



STUDENT PERCEPTIONS ON THE USE OF FLIPBOOKS AS A LEARNING MEDIUM TO INCREASE FOOD SECURITY AWARENESS

Helmi Muzaki^{1*}
Universitas Negeri Malang¹

ARTICLE INFO

Article history:

Received: 04-06-2025

Accepted: 25-06-2025

Published: 13-07-2025

Keyword: student perceptions, flipbooks, medium, food security

ABSTRACT

This study aimed to determine students' perceptions of the use of flipbooks as a learning medium to increase food security awareness. Using a descriptive quantitative approach, data were collected through a questionnaire completed by 62 participants. The results showed that six key aspects ease of access, effectiveness, interest and motivation, food security awareness, involvement, and independence and confidence had an average score of 4.13, which is considered high. These findings indicate that flipbooks are an effective, interactive, and flexible medium for supporting the learning process and fostering student awareness of food security issues.

INTRODUCTION

The rapid development of information technology has brought significant changes in various aspects of life, including education. Technology now enables various innovations that facilitate the learning process, including the use of digital media. Flipbooks are an increasingly popular form of digital media. Flipbooks are interactive learning media available in a digital format, allowing material to be presented like a physical book but with the addition of engaging features such as animation, images, sound, and video. The main advantage of flipbooks is their ability to provide a more dynamic learning experience, where students not only read text but also interact with multimedia elements within them.

* Corresponding author.

E-mail addresses: helmi.muzaki.fs@um.ac.id (Helmi Muzaki)*.

ISSN: 2523-613X (Online) - ISCE: Journal of Innovative Studies on Character and Education is licensed under Creative Commons Attribution-ShareAlike 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>).

Flipbooks, with their more visual and interactive designs, can capture students' attention and engage them more fully in the learning process. These features can enrich students' learning experiences, making them more enjoyable and facilitating the understanding of complex material. For example, the use of animation and video can help students grasp difficult concepts more visually and concretely. Thus, flipbooks are expected to be an effective medium for increasing student engagement and interest in learning and supporting the optimal achievement of learning objectives (Heinich, 2002).

Food security is a global issue that is not only relevant internationally but also crucial at the national level, including in Indonesia. This issue is increasingly urgent for the younger generation to understand, given the growing challenges such as climate change (Hamid, 2021), environmental degradation (Islam, 2025), economic inequality (Tamasiga et al., 2023), and the increasing global population, which is driving increasing food demand. As the fourth most populous country in the world, Indonesia faces particular challenges in ensuring sufficient high-quality food availability for all its citizens.

Food security is not only about meeting food needs but also about the sustainability of natural resources and a food system that is fair, efficient, and accessible to all levels of society. In this regard, the Indonesian government has strived to raise public awareness of the importance of food security through various programs and policies. One such effort is the promotion of environmentally friendly agriculture based on reliable local food security. However, government efforts will be more effective if accompanied by a deeper understanding of the importance of this issue among younger generations.

Therefore, one way to achieve this is to utilize appropriate media to convey information about food security effectively, engagingly, and easily understood by students. The use of technology-based learning media, such as digital teaching materials, is an excellent alternative. By using interactive tools such as flipbooks, students are not only provided with theoretical information but are also able to see real-world applications of food security concepts, such as through videos, animations, and illustrations. Delivering material through this engaging medium can increase student engagement, motivating them to study and understand the topic of food security in a more in-depth way. Digital media provides opportunities for students to learn about food security theory and interact with various multimedia elements that can enrich their understanding, making initially difficult material more accessible.

Flipbook-based short story teaching materials are an innovation that offers a new approach to delivering learning materials, particularly those related to important topics such as food security. As a light and easily digestible form of literature, short stories have a unique

211 | ISCE: Journal of Innovative Studies on Character and Education

appeal for students. Engaging and meaningful stories can more easily influence their understanding of important issues, including global issues such as food security. When short stories are packaged in a flipbook format, this medium not only presents narrative text but also incorporates multimedia elements that make the learning process livelier and more enjoyable.

With flipbooks, short stories are not simply read; they can be complemented with interactive features that facilitate student comprehension. For example, animations depict situations or processes described in the short story, and videos provide more detailed explanations of food security concepts that may be difficult to explain with words alone. These elements provide a more immersive learning experience, where students can interact directly with the material rather than relying solely on textual understanding (McLuhan, 1994).

