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DEVELOPMENT OF E-BOOKLET THEME OF FOOD SECURITY BASED ON SCIENCE LITERACY FOR STUDENTS OF JUNIOR HIGH SCHOOL CLASS IX

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ABSTRACT

Scientific literacy is the answer to prepare students to face the challenges of the 21st century. The resulting e-booklet with the theme of food security based on scientific literacy is an alternative solution to improve students' scientific literacy skills. The food security e-booklet contains food sources, substances contained in food, and food processing methods which were compiled based on the integration of aspects of scientific literacy and problem-based learning models. The research method used was the 4D development model developed by Thiagarajan et al. (1974), which consists of define, design, and develop stages. These stages were done because this research and development were only focused on development and accuracy due to limited energy, time, and cost. The assessment was carried out using a validation sheet filled out by a team of experts. The study results obtained that the percentage of content and language feasibility aspects was 82.1%, the presentation aspect was 86.3%, and the graphic aspect was 84.1%. Therefore, this e-booklet with the theme of food security reflects students' scientific literacy and is suitable for use in science learning.

Keywords: e-booklet, scientific literacy, food security, problem-based learning models

Introduction

Natural Science (IPA) is one subject that plays a significant role in preparing its students to face challenges in the 21st century (Mawardini et al., 2015). Science literacy is the answer to preparing for these challenges. However, a PISA survey showed that Indonesian students' science literacy score occupied the 62nd position out of 71 participating countries, with a distribution of the percentage of science literacy of 25.38%, which was declared sufficient, and 73.61% was declared insufficient (Ward, 2018). These results show that Indonesia is still below the international average. This matter shows that Indonesian students have not understood science thoroughly and cannot apply their scientific knowledge of daily life (Sutrisna, 2021).

The choice of learning resources is one of the things that causes students' low science literacy ability (Asyhari, 2015). This statement follows the results of research by Kurnia et al. (2014) that several things that affect the science literacy of Indonesian students are low, namely the education system, determination of learning methods, facilities and infrastructure, learning models by teachers, and teaching materials. According to Penney et al. (2003), teaching materials in learning are one of the learning resources and have become an essential aspect in improving science literacy skills for long-term learning. However, there are still many teaching materials circulating in schools that have not reflected aspects of science literacy in a balanced manner.

Based on this, teacher creativity is needed in implementing the teaching process in the 21st century to trigger students to have science literacy

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skills that are balanced with aspects of knowledge, attitudes, and skills. One way that plays a role in determining student learning outcomes is that teachers are expected to be able to design teaching materials that are tailored to the characteristics needed by students (Kusumam et al., 2016). However, teaching materials widely used by teachers are still limited to books from the government.

This fact is in line with the results of an interview conducted on Wednesday, December 16, 2020, with a science teacher at SMP Negeri 10 Serang City, that the teaching materials used are still limited to books from the Ministry of Education and Culture and have not been integrated (integrated). In addition, there are no other teaching materials, such as e-books developed by teachers in schools. The delivery of science subjects using teaching materials has not fully applied the concept of science literacy. Students still have learning difficulties because science subjects contain many topics that are pretty difficult to understand and boring. The allocation of time, learning methods such as question and answer, discussion and explanation, and the use of power points in online science learning are not enough to foster motivation and high interest in learning.

Students' motivation and interest in learning need to be improved through several good updates, namely interactive teaching materials. E-booklet is one of the interactive teaching materials and is in accordance with the development of science, technology, and society. E-booklet is a booklet in the form of a soft file that can be accessed through information technology devices such as laptops and mobile phones. Based on the research of Amalia et al. (2020), e-booklets are practical to access under any conditions so that students can learn independently. The e-booklet is also equipped with sample images and harmonious color displays to spur students to be enthusiastic about learning and increase student understanding.

An interesting e-booklet is packed with themes that present information and facts related to student life and can be discussed from disciplines that students already know and understand. Based on the analysis of essential competencies, biotechnology, and food production materials in class IX, food digestion materials in class VIII can be combined with additives and addictive substances in food in class VIII webbed for food security. The characteristics of the three materials are entirely aligned so that they can support science learning. In addition, the theme of food security was chosen because the learning theme of food security is closely related to student life, so direct observation of science objects can be carried out. This activity is carried out to support students' science literacy skills.

