



Development of Nutrition Education Media in the Form of Booklets on the Importance of Breakfast for Junior High School Students

Widi Nur Aisyah¹, Luluk Ria Rakhma²

Universitas Muhammadiyah, Surakarta, Indonesia

Email: widiaisyah6@gmail.com, lulukrakhma@ums.ac.id

ABSTRACT

Keywords:

Educational Media;
Booklet

Educational media has an important role in students' learning process. The number of student score results has decreased, indicating that students' understanding of the material is relatively low. Media that feels appropriate and in accordance with current conditions is booklet learning media. The purpose of this study was to analyze the understanding of junior high school students using booklet learning media.

This research uses Research and Development research procedures (research and development). The analysis of this study is a questionnaire on the feasibility of educational media through booklets. The questionnaires tested the validity of media experts and material experts and student learning outcomes with the existence of learning media through booklets.

Corresponden Author: Luluk Ria Rakhma

Email: lulukrakhma@ums.ac.id

Artikel dengan akses terbuka dibawah lisensi



Introduction

Advances in science and technology, especially information technology, significantly affect the preparation and implementation of learning strategies. Through these advancements, teachers can use various media according to their needs and learning objectives (Hartini & Zaini Imam, 2013). The development of technology today influences the world of education, especially in the learning media used in the learning process. Learning media is a means that allows the realization of a direct relationship between the work of a subject developer and students (Melinda et al., 2010)

According to Rifaldi et al. (2017), an electronic book is a digital version of a book that generally consists of a collection of papers containing text or images. The booklet itself makes the text and images in information both in plain text format and pdf.

The advantages of booklets can be learned at any time because the design is in the form of a book, can be learned independently by students, messages or information are relatively more than posters, attractive booklet designs make students interested in reading them (Gemilang & Christiana, 2018)

Knowledge is the result of human sensing, or the result of knowing a person about objects through the senses he has (eyes, nose, ears, and some of them). The intensity of

perception of objects greatly influences the sensing time to produce knowledge. Most of a person's knowledge is acquired through the sense of hearing (ears) and the sense of sight (eyes) (Soekidjo Notoatmodjo, 2018). Breakfast knowledge is everything that someone knows from the results through senses about what breakfast is like, the benefits of breakfast, the consequences of not breakfast, the type of breakfast composition according to the contents of my plate, and examples of breakfast menus.

Attitudes are actions based on beliefs and norms that exist in society, usually religious norms. However, human actions usually depend on the problem based on their respective beliefs (Suharyat, 2009). Attitude is a behavioral tendency to do things in specific ways, methods, techniques, and patterns toward the surrounding world, both in the form of certain people and objects (Arifin, 2016).

Behavior is a set of actions or actions of a person responding to something and then making a habit because of the value believed. Human behavior is essentially the actions or activities of humans, both observed and unobservable by human interaction with their environment, which manifests in the form of knowledge, attitudes, and actions (Triwibowo et al., 2015)

Nutritional status measures a person's body condition, which can be seen from the food consumed and the use of substances in the body. It is divided into several categories, namely undernourished status, regular nutrition, and overnutrition (Kartini et al., 2019). Food intake is very influential on a person's nutritional status.

According to Dr. Leane, M.Sc, a nutritionist revealed that breakfast, as the first meal, which is then relied on as an energy reserve for the continuity of children's activities, also protects the body against the adverse effects of empty stomach conditions for hours. The stomach's emptiness can cause blood sugar levels in the body to drop dramatically; this results in the supply of glucose energy for the brain being disrupted, so the cognition ability weakens.

A good breakfast must contain lots of carbohydrates because it will stimulate glucose and micronutrients in the brain that can produce energy; it can also spur the brain to help focus the mind on learning and facilitating the absorption of lessons. Almost 50% of teenagers, especially late teens, do not eat breakfast. Other studies also prove that many teenagers (89%) still believe breakfast is essential. Those who eat breakfast regularly are only 60%. Young women instead skip two meals and prefer snacks (Mawarni, 2018). Breakfast habits greatly influence a person's intake in the morning.