The interactivity offered by flipbooks plays a crucial role in increasing students' engagement. Multimedia features, such as animations and videos, can enhance students' understanding in a more engaging way. Numerous studies have shown that multimedia interaction in learning can help students better assimilate information, as they are not merely passive recipients but are actively engaged with the material presented (Mayer, 2021). For example, in material discussing sustainable agriculture, students can see live visualizations through videos or animations that illustrate the steps in the process, making it easier for them to understand and retain the information.

Furthermore, flipbooks allow students to access materials anytime and anywhere, further enhancing the flexibility of the learning process. This convenience allows students to review previously learned materials without the constraints of class time or conventional teaching methods. These features make flipbooks a highly effective medium for enhancing students' understanding of complex topics, such as food security, in a fun and accessible way.

An attractive and easy-to-understand visual design is one factor that can influence students' engagement in the learning process. If a flipbook's display is not only informative but also pleasing to the eye, students will be more interested in accessing and using it as a learning tool. A design that is too complex or unresponsive can make students feel overwhelmed and decrease their engagement levels. Therefore, this design aspect needs to be tested to ensure that the flipbook meets students' visual and functional needs (Clark & Mayer, 2016).

Furthermore, interactive features, such as animations, videos, and quizzes, can deepen students' understanding of food security. However, it is important to evaluate whether these features truly support the learning process or distract students from the

original objectives. Equally important, the ease of access to flipbooks on various devices affects students' comfort in accessing the material anytime and anywhere. Media that are only accessible on certain devices or require long loading times can disrupt students' learning. This ease of access must be considered to enable more flexible and effective study of the material. The use of innovative flipbooks is also expected to increase students' interest and motivation to learn about food security.

Research on flipbooks has been conducted by Bunari et al. (2024) who examined the influence of flipbook learning media, learning interest, and learning motivation on learning outcomes. Fajarianto et al. (2024) examined flipbook learning based on Knowledge Management System. Rabiman et al. (2024) examined the use of flipbooks in vocational education. Usman et al. Usman et al. (2024) examined flipbooks and e-learning as tools to improve English learning in elementary school teacher education. Based on previous research, no one has examined students' perceptions of the Use of Flipbooks as Learning Media to Increase Food Security Awareness.

This study aimed to describe students' perceptions of flipbook-based short story teaching materials in the context of food security learning. Food security is a significant global issue, and it is crucial for young people to understand its impact on their lives. Therefore, effective and engaging learning media are essential to ensure that students not only understand the concepts of food security but are also motivated to learn more.

METHOD

This study used a descriptive quantitative approach to explore students' perceptions of flipbook-based short story teaching materials in the context of learning about food security. The quantitative approach was chosen because this study focused on collecting data that could be measured numerically, which could then be analyzed and illustrated. The collected data provide insights into how students assess various aspects of the flipbook-based short story teaching materials used in their learning.

Data Collection Techniques

To measure student perceptions, researchers used a questionnaire containing questions related to various predesigned indicators. The questionnaire was distributed to 62 students after they completed studying food security material using flipbook-based short story teaching materials. This questionnaire was designed using a Likert scale, which measures respondents' level of agreement or disagreement with the statements posed, as explained by Creswell (2018) regarding quantitative data collection methods

that rely on measuring attitudes or perceptions using scales. The questionnaire indicators used in this study consisted of six indicators: ease of access to flipbooks, effectiveness of flipbooks in learning, interest and motivation in learning, increased awareness of the importance of food security, engagement and interactivity, and independence in learning and self-confidence.

Research Instrument

The main instrument in this study was a questionnaire developed by referring to indicators relevant to the research topic. The questionnaire contained six indicators that measured various aspects of students' perceptions of the flipbook-based short story teaching material. The following instruments were used in this study.