The food security material is prepared based on the syntax of Problem Based Learning (PBL). PBL has five steps, namely problem orientation, organizing learning, guiding individual and group investigations, developing and presenting work results, and analyzing and evaluating the learning process (Hamdalia et al., 2018). This PBL can provide opportunities for students to find information about the problems encountered themselves and can learn actively so that science literacy skills can improve adequately. After studying food security, students are expected to understand food nutrition and suitable food management methods to sustain food.

Given the problems that have been presented, teaching materials, namely e-booklets with the theme of food security based on science literacy will be developed. The e-booklet developed in this study is different from the previous study. In this study, the teaching materials developed contain food security materials in an integrated manner by combining the sciences of Physics, Chemistry, and Biology in one unit that is connected to students' real life. In addition, the science material in the e-booklet is presented to improve students' science literacy in understanding the material related to real life. So the researcher raised the title "Development of an E-booklet on the Theme of Food Security Based on Science Literacy for Junior High School Class IX Students."

Research Methods

The development method used is the 4D model developed by (Thiagarajan et al., 1974), namely define, design, develop and disseminate. However, the development model is narrowed by only implementing until the develope phase. These stages were done because this research and development only focused on developing and measuring product feasibility due to limited energy, time, and cost. According to Kismawardani et al. (2018), the dissemination stage needs a lot of energy and a long time at a high cost. Therefore, this study did not carry out the disseminate phase. This development model is in line with the research carried out by Ritari et al. (2021) development of mind map-based learning media that only carries out three stages by simplifying the 4D development model into 3D. Research is carried out only to produce products and find out the feasibility of the

product so that the dissemination stage is not done due to limited time and cost. In this case, the development model can be used according to the research needed. The following is an explanation of the flow of research and development.

1. Define

The define stage is carried out to establish problems that occur in science learning. There are five steps in this stage of activities, namely:

a. Front-End Analysis

In the front-end analysis stage, researchers look for school information about science learning problems, namely about the curriculum, the application of science learning in schools, the materials and teaching materials used, and the assessment of science literacy used by teachers to students. Researchers conducted this information search by interviewing science teachers at SMP Negeri 10 Serang City.

b. Learner Analysis

The analysis of students in this study analyzes students' cognitive, affective and psychomotor developmental abilities during science learning. Researchers carried out student analysis through interviews with science teachers at SMP Negeri 10 Serang City and literature studies.

c. Task Analysis

The task analysis in this study is to determine the material in outline based on Core Competencies (KI) and Basic Competencies (KD) in science learning which refers to the 2013 curriculum.

d. Concept Analysis

The concept analysis in this study is to identify the content of the primary material taught and then associate the material with other material relevant to the learning material with the theme of food security. The material concepts developed in this study are KD 3.7 and 4.7 Class IX which are conventional biotechnology materials combined with the webbed integration model with KD 3.5 class VIII, which is nutritional material in food, and KD 3.6, which is a material of types of additives. Then the concept is integrated using the concept of webbed integration to develop into several indicators and learning objectives.

e. Specifying Instructional Objectives

Instructional objectives are analyzed by converting task and concept analysis results. The primary instructional goal is that learning using an e-booklet that presents food materials in the surrounding environment can improve students' science literacy skills.

2. Design

This design stage is carried out to design the initial prototype of teaching materials based on previously obtained data. There are four steps, namely:

a. Constructing Criterion Referenced (Preparation of Criterion Test)

The preparation of the criteria tests in this study, namely compiling the final test after learning. The test is in the form of science literacy-based evaluation questions. The test is compiled to determine student learning outcomes in science literacy skills after learning food security using developed teaching materials.

b. Media Selection

The media selection in this study is aligned with student characteristics and material characteristics in Basic Competencies (KD) to achieve learning objectives in learning materials with the theme of food security. The media chosen by researchers is media that can be made as teaching material, namely e-booklets based on science literacy.

c. Format Selection

The format of teaching materials is adjusted to the characteristics of the e-booklet. The preparation of the e-booklet pays attention to the feasibility components of content, language, and teaching materials that are integrated with aspects of science literacy and problem-based learning models.

d. Initial Design

In this initial design stage, the prototype of the e-booklet was designed by researchers based on previous analyses and textbook references. This e-booklet consists of material content and evaluation activities in the form of a final test based on science literacy. In addition, this e-booklet is equipped with attractive designs, images, videos that support learning, and concrete food examples that make it easier for students to understand the material.