The results of data analysis of Basic Health Research (Riskesdas) in 2010 showed there are still many children who are not accustomed to a healthy breakfast, namely around 35,000 school-age children (26.1%) who only eat breakfast with drinking water and 44.6% energy intake from breakfast less than 15% RDA of energy. Research studies (Dwi, 2013) prove that 16.9%-59% of school children, adolescents, and adults in Indonesia do not eat breakfast. Specifically for school-age children, 44.6% of school children who eat breakfast have low-quality breakfast nutrition. Based on (Riskesdas, 2018), 26.1% of school-age children and adolescents do not eat breakfast. Schoolchildren

only consume drinks at breakfast, 26% consume water, milk, or tea, and most consume breakfast with low quality.

Therefore, the author was motivated to develop educational media titled "Development of Nutrition Education Media in the Form of Booklets on the Importance of Breakfast for Junior High School Students." This study is essential to examining breakfast habits in school-age adolescents, studying nutritional knowledge, breakfast concepts, and breakfast habits, assessing breakfast quality in adolescents, analyzing the relationship of family characteristics with breakfast habits, and analyzing nutritional knowledge with breakfast quality.

Research Methods

The research used is the Research and Development (RnD) method, which produces products in the form of booklet media to increase knowledge of the importance of breakfast for junior high school students. The model used in this research and development uses the ADDIE design model (Analysis, Design, Development, Implementation, Evaluation). This ADDIE development model first appeared in 1975. (Setiawan et al., 2021) states that the ADDIE model is an approach that emphasizes analysis related to how each component interacts and coordinates with each other according to the existing phases. The population used in this study is students of SMP Al-Islam 1 Surakarta for the 2024 academic year, with a sample of 50 students. Researchers determine samples with a simple random sampling technique, and the number is determined based on the calculation results of *the Lemeshow formula*. Data collection techniques in product trials using questionnaires or questionnaires. The data analysis technique used in this study is a quantitative analysis technique using average calculation techniques. Analysis of this research data using the SPSS application.

Results and Discussion

Media Development

Tabel 1 Media Development

No	Development Procedure	Event Name
1	Analysis Phase	Needs analysis
2	Design Phase	Booklet-based learning media planning
3	Development Phase	Assessment of subject matter experts and media experts and small class goals
4	Implementation Phase	Trial on large class students of SMP Al-Islam 1 Surakarta
5	Evaluation Phase	Evaluate the stages that have been carried out previously

Development Results

This product development research is adapted from the steps of the ADDIE development model developed by Dick and Carry (1996):

1. Analysis: School students first need nutrition education about the importance of booklet-based breakfast to make it easy for students to remember and store. For this reason, researchers offer nutrition education to junior high school students. Booklet media was chosen because the media displays attractive visual images and can be accepted by junior high school students by containing good information about breakfast. So, junior high school students easily apply the habit of eating breakfast before school. It is hoped that with the booklet media, students can learn with focus during class because they have consumed breakfast, so there is no distraction from feeling hungry.
2. Design: This planning stage aims to determine media specifications based on information that has been obtained from the results of the needs analysis, which can be seen as follows:
 - a. Scenario Design

Tabel 2 Media Scenario Design

No.	Topic	Narasi	Yard	Illustrative image
1.	Cover	Title	1	Schoolchildren are having breakfast.
2.	Content	<ul style="list-style-type: none"> - Breakfast Definition - Benefits of breakfast - The effect of breakfast on nutritional status - Breakfast Habits - Breakfast contribution amount - Negative effects of leaving breakfast - Criteria for a good breakfast - Factors affecting children not eating breakfast 	2 – 16	Examples of practical breakfast are parents working, currency, children overeating, and children waking up late.
3.	Closingan	<ul style="list-style-type: none"> - Breakfast time <p style="text-align: center;">Slogan</p>	17	

- b. Determination of Material Content
The material published in the media includes an understanding of breakfast, its benefits, its influence on nutritional status, breakfast habits, the amount of breakfast contribution, the adverse effects of leaving breakfast, good breakfast criteria, indicators that affect children not having breakfast, breakfast time, practical breakfast examples, and slogans.
3. Development:
 - a. This development stage is carried out after the learning media based on print media, this educational booklet has been completed. This media is created based on the design of the material scenario set and the media format that has been compiled.
 - b. Media Validation: After the development stage, the next stage is media validation. Validators assess through questionnaires and provide five alternative answers that have been provided.