Table 1. Likert scale perception questionnaire

Code	Statements	SD	D	N	A	SA
x1	The visual design of the flipbook-based short story teaching materials is highly engaging and facilitates the learning process.					
x2	The interactive features of the flipbook, such as animation and navigation, increased my engagement during the lesson.					
x3	The interactive features of the flipbook, such as videos and navigation, increased my engagement during the lesson.					
x4	The short stories presented are relevant to contemporary food security issues and facilitate the application of concepts in real life.					
x5	Using flipbook-based short stories increased my interest in learning more about food security topics.					
x6	I feel more motivated to actively participate in learning using flipbook media compared to conventional methods.					
x7	Flipbooks are easy to access and use on various technological devices (computers, tablets, and smartphones).					
x8	Exploring the flipbook is fascinating and does not cause confusion during the learning process.					
x9	Learning using flipbook teaching materials effectively increased my awareness of the importance of food security for the community.					
x10	Through flipbook-based short stories, I am encouraged to apply the values of food security in my daily life.					
x11	Flipbooks provide a more interactive learning experience than conventional, open-ended materials.					
x12	This teaching material raised my awareness of the urgency of future food security.					

x13	The use of multimedia (images, animations, audio) in flipbooks significantly supports the learning process.					
x14	After studying this flipbook, I feel more confident discussing food security.					
x15	The time I spent studying using flipbooks was more effective and efficient than that spent using other methods.					
x16	I found this flipbook to be a fun and engaging learning experience for students.					
x17	Using flipbooks increased my motivation to learn in food security courses.					
x18	I can easily review the material and deepen my understanding through flipbooks at any time after class.					

SD (Strongly Disagree)= 1, D (Disagree)= 2, N (Neutral)= 3, A (Agree)= 4 and SA (Strongly Agree) =5

The respondents' answers were then grouped according to the indicators.

Table 2. Student perception indicators regarding the use of flipbooks as a learning medium to increase food security awareness.

Indicator	Statements Code
Ease of flipbook access	X1, X7, and X8
Effectiveness of flipbooks in learning	X10, X13, and X15
Interest and motivation to learn	X5, X6, X16 and X17
Awareness of the importance of food security	X4, X9, and X12
Engagement and interaction	X2, X3, and X11
Independence in learning and self-confidence	X14 and X18

Data Analysis Techniques

The data obtained analyzed using descriptive statistical techniques, such as calculating the average, to determine student perceptions for each proposed indicator. After obtaining the average perception score, the average score was categorized into the following interval classes.

Table 3. Criteria for Interpreting Student Response Questionnaire Scores

Score Range	Perception Category
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.40	Moderate
3.41 – 4.20	High
4.21 – 5.00	Very High

(Sugiyono, 2020)

RESULT AND DISCUSSIONS

In the results and discussion section, the researchers focused on six indicators to measure students' perceptions of the use of flipbooks as a learning medium to increase food security awareness among students. The six indicators were ease of flipbook access, effectiveness of flipbooks in learning, interest and motivation in learning, increased awareness of the importance of food security, involvement and interactivity, and independence in learning and self-confidence.

Ease of Flipbook Access

Ease of access to learning media is a key element in supporting flexible and sustainable learning processes. When students can access materials anytime and anywhere without technical barriers, they tend to be more prepared, comfortable, and independent in their learning. Flipbooks, as a digital medium, offer the advantage of accessibility through various devices, such as laptops, tablets, and smartphones. This aligns with the opinion of Heinich et al. (2002), who stated that easily accessible learning media will increase the efficiency of learning time and allow students to customize the learning process to suit their needs. The following are students' perceptions of how easily they accessed learning materials through flipbooks.

Table 4. Descriptive Statistics: Ease of Flipbook Access

	N	Minimum	Maximum	Mean	Std. Deviation
x1	62	3.00	5.00	4.21	.60428
x7	62	3.00	5.00	4.42	.52941
x8	62	2.00	5.00	4.05	.81838
Mean	62	2.67	5.00	4.23	.65069

The research results show that students have a very positive perception of the ease of access of flipbooks as a learning medium. The average score of 4.23 (high category) indicates that the majority of students found flipbooks easy to access and comfortable to use to support their learning process. This score indicates that the students did not encounter any obstacles when using flipbooks, whether in terms of opening, reading, or navigating the material.

Ease of access is a crucial aspect of digital learning. In today's fast-paced era, students need learning media that is not only visually appealing but also easily accessible at any time and place. Flipbooks provide a solution to this need with a responsive digital format that can be opened on various devices, including laptops, tablets, and smartphones. In this way, students can continue learning even when they are outside the classroom or far from campus facilities.