3. Develop

The development stage is carried out from the end to the expert appraisal, followed by revisions based on suggestions for improvement. This expert assessment was conducted to obtain feasibility data on a science literacy-based food security e-booklet for junior high school class IX students.

The assessment of the e-booklet developed was tested individually with validation by two science education lecturers and science teachers at SMP Negeri 10 Serang City to determine the e-booklet developed. The validation results from the expert team are used as improvement material so that the e-booklet developed becomes even better with criticism and suggestions from the expert team.

The analytical techniques used are descriptive qualitative and descriptive quantitative. Starting from the processing of e-booklet assessment data obtained from the validation results by a team of experts, then further analyzed with the following steps:

1) Transforming qualitative to quantitative assessments

Each of the statements from the questionnaire has a different value. The measurement scale was modified from Arikunto (2009). Scoring guidelines are presented in Table 1

Table 1. Scoring Guidelines

Likert Scale	Score
Strongly Agree (SS)	4
Agree (S)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

2) Calculate the percentage of validity to determine feasibility with the formula:

$$P = \frac{R}{SM} \times 100\%$$

Information:
P = Percentage
R = Total score of each aspect
SM = Total maximum score of each aspect

The collected data is then analyzed using quantitative descriptive analysis displayed in the assessment scale distribution. Feasibility assessment percentages are shown in Table 2. (Riduwan, 2007).

Table 2. Percentage Range of Validity Criteria

Percentage Range	**Criterion**
82% - 100%	Very Feasible
63% - 81%	Feasible
44% - 62%	Less Feasible
25% - 43%	Not Feasible

Result and Discussion

The results of this research were carried out through several stages of development research to produce an e-booklet that can be used as one of the teaching materials for junior high school class IX students. The research method used is Research & Development (R&D), which refers to the 4D model developed by Thiagarajan et al. (1974) and has been modified as needed, including:

1. Define

The define stage is carried out by conducting front-end analysis, student analysis, task analysis, concept analysis, and learning objectives analysis. The analysis results were obtained based on the interviews, which showed that science learning in schools had not been integrated. Science learning presented by teachers online using PowerPoint media with the question and answer methods and discussions as well as independent assignments makes them feel saturated and makes students often lose their enthusiasm for learning. Furthermore, the teaching materials used at SMP Negeri 10 Serang City are only limited to text books from the government, there are no other teaching materials such as e-books. In addition, the science learning process at SMPN 10 Serang City has not implemented science literacy as a whole, so students have been unable to develop their scientific skills properly.

Furthermore, students still find it challenging to understand the science material because it is pretty tricky. In line with Evita et al. (2015), science learning is considered difficult by students because the student's way of thinking is concrete while science subjects are abstract; besides, the use of Latin terms makes it difficult for students to remember and understand them. Therefore, by applying a scientific approach, students can do learning directly. Based on that explanation, it is concluded that the scientific approach is student-centered learning. The basic competencies that can be achieved through student-centered learning are Basic Competence (KD) 3.5 material digestive system in humans class VIII, KD 3.6 material additives and addictive substances class VIII, and KD 3.7 and 4.7 Biotechnology and Food Production class IX.

Based on these basic competencies, students' learning objectives on the knowledge competencies developed include students being able to apply the concepts and roles of conventional biotechnology as producers of nutrients in food products, students being able to analyze the nutrients contained in

these food products, and students being able to apply food product processing methods using additives. Meanwhile, the student's learning objectives are based on the competencies of the skills developed, namely students are able to make one of the biotechnology products in the surrounding environment as one of the food products for sustainable living.

2. Design

The design stage involves preparing criteria tests, media selection, format selection, and initial design. The preparation of the criteria tests in this study, namely compiling the final test after learning. The test is in the form of evaluation questions in the form of multiple choice and science literacy-based essays. In addition, tests are added in the form of tables and descriptions after the experiments are carried out. The test is compiled to determine students' learning outcomes in the form of science literacy skills after learning food security is carried out using developed teaching materials.

Furthermore, the selection of media is based on previous analysis. Students' motivation and interest in learning need to be improved through several good updates, namely interactive teaching materials. Therefore, the media chosen by researchers is a medium that can be made as teaching material, namely an e-booklet based on science literacy. Booklets are informative and attractively designed to arouse curiosity and make it easier for students to understand the content presented during learning (Pralisaputri et al., 2016). E-booklets are booklets that are packaged in digital form so that they can be accessed through technical devices such as mobile phones and laptops. (Amalia et al., 2020).

