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Development of Circulatory System Disorders Booklet with Antidyslipidemic Activity Test of Bay Leaf Extract

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Abstract

Background: Media booklets are media used in the learning process with advantages in supportive conditions. The booklet contains a summary of the material equipped with pictures and colors so that it is interesting. This study aims to develop a booklet with enriched information about the antidyslipidemic activity test of bay leaf extract (*Sygyzium polyanthum (Wight) Walp.*) as a learning medium in the Sub Material of Circulatory System Abnormalities for second grade of highschool. **Methods:** This development research uses research and development (R & R&D). The development stages include potentials and problems, data collection, product design, design validation, design revision, and product. The media booklet was validated by 5 validators in format, content, and language, covering 9 criteria. **Results:** Validation obtained Content Validity Ratio (CVR) and Content Validity Index (CVI) values of one meet the minimum criteria for content validity. **Conclusions:** Thus, the Booklet enriched with the results of the antidyslipidemic activity test of bay leaf extract (*Sygyzium polyanthum (Wight) Walp.*) was declared content valid as a learning medium in the Circulatory System Abnormalities Sub material.

Keywords: bayleaf; booklet; development; dislipidemic; 4D model

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Introduction

Learning is a change in behavior resulting from an experience or interaction with learning resources (Kosasih, 2014). Teachers have an important role in the teaching and learning process to achieve their planned goals. When doing the learning, learners must be more active and creative. However, teachers must also plan to learn well by preparing interesting learning media. Media can be sensed and serves as an intermediary or means for the communication processor's teaching and learning process (Rohani, 2014). Media is also a tool for information and communication, infrastructure, facilities, support, liaison, and distribution of learning messages (Munadi, 2013; Arsyad, 2017). Thus, teaching media is everything that conveys and distributes messages from sources in a planned manner or information that aims as educational instruction to create a conducive learning environment where the acceptance can carry out the learning process efficiently and effectively (Munadi, 2013; Rohani, 2014; Wahid, 2018). Learning media is used by teachers in making good learning planning.

Media can assist teachers in delivering materials and creating an efficient learning atmosphere (Supriyono, 2018), which can be the use of books, movies, tape recorders, cassettes, photos, videos, graphics, television, and computers (Arsyad, 2014). Print technology-based media is commonly used to present information with fun, attractive, easy to understand, and clear in the form of books and visual materials that go through the printing process. Print technology-based media generally contains text, graphics, and

photos (Arsyad, 2014). Booklet learning media is one of the media based on print technology that contains images or photos.

A booklet is a book that is small (half quarto) and thin (usually no more than thirty sheets back and forth) that contains writing and drawings (Wu & Albanese, 2013). Several studies have revealed the feasibility and effectiveness of booklets in learning, for example, Pralisaputri et al. (2016) in the main material mitigation and adaptation of natural disasters and Primadeka (2017) in biodiversity materials in class X high school. With a relatively small size, booklets are easy to carry and lightweight. Meanwhile, using short, simple, concise, and concise sentences allows students to obtain a summary of information so that learning time is more efficient. In other words, booklets can contain interesting information because they are accompanied by illustrated images that are expected to cause student curiosity and make it easier to carry out learning activities (Hapsari, 2013; Qurrota'; Pralisaputri et al., 2016; Pebrianti, 2019).

To increase the depth of content in booklet materials, teachers need to consider enriching relevant information. They can add to students' insights while increasing the contextuality of the concepts learned in everyday life. For example, in the Circulatory System Abnormality Sub Material in class XI of high school, teachers can display enrichment such as the results of research on the trial of antidyslipidemic activity of plant extracts in experimental animals. The emergence of the results of this study is expected to provide a complete explanation of lipidemia.

This Booklet explains how lipidemia processes occur, the potential of traditional medicine with medicinal plant extracts, and how the extract works against the decline in lipid levels in the blood. The appearance of direct research results is also expected to improve students' understanding of the concept of scientific thinking and steps in the scientific method. The development of this booklet media is expected to provide alternative learning media solutions for teachers in the Circulatory System Abnormality Sub Material. Testing the feasibility of development products can be an early indicator of the potential utilization of booklet media in learning.