This finding is reinforced by research by Syafi'ah and Nugraha (2024), who stated that the use of digital flipbooks allows students to maximize technology in their learning. Flipbooks offer flexibility in study time, which is particularly helpful for students with busy schedules or limited access to printed materials. In some cases, flipbooks serve as a substitute for physical textbooks that are difficult to access, either because of cost or distribution limitations.

Without significant technical constraints, students can focus on understanding the material without being distracted by accessibility concerns. This undoubtedly has a positive impact on the overall learning effectiveness. Students are also more likely to review material if access is quick and simple, thereby strengthening their understanding on an ongoing basis.

Overall, these results confirm that the ease of access offered by flipbooks is not only valued by students for practical purposes but is also a key reason why this medium is considered effective, flexible, and relevant in modern learning contexts. Flipbooks successfully bridge the needs of students who are increasingly accustomed to independent and digital learning systems. According to West et al. (2006), digital media designed with high accessibility principles can accommodate various learning styles and technology preferences, thereby encouraging stronger engagement and motivation to learn.

Effectiveness of Flipbooks in Learning

The effectiveness of learning media is a crucial factor in determining the success of knowledge transfer to students. When the media can convey material clearly, engagingly, and easily, the learning process will be more optimal. Flipbooks, as interactive digital media, have great potential to enhance learning effectiveness because they combine text, visual, and multimedia elements. As explained by Mayer (2021), learning media that combine verbal and visual elements in a structured manner can strengthen the understanding and retention of information. In this context, the following section outlines how student perceptions indicate that the use of flipbooks significantly contributes to the effectiveness of their learning.

Table 5. Descriptive Statistics Effectiveness of Flipbooks in Learning

	N	Minimu m	Maximu m	Mean	Std. Deviation
x10	62	2.00	5.00	4.21	.72738
x13	62	2.00	5.00	4.32	.69599
x15	62	2.00	5.00	3.82	.85936
Mean	62	2.00	5.00	4.12	.76091

The results show that students had a very positive perception of the effectiveness of learning using flipbooks. The average score for learning effectiveness was 4.12, which falls into the high category, indicating that the majority of students felt that flipbooks were effective in supporting their learning process.

This research aligns with the findings of Nafiah et al. (2023), who showed that the use of digital-based flipbooks can increase student learning interest. The study used a single-group pretest-posttest experimental design and found that students learning interest increased significantly after using flipbooks as a learning medium.

Furthermore, Sari et al. (2024) support these findings, showing that the use of flipbook-based e-modules in elementary school science learning can improve student motivation, interaction with the material, and mastery of science concepts. This study analyzed various empirical studies from 2019 to 2023 and found that flipbook-based e-modules have the advantage of increasing learning effectiveness.

Furthermore, Hartley and Bendixen (2001) noted that interactive learning media, such as flipbooks, can improve student comprehension. They found that material presented through media that combine text, images, and interactivity is not only more engaging but also makes it easier for students to remember and understand the information learned. This concept supports the use of flipbooks as an effective medium for improving learning quality, as they provide a richer and more comprehensive experience than conventional learning methods.

Thus, the use of flipbooks as a learning medium has been proven effective in improving the quality of learning and student understanding of the material presented, as well as increasing their engagement in the learning process.

Interest and Motivation to Learn

Interest and motivation are key factors in successful learning. When students feel interested and motivated, they tend to be more active, focused, and persistent in the learning process. As Deci and Ryan (2000) state, intrinsic motivation, which stems from curiosity and

interest in the material, encourages deeper and more sustained learning. The following describes students' perceptions of how the use of flipbooks can stimulate their interest and motivation during learning.

Table 6. Descriptive Statistics the Use of Flipbooks Can Stimulate Interest and Motivation to Learn

	N	Minimu m	Maximu m	Mean	Std. Deviation
x5	62	1.00	5.00	4.03	.86778
x6	62	2.00	5.00	3.92	.81579
x16	62	2.00	5.00	3.89	.81190
x17	62	2.00	5.00	3.97	.70053
Mean	62	1.75	5.00	3.95	.7990

The overall average score of 3.95 indicates that students felt quite motivated to use flipbooks as a learning medium. This figure indicates that students were not only interested in the content but also felt compelled to continue actively participating in the learning process because of the interactive and engaging presentation format. Flipbooks, with their dynamic visuals and easy navigation, create an engaging and immersive learning experience.