The next step is the selection of a format that is adjusted to the characteristics of the teaching material (e-booklet) to be developed so that in its preparation pay attention to the components of the feasibility of the content, language, and design of teaching materials. The arrangement of e-booklets made in this study is a cover, foreword, table of contents, list of images, list of tables, list of videos, instructions for using e-booklets, specifications of e-booklets in the flow of delivering science literacy-based material, competency tests, assessment instruments, bibliography, and author biography. The content of this e-booklet contains aspects of science literacy, namely science as a stem of knowledge (science as a body of knowledge), science as a way to investigate (science as a way of investigating), science as a way to think (science as a way of thinking), and the interaction of science, technology, and environment (interaction of science, technology, and society) (Chiappetta et al., 1993). The content is prepared using a Problem Based Learning learning model consisting of (1) problem orientation, (2) learning organization, (3) guiding individual and group investigations, (4) developing and presenting work results, and (5) analyzing and evaluating the learning process (Hamdalia et al., 2018). The material is arranged using Microsoft Word and the layout is arranged using Canva, then combined into an e-booklet using Flip PDF Professional software. Ghaliyah et al. (2015) stated that the flip book display is attractive, the flip effect is more realistic, and the video display is clearer to stimulate students' learning motivation and increase their science literacy.

3. Develop

The next stage of development is expert assessment, followed by revisions based on suggestions for improvement from experts. At this stage, the initial prototype in the form of a science literacy-based food security e-booklet integrated with Problem Based Learning is consulted with the supervisor to get advice. Immediately followed up on the improvement of the e-booklet. E-booklets are assessed based on 4 aspects of assessment of modified results from BSNP (2014), namely aspects of content feasibility, language, presentation, and graphics. This e-booklet was assessed by experts consisting of two science education lecturers and a science teacher at SMP Negeri 10 Serang City. This activity was done to obtain e-booklet feasibility data on the theme of food security based on science literacy for junior high school students in grade IX. The results of the feasibility of the e-booklet on the theme of science literacy-based resilience are shown in figure 1.

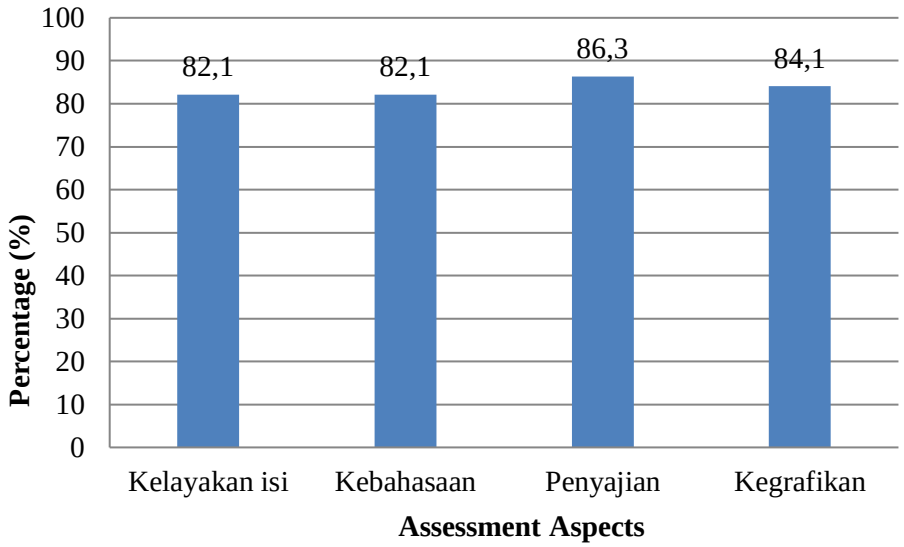

Figure 1. E-Booklet Assessment

Results of Assessment of Content Feasibility Aspects

The feasibility assessment of the content aspects of the e-booklet obtained an average score of 82.1% with a very feasible category. The feasibility aspect of the content is assessed through two indicators, namely, the curriculum and the completeness of the material. The assessment results on each indicator are shown in the following figure.