Media Credentials

1. Expert Validation Test Results Data

Table 3 Material Expert Validation Test Data

Indicator	Validator			Average	Information	CVR
	1	2	3			
The relevance of breakfast material in accordance with balanced nutrition guidelines	4	5	4	4,6	Verry Decent	1,00
Material relevance of the Regulation of the Minister of Health of the Republic of Indonesia no. 41 2014 concerning Getting Used to Breakfast	4	5	4	4,6	Verry Decent	1,00
The material relevance of the benefits of breakfast in accordance with Permenkes RI no. 41 of 2014 concerning Guidelines for Balanced Nutrition	4	5	3	4	Verry Decent	1,00
The relevance of the negative effects of leaving breakfast	3	5	3	3,6	Decent	1,00
The relevance of the material Fill My Plate	3	5	3	3,6	Decent	1,00
Material relevance of factors affecting not eating breakfast	3	3	3	3	Decent	1,00
The relevance of recommended breakfast time	4	5	2	3,6	Decent	0,33
Punctuation writing on the media is correct	3	3	3	3	Decent	1,00

The use of the term in the media is appropriate	2	4	3	3	Decent	0,33
Sentences contained in the media are clear and understandable	3	4	3	3,3	Decent	1,00
Total				3,63	Decent	$\sum CVR = 10$

Score: 1-2 = Inefficient, 3-5 = Efficient

The CVR value of each question item:

$$CVR = ((Ne - N/2) / (N/2))$$

Table 4 CVR & CVI Calculation Results

Indicator	Ne	CVR	CVI
Item 1	3	1,00	1,00
Item 2	3	1,00	1,00
Item 3	3	1,00	1,00
Item 4	3	1,00	1,00
Item 5	3	1,00	1,00
Item 6	3	1,00	1,00
Item 7	2	0,33	0,67
Item 8	3	1,00	1,00
Item 9	2	0,33	0,67
Item 10	3	1,00	1,00

The overall material expert validation test results reached an average score of 3.63 with the category "Decent." The CVR score obtained on each question is 1.00, but indicators 7 and 9 score 0.33 with a total CVR of 10. Furthermore, the calculation of the results of the CVI value is obtained with a CVI value of 1, which is included in the very appropriate category, indicators 7 and 9 with a value of 0.67, including the very appropriate category. So, it can be concluded that the material's content in this booklet is "Feasible" and can be used as a nutritional education medium about the importance of breakfast for junior high school students.

The results of media expert validation can be seen in Table 4:

Table 5 Media Expert Validation Test Data

Indicator	Validator			Average	Information
	1	2	3		
The quality of learning media has met the criteria for learning media	4	4	3	3,6	Decent
The design can attract the attention of students	4	5	4	4,3	Verry Decent
General display of engaging learning media	4	5	4	4,3	Verry Decent

Compatibility of the display with the background	4	4	4	4	Decent
Interesting colour combinations	4	4	4	4	Decent
Precise selection of colours in the image to make it clear	4	4	4	4	Decent
Accuracy of font size selection	3	5	4	4	Decent
Compatibility of image and animation settings	4	4	4	4	Decent
The suitability of the presentation of the image with the material discussed	4	4	4	4	Decent
Illustrations are easy to understand and fit everyday life	5	4	5	4,6	Verry Decent
Total				4,08	Verry Decent

Literature studies show that animation as a technology-based learning medium can increase student learning motivation (Alannasir, 2016). Animation has a strong visual appeal, arousing students' imagination and creativity. With the proper use of animation, complex or abstract learning material can be delivered in a way that is easier for students to understand. Animation can also present information interactively, allowing students to actively participate in the learning process (Yuliansah, 2019). The validation test results from the three media experts overall received an average score of 4.08 in the category "Very Decent." So, it can be concluded that this electronic book-based nutrition education media can be used as informative media related to the importance of breakfast for students.

