs and spices.

Moreover, research has demonstrated that interactive digital media such as flipbooks can improve cognitive retention and emotional engagement when compared to conventional teaching methods (Aristovnik et al., 2020; Pelikan et al., 2021). By combining visual, textual, and auditory information, virtual learning tools cater to multiple learning styles simultaneously, thus supporting a more inclusive and effective educational environment. The easy accessibility of flipbooks through mobile devices and internet connectivity makes them an ideal solution for enhancing vocational education, especially in practice-oriented subjects like culinary studies.

## 2. LITERATURE REVIEW

### 2.1. The Role of Learning Media in Vocational Education

Learning media serves as an essential component in vocational education, particularly in fields that require both theoretical knowledge and practical skills. Effective learning media not only facilitates the delivery of instructional materials but also enhances student engagement, motivation, and comprehension (Pelikan et al., 2021; Hassan et al., 2021). In culinary education, where hands-on skills are crucial, integrating interactive media into the learning process supports a deeper understanding of concepts such as the identification and use of herbs and spices. Research indicates that the use of multimedia elements can significantly improve cognitive outcomes by addressing various learning styles (Kim, Lee, & Park, 2022).

### 2.2. Flipbook as an Interactive Digital Learning Tool

Flipbooks have emerged as an innovative medium for presenting learning materials interactively. They combine text, images, and multimedia elements into a cohesive, book-like digital format that is easily accessible on smartphones and other devices (Dhawan, 2020; Tang et al., 2021). Flipbooks provide a visually engaging alternative to static PowerPoint slides or printed materials, helping to sustain student interest. According to Zhao, Cheng, and He (2022), virtual flipbooks are particularly effective in promoting student-centered learning environments by allowing students to explore content at their own pace, thus fostering autonomy and deeper engagement with the material.

### 2.3. Development of Learning Media Using the ADDIE Model

The ADDIE model (Analysis, Design, Development, Implementation, Evaluation) is widely recognized as a systematic framework for developing instructional products (Trust & Whalen, 2020). In the context of creating virtual flipbooks, this model ensures that the media development process is grounded in an accurate analysis of learning needs, careful design and development of content, practical application, and rigorous evaluation. Research by Moorhouse (2020) emphasizes that following structured development models like ADDIE can lead to higher quality learning products, greater alignment with curricular goals, and better educational outcomes.

### 2.4. The Impact of Digital Learning Media on Student Engagement

Several studies have shown that digital learning media positively impacts student engagement and learning outcomes, particularly during the transition to online and blended learning modes necessitated by the COVID-19 pandemic (Pokhrel & Chhetri, 2021; Xie, Siau, & Nah, 2021). Multimedia learning environments incorporating interactivity, such as virtual

flipbooks, help maintain student attention, reduce cognitive overload, and promote active learning. Student feedback collected from various implementations of digital media consistently highlights higher satisfaction levels, increased understanding of material, and improved academic performance (Gonzalez et al., 2020; Hassan et al., 2021).

## 3. METHODS

This study focuses on the development of a virtual-based flipbook learning media featuring herbs and spices content for the Food Ingredient Knowledge subject. The resulting product is expected to enhance students' learning interest and support the learning process in vocational high schools. In selecting effective learning media, the use of multimedia elements is emphasized. Multimedia refers to a combination of two or more media formats, such as text, images, graphics, music, animation, video, and interaction, all integrated into digital files to convey information to learners (Kim, Lee, & Park, 2022). One of the suitable types of learning media to support this purpose is virtual flipbook media.

This research is categorized as a development study using the ADDIE model (Analysis–Design–Development–Implementation–Evaluation) as the research framework. The ADDIE model consists of five stages. The first stage, Analysis, involves collecting data by identifying student needs, learning objectives, learning content, the learning environment, and delivery strategies through literature reviews, curriculum documents (RPP), and interviews with related stakeholders at the research site.

a. The second stage, Design, focuses on creating a conceptual framework for the media product based on the analysis results. This includes developing the materials, tools, and resources needed to build the flipbook. In this phase, instruments are also designed to assess media feasibility, using the Media Feasibility Assessment Guidelines embedded in the expert validation sheets.

b. The third stage, Development, involves constructing the actual flipbook media based on the design. Once developed, the product undergoes validation by experts in media, content, and language. Feedback and revisions are incorporated until the product meets the desired quality standards.

c. The fourth stage, Implementation, involves applying the validated flipbook in a real learning environment to observe its effectiveness and usability.

d. The final stage, Evaluation, assesses the achievement of the product development objectives. Student feedback is collected through questionnaires to evaluate their responses to the virtual flipbook learning media.