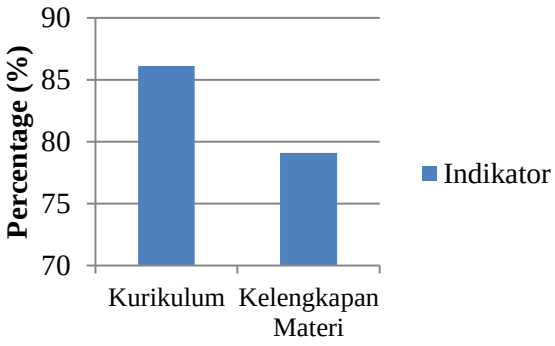

Figure 2. Content Feasibility Aspects

Figure 2. shows that the average score on the curriculum indicator is 86.1%, with a very feasible category. This result is evidenced by the compatibility between the material, Core Competencies (KI), and Basic Competencies (KD) used. This statement is under the opinion of Hidayati et al. (2016) that in using learning media, teachers must understand and use KI and KD to adjust the material because this affects the implementation and evaluation of students' understanding of the material.

In the aspect of feasibility, the content is considered very feasible, but there are still suggested improvements, namely in the curriculum indicators. Questions in the discussion activities are not in accordance with the basic competencies used for the theme of food security and have not reflected on science literacy. The question should be replaced with one corresponding to the basic competencies used. This step is under the statement of Kaaffah et al. (2021). Not only can a good textbook be an effective and efficient learning resource, but it must also have a reliable evaluation tool to measure students' level of understanding in absorbing the information and concepts that the textbook presents.

According to Wulandari (2016), the instrument of literacy problems can recognize issues and characteristics of phenomena that can be solved scientifically. The ability to identify scientific problems is closely related to science as knowledge. Questions on literacy relate students' cognition to phenomena they often encounter in their lives. Students utilize their previous knowledge to receive new information by associating it with their previous knowledge (Chiappetta et al., 1993). Therefore, researchers correct and change questions according to the basic competencies used and reflect on science literacy.

Furthermore, the material's completeness indicator obtained an average value of 79.1% with a feasible category. The material has been equipped with data appropriate to students' daily lives. This food security material is integrated with aspects of science literacy by presenting data that follows events in the environment around students. This food security e-booklet is equipped with individual and group discussion activities to train students to think. The e-booklet is also equipped with real pictures to make it easier for students to understand the meaning of the images. In addition, the e-

booklet is also equipped with tables and videos so that the material presented can be easily learned by students. This result is in line with Rafianti et al. (2018) that updates with interactive teaching materials can clarify how the material is delivered by displaying interactive and exciting animations and presenting concrete examples in everyday life so that students can more easily understand the concept of the material.

The suggestions and improvements to the indicators of completeness of the material are the addition of pictures and explanations of material about Banten food processing so that students know and understand the sources of food and how to process food from their own area. This result is in line with Parrish & Linder-VanBerschot (2010) that culture-based learning is indispensable for students because it will teach an attitude of loving culture, make students aware of the potential of an area, and make students more familiar with the culture of the region.

These results also align with Ariningtyas et al. (2017) that studying science by immersing in local culture will help students learn science according to their understanding without deviating from general concepts. Indonesia's diverse cultural wealth can be integrated into science learning to develop science literacy in cultural content. Thus the student learning process becomes more meaningful, and students can get used to actively shaping their knowledge through interaction with the environment. This integration reflects aspects of science literacy, namely the interaction of science, technology, society, and the environment (Chiappetta et al., 1993). Therefore, the addition of Banten food processing needs to be done so that students can interact with their environment and understand food sources and how to process food from their area well.

Results of Language Aspects Assessment

The assessment of linguistic aspects in e-booklets according to experts obtained an average score in a percentage of 82.1% with a very feasible category. The linguistic aspect is assessed through two indicators: the conformity of language rules and communication. The assessment results on each indicator are shown in the following figure.