The results of goal validation are shown in table 6 below:

Tabel 6 Goal Validation Test Data

Indicator	Validator			Average	Information
	1	2	3		
Learning media can be operated easily	4	4	4	4	Decent
A simple way of delivering material	4	5	5	4,6	Verry Decent
I gained more knowledge through education in this book	5	5	4	4,6	Verry Decent
The Electronic Book's display is attractive.	4	3	5	4	Decent
This learning media was able to attract my attention to more easily understand health material	5	4	5	4,6	Verry Decent

Text-animated images in Electronic Book media are displayed	3	4	4	3,6	Decent
The delivery of material like this increases the motivation for the breakfast routine	4	3	4	3,6	Decent
The layout of the information contained in the Electronic Book media is visible	3	5	4	4	Decent
The material presented is easy to understand	5	5	5	5	Verry Decent
Overall, I am satisfied with this Electronic Book media	5	5	4	4,6	Verry Decent
Total				4,26	Verry Decent

The validation test results of the three targets get an average score of 5 with the category "Very feasible." So it can be concluded that the educational media of this *booklet* is "Very feasible" to be used as a nutrition education media about the importance of breakfast for junior high school students because it has met the target aspects of small groups. According to (Aprilia et al., 2022), engaging, entertaining, and relevant animations can arouse students' interest in learning. This aligns with research (Iqbal et al., 2023), which states that booklet media can improve children's nutritional knowledge. With educational media that has been designed using attractive animations, it is hoped that the target will more easily understand the importance of breakfast.

The results of the overall validation test of material experts, media experts, and small group targets can be seen in Table 7:

Table 7 Media Test Results Data

Testing	Average	Category	CVI
Material Validation Test	3,63	Decent	1
Media Validation Test	4,08	Verry Decent	-
Goal Validation Test	4,26	Verry Decent	-

Table 7 shows that nutrition education media in booklets have an average result of material validation tests of 3.63, classified as feasible categories. The results of the media validation test showed an average score of 4.08, which is classified as very decent. The results of the target validation test get an average value of 4.26, which is classified as very feasible, so it can be declared very feasible for the target user. Validation tests using CVI from material experts have values that fall into the category of very appropriate. Based on the data obtained, it can be concluded that booklet educational media about the importance of breakfast for junior high school students is feasible and suitable for nutrition education.

Knowledge Before and After Nutrition Education

Table 8 Distribution of respondents by level of knowledge

Knowledge Categories	Before		After	
	n	%	n	%
Low	6	12	2	4
Keep	38	76	21	42
Good	6	12	27	54
Total	50	100	50	100

The categorization results showed that before the intervention, the level of knowledge was low at 12%, medium at 76%, and the level of knowledge was good at 12%. After the intervention in the form of nutrition education counselling assisted by booklet media, students were measured again by being given the same questionnaire as before as a measure of knowledge and to determine whether or not there were changes before and after the intervention. The post-test results showed that students' knowledge increased with low category results of 4%, medium 42%, and good 54%.

The questions used in the knowledge questionnaire refer to the importance of breakfast. The highest percentage of correct answers before breakfast counseling was 98% about understanding breakfast, the right time to carry out breakfast, and ten messages of balanced nutrition. The lowest percentage of correct answers before breakfast counseling prevented one of the metabolic disorders by 8% and the loss of leaving breakfast by 25%.