This study described developing and testing booklet validity in the Submitter of Circulatory System Abnormalities enriched by the results of the research test of antidyslipidemic activity of bay leaf extract from the study (Handarsiputri, 2021). This Booklet is expected to be an alternative media for learning about the Submitter of Circulatory System Abnormalities and increase students' insights related to the research results delivered as enrichment.

Metode

Scope of Research

This research was conducted in April-October 2020 using research and development (R&D) methods to produce and test the effectiveness of products (Sugiyono, 2015). The stages of R&D activities in this study aim to create and develop products in the form of booklets as a learning medium in class XI in the Submitter of Circulatory System Abnormalities. According to Sugiyono (2015), there are 10 stages of R&D activities covering potential problems, data collection, product design, product validation, design revision, design revision, product trial, and product revision. In this study, six out of ten steps were used, according to Sugiyono (2015), including potential problems, data collection, product design, design validation, design revision, and products.

The potential and problem stage is the stage of analysis of the situation experienced by the teacher, the characteristics of learners, and concepts that will be published in the learning media through an interview with one of the Biology High School teachers in Pontianak City. The data collection stage is the stage of finding and compiling data that will be used to prepare booklets. The product design stage is designing a booklet media which is set to be 14.8x21 cm (A5) and amounts to forty pages referring to Pralisaputri et al. (2016). The development of the material was obtained from various sources, especially from the results of research on the antidyslipidemic activity test of bay leaf

extract (*Sygyzium polyanthum (Wight) Walp.*) by Handarsiputri (2021), which was equipped with photographs of research documentation. The preparation of the format and contents of the book is modified from the Booklet from Putri (2020) research. Front cover, inside cover, foreword, table of contents, concept map, basic competencies (KD), achievement indicators (GPA), learning objectives, instructions for use, introduction, description of materials in the form of Submitter of Circulatory System Abnormalities, group discussions, health information, material summaries, evaluations, bibliography, answer keys, and glossaries.

The design validation stage is where the Booklet designed is then validated and commented on to fit the teaching needs. Booklet validation consists of 3 aspects: format, content, and language. Measurements in the booklet media validation instrument using a 4-level Likert scale are very good, worth 4, good 3, less good 2, and not good 1. The design revision stage is the stage of improving the results of booklet validation results accompanied by the results of the antidyslipidemic activity test of bay leaf extract as a learning medium in the Submitter abnormalities of the Blood Circulation System Class XI Senior High School. Product, which is the stage produced by learning media in the form of Booklet Sub material Abnormalities of The Circulatory System Class XI Senior High School, has been validated and revised according to the advice of validators.

Respondent

The validation of booklet media was carried out by five validators: two lecturers and three teachers. One lecturer from the Faculty of Biology Education and one lecturer from the Faculty of Chemical Education Study Tanjungpura Pontianak University, and three teachers of Biology subjects class XI high school in Pontianak City, namely from SMAN 9, SMAS Muhammadiyah 1, and SMA Islam Haruniyyah. The selection of the three schools using random sampling techniques for each UNBK score group in 2019 and randomly taken each of the schools at the highest, middle, and lowest ranks.

Instrument

The tools used in the booklet creation are digital cameras, laptops, printers, and Microsoft PowerPoint 2017 programs. The materials used include class XI biology books, various research articles, and the results of research tests for the antidyslipidemic activity of bay leaf extract (*Sygyzium polyanthum (Wight) Walp.*) from Handarsiputri (2021), 120 gsm double-side glossy paper, and printer ink.

Data Analysis

Booklet validation data is analyzed using content validity ratio (CVR) and content validity index (CVI) or average CVR as a whole refers to (Lawshe, 1975) with the following formula:

$$CVR = \frac{ne - \frac{N}{2}}{\frac{N}{2}}$$

Description:
CVR : *Content Validity Rasio* (Rasio Validasi Konten)
Ne : Number of validators who approve media validity
N : The total number of validators

$$CVI = \frac{\sum CVR}{\sum n}$$

Description:
CVI : *Content Validity Index*
CVR : *Content Validity Ratio*
N : Number of items throughout the aspect

Booklets are declared valid if the CVR and CVI values meet the minimum limit of 0.99 for five validators according to Lawshe (1975). The validated media booklet is then revised based on the validator's suggestion.