Learning motivation is a key factor in successful learning. When students feel motivated, they demonstrate greater effort, are more consistent in following the material, and persist more in completing academic assignments. Schunk (2020) stated that interactive and engaging media, such as flipbooks, can foster students' intrinsic motivation, which is the drive to learn that stems from within, driven by curiosity or personal enjoyment of the material. With their engaging visuals, easily accessible content, and flexible learning flow, flipbooks are a powerful medium that meets the needs of today's students, who are increasingly accustomed to digital approaches.

Similarly, Dörnyei and Ushioda (2021) emphasized that motivation can grow when students feel engaged in meaningful and enjoyable learning processes. Media such as flipbooks, which combine text, images, and other interactive elements, can increase students' sense of ownership of the learning process. They feel that learning is no longer a burden but rather an enjoyable activity.

Furthermore, when students' motivation to learn is high, it impacts learning outcomes. Motivated students tend to seek further information, engage in more active discussions, and absorb material more effectively. In the context of food security, this high

motivation is crucial because it requires a strong conceptual understanding and critical awareness. In this case, flipbooks serve not only as a medium for conveying information but also as a tool capable of fostering a passion for learning.

Thus, the results of this study indicate that flipbooks contribute significantly to increasing students' interest and motivation to learn. This medium has been proven to provide a more enjoyable learning experience and is relevant to the needs of the current digital generation.

Raising Awareness of the Importance of Food Security

Flipbooks, as a digital teaching medium, offer an engaging and interactive way to convey information related to food issues that is easier for students to understand. The following are the students' perceptions of the use of flipbooks to raise awareness of the importance of food security.

Table 7. Descriptive Statistics Student Perceptions of the Use of Flipbooks to Raise Awareness of the Importance of Food Security

	N	Minimu m	Maximu m	Mean	Std. Deviation
x4	62	2.00	5.00	4.35	.60318
x9	62	2.00	5.00	4.23	.71102
x12	62	2.00	5.00	4.31	.66748
Mean	62	2.00	5.00	4.30	.66056

The overall mean score of 4.30 indicates that the majority of students felt that flipbooks as a learning medium could effectively raise their awareness of food security's importance. This score indicates that students see the tangible benefits of flipbooks in communicating important information related to food issues relevant to their lives.

This finding aligns with the research by Emilia et al. (2024), who stated that the use of interactive flipbooks can improve students' nutritional knowledge and skills in planning balanced menus using local food ingredients. This study shows that flipbooks are effective in conveying information and increasing student participation and engagement in learning. Furthermore, flipbooks, as a technology-based learning medium, can help raise awareness of food security issues in an engaging and interactive way. According to the FAO (2011), the use of engaging media can increase the effectiveness of communication in conveying important messages related to food security to the public.

Thus, flipbooks have proven to be a highly effective tool for raising students' awareness of the importance of food security, not only educating them but also sparking their interest in social and global issues.

Engagement and Interaction

Engagement and interactivity are two important elements in creating meaningful learning experiences. Visual and interactive learning media, such as flipbooks, can attract students' attention and encourage them to actively participate in the learning process. The following are student perceptions of flipbooks that can increase engagement and interaction.

Table 8. Descriptive Statistics Increase Engagement and Interaction

	N	Minimu m	Maximu m	Mean	Std. Deviation
x2	62	2.00	5.00	4.26	.62556
x3	62	2.00	5.00	4.23	.68758
x11	62	2.00	5.00	3.98	.85874
Mean	62	2.00	5.00	4.16	.72396

The overall average score of 4.16 indicates a high level of student engagement and interactivity when flipbooks were used as a learning medium. This figure indicates that students do not simply passively access and read the material but are actively engaged throughout the learning process. Flipbooks, with their intuitive navigation features, engaging visual design, and the possibility of incorporating interactive media such as animations or additional links, make students feel more connected to the material being studied than traditional textbooks.