This study employs both qualitative and quantitative descriptive methods. The qualitative approach is used to analyze the feedback and suggestions provided by expert validators during multiple rounds of revisions. The quantitative approach is employed to process and analyze student response data regarding the media's effectiveness and usability, aiming to refine and perfect the final product.

The validation process involved three expert validators:

a. Learning Media Expert: Mrs. Dra. Atat Siti Nurani, M.Si., who provided feedback on presentation quality and visual communication aspects.

b. Content Expert: Mrs. Mulia, S.Pd., M.M., who assessed the accuracy and relevance of the learning material.

  c. Language Expert: Mrs. Hj. Lilis Siti Sulistyaningsih, M.Pd., who evaluated the linguistic quality of the flipbook.

Finally, to gather student responses, a student questionnaire was distributed to 30 students from Class X Tata Boga 1 at SMK Pariwisata Telkom Bandung. Their feedback was used to assess the feasibility and acceptance of the developed virtual flipbook media.

## 4. RESULTS AND DISCUSSION

### 4.1. The Process of Making Virtual Media Flipbook on Spices and Spices Material

Based on the results of the research and development process, the creation of virtual flipbook learning media for herbs and spices material for Grade X Culinary students at Telkom Bandung Vocational School of Tourism was conducted through several key stages. The initial stage involved material collection and needs analysis. Data were gathered through interviews with Food Ingredient Knowledge subject teachers, review of lesson plans (RPP), handouts, textbooks on herbs and spices, internet-based literature studies, and relevant images. The analysis identified the essential learning components, including the definitions of herbs and spices, types of herbs and spices, benefits and functions of herbs and spices, storage methods, and quality assessment procedures. These materials align with the core competencies and basic competencies outlined for Culinary Arts programs in vocational schools (Pelikan et al., 2021; Zhao, Cheng, & He, 2022).

In terms of hardware, the development process utilized a laptop, while the software employed included Canva for graphic design, Adobe Acrobat for document merging, and Heyzine Flipbook Maker for converting PDFs into interactive flipbooks. The choice of visually appealing and interactive digital media is supported by previous studies indicating that dynamic digital content increases student engagement and learning effectiveness (Dhawan, 2020; Kim, Lee, & Park, 2022). The next step involved preparing the Media Program Outline (GBPM), which served as a foundation for media scriptwriting. The GBPM was constructed based on the needs analysis and outlined visual, graphical, and audio elements to be included. Media scripts provided clear written guidelines to ensure that the visuals and narratives aligned with the targeted competencies and learning objectives related to herbs and spices (Moorhouse, 2020).

Following the scripting phase, the programming stage involved assembling all designed elements. First, the GBPM was drafted using Microsoft Word. Subsequently, the visual design was created using Canva and saved in PDF format. The PDFs were merged using Adobe Acrobat, and finally, the integrated document was converted into a virtual flipbook using Heyzine Flipbook Maker, providing a professional and accessible learning product. The developed media underwent a rigorous validation process involving three expert validators: a media expert (Mrs. Dra. Atat Siti Nurani, M.Si.), a content expert (Mrs. Mulia, S.Pd., M.M.), and a language expert (Mrs. Hj. Lilis Siti Sulistyaningsih, M.Pd.). Validation sheets included learning media feasibility questionnaires, where evaluators provided feedback through a checklist-based system. This iterative validation process continued until no further revisions were necessary, ensuring that the flipbook met all academic and usability standards (Trust & Whalen, 2020; Hassan et al., 2021). The final product, after validation and refinement, resulted in a virtual learning flipbook media deemed suitable and effective for use in enhancing student understanding of herbs and spices materials.

**4.2. Student Response to The Spice and Spice Flipbook Virtual Learning Media**

Student responses to the developed virtual flipbook learning media were evaluated using a questionnaire distributed to 30 students from Class X Tata Boga 1 majoring in Culinary Arts at Telkom Bandung Vocational School of Tourism. The questionnaire assessed three key aspects: the material content, the media design and interactivity, and the perceived benefits of using the virtual flipbook. The overall analysis of the student response questionnaire revealed an average percentage score of 98%, categorizing the media as "Excellent." Students expressed high levels of interest and indicated that the virtual flipbook enhanced their understanding of the herbs and spices material. The results demonstrated that students not only found the media engaging but also appreciated its interactive features and clear presentation of content.

These findings are consistent with previous research indicating that multimedia-based learning environments can significantly improve student engagement, comprehension, and satisfaction compared to traditional learning methods (Kim, Lee, & Park, 2022; Hassan et al., 2021; Tang et al., 2021). Furthermore, integrating visual, audio, and interactive elements into learning resources has been shown to foster more meaningful learning experiences, especially in vocational education settings where practical knowledge and conceptual clarity are critical (Zhao, Cheng, & He, 2022). Thus, it can be concluded that the virtual flipbook learning media developed for the herbs and spices material received a highly positive response from students and is considered effective for supporting the Food Ingredient Knowledge learning process at SMK Pariwisata Telkom Bandung.