Result

The development of booklet media begins with potential stages and problems. This stage is done by studying the things needed in the learning process and analyzing the goals and limits of the material to be developed. The needs analysis was passed by interviewing a class XI high school biology teacher in Pontianak city who taught circulatory system materials. The interview results showed that the teacher still used media in the form of A4-sized images affixed to the board and discussion and question and answer methods. Meanwhile, the research results on antidyslipidemic activity tests from bay leaf extract (*Syzygium polyanthum* (Wight) Walp.) have the potential as an enrichment material that can increase the depth of the material abnormalities in the Circulatory System. Next, the data collection stage is filled with tracing the needs of the material to be used to prepare the Booklet. Material materials are taken from various sources, especially research results including the results of research on antidyslipidemic activity tests from bay leaf extract (*Sygyzium polyanthum (Wight) Walp.*) from Handarsiputri (2021).

In the next stage, the design stage is set the size of the Booklet is 14.8 x 21 cm (A5) with a portrait orientation, and consists of 40 pages refer to Pralisaputri et al. (2016). The material of circulatory system abnormalities is taken from the biology package book, various research articles, and the results of the antidyslipidemic activity test of bay leaf extract (*Sygyzium polyanthum (Wight) Walp.*) by Handarsiputri (2021). The selection of this topic aims to be used as enrichment in the Submitter of Circulatory System Abnormalities and as an example of a scientific research report on the Research Design Submitter. In content, the booklet design is taken from various related sources and has been adjusted to KD, indicators, and learning goals. The parts of the Booklet can be seen in Figure 1.

Figure 1. Booklet of Disorders or Abnormalities of the Circulatory System with Enrichment Test of Antidislipidemia Activity of Bay Leaf Extract

Furthermore, the media booklet was validated by five validators to find out its eligibility in the Sub material abnormalities of the Circulatory System class XI SMA / MA. The assessed aspect consists of format, content, and language. According to Lawshe (1975), the minimum value of a medium for five validators is 0.99. All validators agree or strongly agree on all criteria to obtain a CVR and CVI value of 1. Because the value of 1 is greater than 0.99, the learning media is declared valid content according to the assessed criteria (Table 1).

After the CVR value is obtained, the CVI value is calculated to determine the overall validity. The CVI calculation obtained is 1. The CVI value indicates that the entire booklet media section follows the specified criteria so that the booklet media is declared valid.

Table 1. CVR and CVI media booklet Grades Sub material Disorders or Abnormalities of the Circulatory System Class XI Senior High School

Aspects	Criteria	CVR
Format	1. Explore cover booklet design	1
	2. Completeness of components and the lack of presentation of booklet contents.	1
	3. Match the color and size of letters and images with the background and size of the Booklet.	1
	4. Match the Booklet with the size of the letters.	1
Contents	5. Conformity of the content of the material in the Booklet with Basic Competencies 3.6	1
	6. The appropriateness of booklet potential to support the achievement of competency achievement indicators (GPA) and learning goals.	1
	7. The strength of the material concepts presented in the Booklet follows scientific concepts	1
Language	8. Grammatical conformity on booklets according to PUEBI	1
	9. Effective and efficient use of sentences and does not lead to double interpretation	1
	CVI	1

Discussion

The development of the Booklet of Disorders or Abnormalities of the Circulatory System accompanied by the results of the antidyslipidemic activity test of the contract of bay leaves was declared valid in content because it met the minimum value of 0.99 according to Lawshe (1975) for five validators. Furthermore, the Booklet that has been developed in this study has the potential to be tested both on a limited and wide scale to find out its feasibility as a learning medium in the Circulatory System Abnormality Sub material. This Booklet is designed to make it easier for teachers to convey materials to students because they are equipped with materials, evaluation questions, and LKPD and image clarity to be adequately understood.