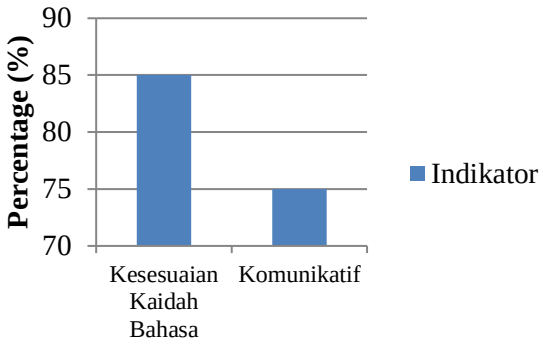

Figure 3. Linguistic Aspects Assessment

Figure 3. shows that the average score on the indicator of conformity of language rules is 85%, with the very feasible category. Based on the assessment by a team of validation experts, the language used in this e-booklet is in Indonesian spelling and is simple so that it is easy to understand. This result is in line with Lasiratan (2019), and using the correct language according to the rules or spelling is one of the essential factors in writing. These rules often support writing to be more organized, valuable, and accessible for others to understand.

Based on the assessment by the expert team, there are suggestions and improvements to produce a better e-booklet. Suggestions and improvements are found in the indicator of the appropriateness of language rules that the word "sedangkan" at the beginning of a sentence should be corrected because it does not conform to the correct writing rules. This result is in accordance with Chair (2011) that a conjunction is a word used to connect a word with a word or a sentence with a sentence. Here are the words in the conjunction whereas, and, but, but, later, even, then, and so on.

Subsequently, communicative indicators obtained an average value of 75% in the feasible category. The message between one concept and another is enough to reflect the interrelationship of the content and not give rise to multiple interpretations. This result is in accordance with Mulyono (2007) that a good textbook contains knowledge information that can be conveyed logically and easily understood according to the stage of cognitive development of the reader. According to Rafianti et al. (2018), updates with interactive teaching materials can clarify how the material is delivered so that it allows two-way communication and the learning process is not monotonous.

In addition, there are still suggestions and improvements in communicative indicators. Some

paragraphs have not been related to the previous paragraph. These paragraphs can make students confused when reading e-booklets. In line with Habibi (2020), that paragraph consists of a series of sentences whose meanings are interrelated to form a unity of meaning. The meaning between sentences in a paragraph makes the paragraph solid, and the reader can understand the message. The next suggestion is that there are sentences that are delivered repeatedly, this is feared to reduce students' understanding. This suggestion is in line with Chair (2011) that effective sentences can be achieved when it comes to using words in writing. Any element should work adequately, and elements that do not support the meaning of the sentence should be avoided. For example, sentences do not use repeated forms of plural markers.

Results of Assessment of Aspects of Presentation

The assessment results of the presentation aspects of the e-booklet obtained an average score of 86.3% with a very feasible category. The presentation aspect is assessed through two indicators: the presentation of learning and the support of presentation. The assessment results on each indicator are shown in the following figure. The presentation aspect is assessed through two indicators: the presentation of learning and the support of presentation. The assessment results on each indicator are shown in the following figure.

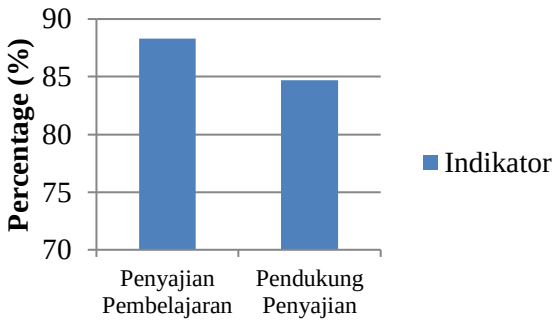

Figure 4. Presentation Aspect Assessment

Figure 4. shows that the average score on the learning presentation indicator is 88.3%, with a very feasible category. The presentation of the e-booklet is in accordance and in line with the theme of food security which is compiled based on the Problem Based Learning model, which is integrated with aspects of science literacy. Using the Problem Based Learning model makes learning more related to life outside school. This model can train students' ability to solve a scientific problem and cultivate students' critical, analytical, creative, and thorough thinking skills (Nata, 2014). The suggestion on the indicators of learning presentation is that there is a presentation of evaluation questions that are still unclear. The questions presented are in accordance with the theme of food security, but there are some things that are not quite right. In line with Kadir (2015), the idea of writing multiple-choice questions is that they must meet the indicators, and the selection of questions and answers must be clear, concise, and concise.