In modern learning, student engagement is a crucial indicator for assessing the success of the method or media used to teach. Students who are cognitively and affectively active in the learning process tend to demonstrate a deeper understanding of the subject matter. Jonassen and Rohrer Murphy (1999) emphasized that interactive media can foster active student engagement, which ultimately helps them understand and retain information better. This contrasts with conventional learning media, which tend to make students passive information recipients.

Laurillard (2012) also stated that interactive learning media can stimulate more complex cognitive processes, such as critical, analytical, and reflective thinking. When students are given the opportunity to interact directly with the content, for example, by clicking, selecting, or exploring links in a flipbook, they are more motivated to think actively

about the material. This process not only improves comprehension but also makes learning a more personalized and meaningful experience for students.

Flipbooks, as a digital medium, perfectly suit the characteristics of the current generation of students, who are familiar with technology and are more responsive to visual and interactive media. Features such as page flips that resemble real books, zoom capabilities, and media integration make students feel more comfortable and enthusiastic about learning in a digital environment. These advantages allow flipbooks to create a learning environment that is not monotonous, thus increasing student participation.

Therefore, it can be concluded that flipbooks play a crucial role in creating an interactive and participatory learning experience. This medium provides opportunities for students to become not only readers but also active explorers of the material. This increased interactivity ultimately strengthens student engagement in learning and improves the overall effectiveness of the learning process.

Independence in learning and self-confidence

Learning media such as flipbooks, which can be accessed flexibly, allow students to learn at their own pace and according to their needs, thus supporting the development of independence among students. Furthermore, making it easier to understand the material through engaging visual displays can increase students' confidence when discussing or expressing their opinions.

Table 9. Descriptive Statistics Learning Independence and Self-Confidence

	N	Minimum	Maximum	Mean	Std. Deviation
x14	62	2.00	5.00	4.08	.70823
x18	62	3.00	5.00	4.23	.58448
Mean	62	2.50	5.00	4.15	.64635

The results show that students have very positive perceptions of learning independence and confidence in discussions when using flipbooks as a learning medium. The average score obtained was 4.15, which is in the high category, indicating that the majority of students felt more independent and confident in learning and participating in discussions involving Flipbook material.

These results align with the findings of Zimmerman (2002), who stated that learning media that support independent learning, such as flipbooks, can increase student motivation and engagement. Zimmerman explains that students who feel more independent in their

learning tend to have greater control over their learning process, leading to improved academic achievement. Furthermore, Bandura (2012) revealed in his theory of self-efficacy that increased student confidence in the learning context can occur when they feel more engaged and competent in the material being studied. Media that facilitate discussion and interaction, such as flipbooks, can strengthen students' confidence in sharing and expressing their opinions.

Based on the analysis of the six aspects evaluated in this study—ease of access to flipbooks, effectiveness of flipbooks in learning, interest and motivation in learning, increased awareness of the importance of food security, involvement and interactivity, and independence in learning and self-confidence—the average score was 4.13. This score places students' perceptions of the use of flipbooks as a learning medium in the high category.

CONCLUSIONS

Students had a high perception of flipbooks as a learning medium to raise awareness of food security. With an overall average score of 4.13, students felt that flipbooks were not only easy to access and enjoyable to use, but also effective in conveying relevant learning material, particularly on important issues such as food security. Flipbooks provide a more flexible, engaging, and interactive learning experience. Students experienced ease of access to the material, increased interest and motivation to learn, and encouragement to be more involved and confident in the discussions. Furthermore, flipbooks successfully raised students' awareness of the importance of food security, a crucial issue today. These medium encouraged students not only to understand the material but also to foster concern for broader social issues.

The primary contribution of this study is that it demonstrates that digital-based learning media, such as flipbooks, can be an effective educational tool for fostering conceptual understanding and social awareness in students. These results strengthen the position of flipbooks as a relevant, modern learning alternative for the digital learner generation.

However, this study was limited to one group of students. Therefore, future researchers should expand the sample size to include students from various study programs or institutions to examine the diversity of perceptions. Furthermore, it would be more enriching to conduct long-term research to determine the impact of flipbooks on changes in students' attitudes or concrete actions regarding food security beyond the classroom.