The percentage of correct answers after intervention in counseling with booklet media showed that all questions improved. The highest percentage of correct questions about the meaning of breakfast rose to 100%, and the right time to perform breakfast also rose to 100%. The question has a high percentage possible because respondents quickly understood the material, read the booklet, and listened to the counselling delivered. For the percentage of pretest answers that were previously the lowest, namely about breakfast, which can prevent one of the metabolic disorders after counselling, the figure rose from 8% to 78%, meaning an increase in knowledge by 70%. Based on the answer choices chosen by respondents, the average respondent is fooled by dizziness, fireflies, and malnutrition if they do not have breakfast. Breakfast material can prevent metabolic disorders, which are already listed in the media booklet so that respondents can get information from the media booklet.

The percentage that had a low increase in the question of the benefits of breakfast increased by 2% from 96% to 98%. This low increase is possible because the available answers still deceive some, so they have not reached a maximum percentage of 100%.

Things that can influence respondents to answer incorrectly include the delivery of material lacking emphasis from the source/author, less explicit material, and the material in the booklet being explained unevenly. Apart from the resource person's factors, respondents' conditions can affect post-test work. These include their lack of

concentration when answering questions, readiness in post-test work, and paying less attention when delivering material.

The percentage of answers before and after counseling has increased. The increase also illustrates the success of counseling with booklet media. Using booklet media by researchers helps respondents obtain information that has not been known before. Therefore, respondents who cannot answer questions before being given counseling can answer these questions correctly after counseling is given.

Media Application Results

Table 9 Results Average acceptability

Panning	N	SD	Average Rate	<i>p-value</i>
Before the study	50	9,9	75	0,000
After the study	50	9,7	85	
Difference			10	

Based on the results of the media application, the average pretest score was 75, and the *average post-test score* was 85. Students were not given any information regarding the importance of breakfast before taking the questionnaire. The questionnaire explains instructions on how to answer the question. Then, nutrition education was given while students read the media booklet for approximately 10 minutes. A question-and-answer session was carried out, and the next step was continued with questionnaires to see changes in student knowledge. Students are given 10 minutes to complete all the questions in the questionnaire, totaling 10 items, and the results increase students' knowledge. Based on the data, it can be concluded that nutrition education media, in the form of booklets, affects junior high school students because of an increase in knowledge by 10%. These results align with research (Permadi et al., 2021),, proving that using booklet media in health education for junior high school students can increase student knowledge.

In Table 9, it can be seen that there is a significant difference between *pre-test* results with *nutrition education post-test* with the Paired T-Test test obtained results with *p-values* of $0.000 < 0.05$, this shows that there is a significant difference between knowledge before nutrition education and after nutrition education using booklets evidenced by a percentage increase in knowledge of 10%. Creative learning media will make students quickly and easily understand the material the teacher delivers so that learning sessions do not feel monotonous and students are not only objects in learning but also become subjects. Because of the learning media, teachers and students become more interactive with each other (Rohima, 2023).

Conclusion

Based on the research and development results of this nutrition education media, it can be concluded that the product developed is a booklet-based learning media about the importance of breakfast for junior high school students. This nutrition education media was developed based on the purpose of research, namely developing and implementing booklet-based nutrition education media to increase students' nutritional knowledge related to the morning eating habits of junior high school children. Based on the validation test results, the media validation test obtained an average value of 4.08, which is classified as very feasible. The results of the target validation test get an average value of 4.26, which is classified as very feasible, so it can be declared very feasible for the target user. Validation tests using CVI from material experts have values that fall into the category of very appropriate. Based on the data obtained, it can be concluded that booklet educational media about the importance of breakfast for junior high school students is very feasible and suitable for nutrition education. From the research data using educational media after conducting pre and post-tests on grade 7A and 7B students of SMP Al-Islam 1 Surakarta, an average of pre-test 75 and post-test 85 were obtained. Thus, the post-test results are higher than the *pre-test results*. From the paired t-test data, students' knowledge is significantly different because Sig. (2-tailed) has a value of 0.00 less than 0.05. So, it can be concluded that there is a difference between pre and post-tests. So, the test on the t-test statistics is declared valid and effective.