The assessment carried out by the expert team on the presentation of learning on this e-booklet is not only presented in accordance with the PBL syntax which makes students actively participate in learning, but there is supporting information with an average score of 84.7% in the very feasible category. The supporting information, such as supporting data and referral lists, help students explore more about food, and the assessment instruments motivate students to study harder. According to Prastowo (2012), textbooks are composed of five parts: titles, material content, additional (supporting) information, practice questions, and evaluations. According to Kinanti and Sudirman (2017), learning support materials in textbooks are presented to stimulate student skills because they are equipped with material reviews such as the presentation of questions, real examples, pictures, and individual and group assignments.

In the supporting indicators of this presentation, there are still suggestions and improvements, namely that the reference list is displayed with 1 pt to be neatly arranged. This result is in line with Noermanzah et al. (2018) in writing a bibliography, including reference sources, including title, author's name, publishing city, book publisher, and other information related to writing rules. The bibliography is placed on the book's last page and arranged in an orderly manner. Therefore the researcher corrected it.

Results of the Assessment of Graphic Aspects

According to experts, the assessment results of the graphic aspect of the e-booklet obtained an average score of 84.1% with a very feasible category. The graphic aspect is assessed through three indicators: cover design, a complete description of the content, and content design. The assessment results on each indicator are shown in the following figure.

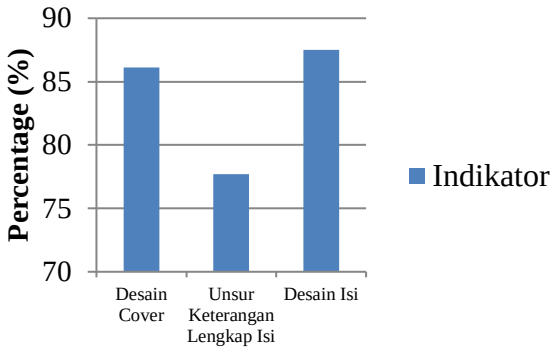

Figure 5. Graphing Aspect Assessment

Figure 5. shows that the average score on the cover design indicator is 86.1% with a very feasible category. The appearance of the e-booklet cover already fits the theme of food security. The images contained on the cover are proportional and in accordance with reality. In addition, the type of font used varies, the title size is more dominant than the letters of the education level and the name of the compiler, and the colors in the letters contrast with the background color. The layout between the letters and the picture is already harmonious, so it is interesting for students to learn. According to Munir (2014), the choice of font, consistency of text in headings, subtitles, and text in the content, and using the appropriate text size will deliver messages that can attract readers' attention. In the cover design indicator, there are still suggestions and improvements, namely the name of the compiler is added as the ownership of the e-booklet. This suggestion is in line with Chair (2011) that the cover page contains a formulation of the title, subtitles (if any), description of the form, author's name, institutional status (if needed), location, and year of preparation of the scientific work.

Furthermore, the element indicator is a complete description of the contents with an average value of 77.7% in the feasible category. In addition, the images and videos are presented interactively and can add information about food. This feature can motivate students to read and learn the contents of the e-booklet. In line with Hadi (2017), videos are considered interesting and not dull, so student motivation increases in learning.

Thus, the development of e-booklets after an assessment by expert validators and revisions can be used as alternative teaching materials for junior high school students in grade IX, especially in materials related to the theme of food security. The e-booklet is compiled using the integration of aspects of science literacy with the Problem Based Learning model so that it can facilitate and grow students' science literacy skills by actively engaging in learning activities. In addition, this e-booklet is more interesting, easier to understand, and interactive because this e-booklet contains food security material contained from several material concepts compiled using webbed integration and using a science literacy-based approach, there is supporting information in the form of images, tables, and videos. The presentation of material's content is packaged concisely and concisely, using simple language so that students can understand; besides that, the e-booklet design's appearance is arranged attractively and with synchronous colors.

Conclusion

Based on the study's results, it can be concluded that the science literacy-based food security e-booklet was developed using the Research & Development (R&D) method with a 4D model developed by Thiagarajan et al. (1974). The development stage is modified based on needs, that is, only through the define, design, and develop stages. The dissemination stage is not carried out because this research and development only focus on developing and measuring the feasibility level of the product due to limited energy, time, and costs. The developed e-booklet is worthy of being used as teaching material for students. The highest score was found in the presentation aspect at 86.3%, while the lowest was in the content and language feasibility aspect at 82.1%. These results are evidenced by the alignment of food security materials which are assessed with four aspects of assessment integrated with science literacy and Problem Based Learning models. Therefore, this food security theme e-booklet reflects students' science literacy and is suitable for use in science learning.

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