REFERÉNCES

- Bandura, A. (2012). *Self-efficacy: The exercise of control* (12. print). Freeman.
- Clark, R. C., & Mayer, R. E. (Eds.). (2016). *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning* (1st ed.). Wiley.
<https://doi.org/10.1002/9781119239086>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth edition). 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
- Dörnyei, Z., & Ushioda, E. (2021). *Teaching and researching motivation* (Third edition). Routledge.
- Emilia, E., Pratiwi, C., & Haryana, N. R. (2024). The Effectiveness of an Interactive Flipbook on Nutrition Knowledge in Mandailing Culinary on Students Ability to Plan a Balanced Menu Using Local Foods Ingredients. *Journal of Ecohumanism*, 3(6), 898–909.
<https://doi.org/10.62754/joe.v3i6.4060>
- Fajarianto, O., Setiyowati, A. J., Fadhli, M., Adi, E. P., Prastiawan, A., Hasanah, W., Aqillah Nur Farikh, N. I., & Ismail, A. (2024). Development of a Flipbook Based on a Knowledge Management System to Improve the Integrity Character of Education Personnel in Tertiary Institutions. 2024 10th International Conference on Education and Technology (ICET), 32–35. <https://doi.org/10.1109/icet64717.2024.10778452>
- Food and Agriculture Organization of the United Nations (Ed.). (2011). *Food security: Communications toolkit*. Food and Agriculture Organization of the United Nations.
- Hamid, E. B. (2021). *Climate change–food security nexus in Burkina Faso*. CABI Reviews.
<https://doi.org/10.1079/pavsnnr202116009>
- Hartley, K., & Bendixen, L. D. (2001). Educational Research in the Internet Age: Examining the Role of Individual Characteristics. *Educational Researcher*, 30(9), 22–26.
<https://doi.org/10.3102/0013189x030009022>

- Heinich, R. (Ed.). (2002). *Instructional media and technologies for learning* (7. ed). Merrill Prentice-Hall.
- Islam, S. (2025). Agriculture, food security, and sustainability: A review. *Exploration of Foods and Foodomics*. <https://doi.org/10.37349/eff.2025.101082>
- Jonassen, D. H., & Rohrer-Murphy, L. (1999). Activity theory as a framework for designing constructivist learning environments. *Educational Technology Research and Development*, 47(1), 61–79. <https://doi.org/10.1007/BF02299477>
- Laurillard, D. (2012). *Teaching as a design science: Building pedagogical patterns for learning and technology*. Routledge.
- Mayer, R. E. (2021). *Multimedia learning* (Third edition). Cambridge University Press. <https://doi.org/10.1017/9781316941355>
- McLuhan, M. (1994). *Understanding media: The extensions of man* (1st MIT Press ed). MIT Press.
- Nafiah, N., Ghufroon, 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 Educational Technology: Current Issues*, 15(4), Article 4. <https://doi.org/10.18844/wjet.v15i4.7833>
- Rabiman, R., Oksandi, F., & Khaharsyah, A. (2024). Learning technology using flipping book in vocational education: ADDIE model. *AIP Conference Proceedings*, 3145, 030017. <https://doi.org/10.1063/5.0214392>
- Sari, I. P., 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), Article 6. <https://doi.org/10.46245/ijorer.v5i6.615>
- Schunk, D. H. (2020). *Learning theories: An educational perspective* (Eighth edition). Pearson.
- Sugiyono. (2020). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.

- Syafi'ah, R., & Nugraha, A. W. (2024). Pengembangan Modul Flipbook Digital untuk Mahasiswa S1 Pendidikan IPA. *EDUPROXIMA (JURNAL ILMIAH PENDIDIKAN IPA)*, 6(1), Article 1. <https://doi.org/10.29100/.v6i1.5001>
- Tamasiga, P., Onyeaka, H., Akinsemolu, A., & Bakwena, M. (2023). The Inter-Relationship between Climate Change, Inequality, Poverty and Food Security in Africa: A Bibliometric Review and Content Analysis Approach. *Sustainability*, 15(7), 5628. <https://doi.org/10.3390/su15075628>
- Usman, H., Lestari, I., Siregar, Y. E. Y., Rafiq, S. R., & SENTRYO, I. (2024). Flipbook and e-learning for teaching English to elementary school teacher education students. *Studies in English Language and Education*, 11(2), 919–935. <https://doi.org/10.24815/siele.v11i2.35476>
- 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