Bibliography

- Afrilia, L., Neviyarni, Arief, D., & Amini, R. (2022). Efektivitas Media Pembelajaran Berbasis Video Animasi. *Jurnal Cakrawala Pendas*, 8(3), 710–721.
- Alannasir, W. (2016). Nomor 2 Agustus. *Journal of EST*, 2(3), 81–90.
- Arifin, H. Z. (2016). Aplikasi Sikap Profesional Guru Dalam Pendidikan Oleh. *Pendidikan*, 3, 7–25.
- Gemilang, R., & Christiana, E. (2018). Pengembangan booklet sebagai media layanan informasi untuk pemahaman gaya hidup hedonisme siswa kelas XI di sman 3 sidoarjo. *Jurnal BK UNESA*, 6(3), 3–9.
- Hartini, R., & Zaini Imam. (2013). Penerapan Media Animasi Flash dalam Pembelajaran Motif Batik Siswa Kelas X SMA Negeri 1 Menganti. *Jurnal Pendidikan Seni Rupa*, 1(1), 47–55.
- Iqbal, M., Gizi, P. S., Pertanian, F., Peternakan, D. A. N., Islam, U., Sultan, N., & Kasim, S. (2023). *Hubungan Sarapan Dengan Konsentrasi Siswa Smp Negeri 4 Sentajo Raya Hubungan Sarapan Dengan Konsentrasi Siswa Smp Negeri 4 Sentajo Raya*.
- Kartini, T. D., Manjilala, M., & Yuniawati, S. E. (2019). Pengaruh Penyuluhan Terhadap Pengetahuan Dan Praktik Gizi Seimbang Pada Anak Sekolah Dasar. *Media Gizi Pangan*, 26(2), 201. <https://doi.org/10.32382/mgp.v26i2.1231>
- Mawarni, E. E. (2018). Edukasi Gizi "Pentingnya Sarapan Sehat Bagi Anak Sekolah". *Warta Pengabdian*, 11(4), 97–107. <https://doi.org/10.19184/wrtp.v11i4.7238>

- Melinda, V. A., Degeng, I. N. S., & Kuswandi, D. (2010). Pengembangan Video Pembelajaran Berbasis Virtual Field Trip Pada Mata Pelajaran Ips Di Sekolah Dasar (Sd). *Digilib.Mercubuana.Ac.Id*, 6–7.
- Permadi, M. R., Ayu, I., Adnyani, M., & Astari, R. (2021). Pengaruh Media Booklet terhadap Peningkatan Pengetahuan Siswa SMP dalam Memilih Jajanan Sehat. *Gorontalo Journal Of Nutrition Dietetic*, 1(1), 16–21.
- Rifaldi, E., Aji, P., & Aditya, B. R. (2017). Aplikasi Android Untuk Berbagi Ebook Di Lingkungan Telkom University. *E-Proceeding of Applied Science*, 3(2), 624–632.
- Rohima, N. (2023). Penggunaan Media Pembelajaran Untuk Meningkatkan Keterampilan Belajar Pada Siswa. *Publikasi Pembelajaran*, 1(1), 1–12.
- Setiawan, H. R., Rakhmadi, A. J., & Raisal, A. Y. (2021). Pengembangan Media Ajar Lubang Hitam Menggunakan Model Pengembangan Addie. *Jurnal Kumparan Fisika*, 4(2), 112–119. <https://doi.org/10.33369/jkf.4.2.112-119>
- Soekidjo Notoatmodjo. (2018). *Metode Penelitian Kesehatan*. Rineka Cipta.
- Triwibowo, D., Kridalukmana, R., & Martono, K. T. (2015). *Pembuatan Aplikasi Terintegrasi, Pendataan Barang di Gudang Berbasis Android*. 3(2), 320–334.
- Yuliansah, Y. (2019). Efektivitas Media Pembelajaran Powerpoint Berbasis Animasi Dalam Meningkatkan Motivasi dan Prestasi Belajar. *Efisiensi - Kajian Ilmu Administrasi*, 15(2), 24–32. <https://doi.org/10.21831/efisiensi.v15i2.24491>