Circulatory System Abnormality Booklets can be used in the learning process with the Discovery Learning learning model or can be adapted to other learning models involving activities such as discussion and information search. The development of the Sub material Booklet of Circulatory System Abnormalities is also equipped with RPP and LKPD to be used in the learning process. RPP in this study was compiled and equipped with LKPD which contains stages of learning activities that must be carried out during the learning process following the Discovery Learning learning model.

The advantages of this booklet media are ease to carry, light presentation of materials equipped with images, clarity of material and attractive appearance, and simple design but still varied as described by Imtihana (2014). Hapsari (2013) also added the advantages of booklet media: using short, simple, short, concise sentences and using uppercase and bold letters. The Booklet developed in this study is easy to carry or grasp and is light because it is only A5 in size and consists of 40 pages. According to Qurrota'aini & Sukirno, (2013), students who use booklets will get a summary of information so that learning time is more efficient. The form is practical, the composition of the material presented is denser and concise and easy to understand. This Booklet also contains materials and images following the opinion of Pralisaputri et al. (2016) to facilitate the learning process. The use of letters that are simple, easy to read, and not diverse and the sentences used are easy to understand is also one of the important elements in learning media (Pebrianti, 2019).

To improve the quality of Booklet, it is necessary to add information in the form of applied from the concept to be studied as enrichment. In this study, the process of developing and testing the feasibility of submitter booklets for circulatory disorders was added to the results of the antidislipidemic activity test of bay leaf extract (*Sygyzium polyanthum (Wight) Walp*.). The high number of dyslipidemia cases that have reached 1.5% of the total population in Indonesia (RISKESDAS, 2018) indicates that the understanding of this disease needs to be improved not only for sufferers but also for the public in general. According to Setiono (2012), people with severe dyslipidemia are found in people who are 55 years old. High school students about to enter adulthood are the right targets to improve insight into dyslipidemia disease in the hope of emerging awareness related to disease prevention in adulthood or old age. Thus, this Booklet is not only expected to be an alternative medium in the learning of Sub material Abnormalities or Disorders of the Circulatory System. This media also adds to learners' insights related to the research results delivered as enrichment and knowledge to become the basis of attitudes on a diet in everyday life.

In addition to the above advantages, booklets as a print media also have disadvantages. According to Arsyad (2017), the shortcomings of print media are the difficulty of displaying motion on print media pages, printing media that often takes a lot of time and time because it takes time during printing, and the complexity associated with the process of preparing pages. In addition, the shortcomings of the Booklet according to Sukraniti et al (2012) namely in the division of lessons in print media must be designed so as not to be too long and not boring for students. Generally, print media can bring good results if the learning goals are cognitive, for example, learning about facts and skills. Another disadvantage of print media is that it can quickly damage or disappear if it is not treated properly.

How to overcome the shortcomings in the image aspect in the media booklet can be done by placing the position of the image and other supporting components of the content precisely and easily visible and accompanied by the use of words that are easy to understand as an image explainer. The cost of printing a booklet can be reduced by printing on paperback and forth and choosing the type of volume that suits the budget and thickness of the Booklet. For the Booklet to last longer, the cover can be given a plastic coating to be waterproof and not easily peeled off. Booklets should also be stored in a safe place and do not mix with other learning media to be easily searched when used.

Overall, the development of the booklet media on Disorders and Disorders of the Circulatory System was successfully carried out by enrichment in the form of test results of the activity of bay leaf extract (*Sygyzium polyanthum (Wight) Walp*.). Next, this medium deserves small-scale and extensive trials to measure its effectiveness in learning. Various advantages presented by this development product should give ideas to teachers to create the next booklet media they need in the teaching and learning process. The use of print media that contains concise and dense materials accompanied by an attractive format display and enriched with relevant information and increased knowledge will always be beneficial for improving student understanding while increasing the competence of teachers in teaching.

Conclusions

The development of a booklet media on Disorders or Disorders of the Circulatory System enriched by the results of the bay leaf extract activity test (*Sygyzium polyanthum (Wight) Walp*.) was successfully carried out and obtained a valid assessment in content according to five validators.

Declaration statement

The authors reported no potential conflict of interest.

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