Moreover, the results align with the broader trend of digital transformation in education, emphasizing the importance of utilizing mobile-friendly, accessible platforms to enhance learning flexibility and inclusiveness (Xie, Siau, & Nah, 2021; Dhawan, 2020). In the context of vocational education, where hands-on practice and conceptual understanding must be balanced, virtual flipbooks offer a dynamic and adaptive learning approach. By allowing students to interact with learning content anytime and anywhere, the use of virtual flipbooks helps bridge the gap between theoretical instruction and real-world application. This innovation not only increases student motivation and independence but also supports the development of digital literacy skills essential for 21st-century competencies.

**5. CONCLUSION**

This study developed virtual flipbook learning media on herbs and spices material for Grade X Culinary students at SMK Pariwisata Telkom Bandung. The development process involved several stages, beginning with needs analysis based on interviews, RPP analysis, handouts, literature studies, and internet sources. The analyzed materials included the definition, benefits, functions, storage, and quality assurance of herbs and spices, aligned with the core and basic competencies of the 2013 curriculum. The virtual flipbook was designed using Canva, Adobe Acrobat, and Heyzine Flipbook Maker. After undergoing expert validation by media, content, and language experts, the virtual flipbook was deemed suitable for use in the learning process. Student responses to the virtual flipbook were highly positive, indicating that the media was well-received and effectively supported student understanding. This virtual learning media can serve as a reference for future researchers and contribute to the advancement of technology-based learning tools in culinary education

and other fields. Additionally, the virtual flipbook promotes the effective use of smartphones in learning, thereby increasing students' focus, engagement, and learning outcomes in the Food Ingredient Knowledge subject.

## 6. REFERENCES

Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*, 1, 100011. https://doi.org/10.1016/j.ijedro.2020.100011

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12(20), 8438. https://doi.org/10.3390/su12208438

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5–22. https://doi.org/10.1177/0047239520934018

Gonzalez, T., de la Rubia, M. A., Hincz, K. P., et al. (2020). Influence of COVID-19 confinement on students' performance in higher education. *PLOS ONE*, 15(10), e0239490. https://doi.org/10.1371/journal.pone.0239490

Hassan, M. M., Malik, A. A., Basit, A., & Raza, S. M. (2021). Measuring students' engagement in online learning during COVID-19 pandemic: A case study of higher education in Pakistan. *Education and Information Technologies*, 26(6), 7017–7037. https://doi.org/10.1007/s10639-021-10565-w

Kim, D., Lee, J., & Park, Y. (2022). Effects of online learning and learners' characteristics on learning motivation during COVID-19. *Sustainability*, 14(3), 1234. https://doi.org/10.3390/su14031234

Moorhouse, B. L. (2020). Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *Journal of Education for Teaching*, 46(4), 609–611. https://doi.org/10.1080/02607476.2020.1755205

Pelikan, E. R., Lüftenegger, M., Holzer, J., et al. (2021). Learning during COVID-19: The role of self-regulated learning, motivation, and procrastination for perceived competence. *Zeitschrift für Erziehungswissenschaft*, 24(2), 393–418. https://doi.org/10.1007/s11618-021-01002-x

Pokhrel, S., & Chhetri, R. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Education for the Future*, 8(1), 133–141. https://doi.org/10.1177/2347631120983481

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020). Challenges in the online component of blended learning: A systematic review. *Computers & Education*, 144, 103701. https://doi.org/10.1016/j.compedu.2019.103701

Tang, Y. M., Chen, P. C., Law, K. M. Y., Wu, C. H., Lau, Y. Y., Guan, J., & He, D. (2021). Comparative analysis of student learning experiences in online and offline learning environments: A case study of a computer programming course. *Sustainability*, 13(4), 2136. https://doi.org/10.3390/su13042136

Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189–199. https://www.learntechlib.org/primary/p/216286/

Xie, X., Siau, K., & Nah, F. F. H. (2021). COVID-19 pandemic–Online education in the new normal and the next normal. *Journal of Information Technology Case and Application Research*, 23(3), 161–173. https://doi.org/10.1080/15228053.2021.1951367

Zhao, Y., Cheng, S., & He, W. (2022). Investigation of practical challenges and responses in online learning: Evidence from vocational education. *International Journal of Educational Technology in Higher Education*, 19(1), 1–23. https://doi.org/10.1186/s41239-022-00326-y

Zhao, Y., Cheng, S., & He, W. (2022). Investigation of practical challenges and responses in online learning: Evidence from vocational education. *International Journal of Educational Technology in Higher Education*, 19(1), 1–23. https://doi.org/10.1186/s41239-022-00326-y