Feasibility of Butterfly Pea Plant Plant Booklet (Clitoria ternatea L.) as Learning Media

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Abstract: Learning media is a tool that teachers can use to improve the quality of learning. Making learning media can be compiled based on the results of previous research literature studies on an object. The purpose of this study was to determine the feasibility of learning media for Clitoria ternatea L. booklets. The stages in this research are carried out by collecting information through literature studies related to falconry plants, booklet preparation, booklet validation, and booklet revision based on suggestions from both validators. Booklet assessment covers aspects of format, content, and language. The results of validation by validators are then analyzed using Gregory. The results of the data that have been analyzed show that aspects of format, content, and language get a value of 1.00 and these three aspects have an average of 1.00 with a very high validity category. Thus, it can be concluded that this eagle plant booklet is suitable to be used as a learning medium.

Keywords: Booklet; Feasibility; Learning Media

Introduction

Education in the 21st century emphasizes on proving the quality of learning. The quality of learning in schools is currently determined by learning designed and implemented by teachers, such as various learning strategies, learning models, learning media management, and teaching materials made (Mahardika et al., 2021; Ajjawi et al., 2019; Muchlisianah & Umam, 2022; Zakiah et al., 2019; Munisah, 2020; Purnasari & Sadewo, 2020). Innovation to improve the quality of learning which is very important is through appropriate, quality, creative and interesting learning media, so that it can help and facilitate teachers and students in achieving optimal learning goals (Wulandari et al., 2020; Nevrita et al., 2020; Panjaitan et al., 2021). Furthermore, the media used can make students more interested in learning and hone their knowledge in an effort to achieve learning goals, so that the media as a system absolutely must exist to be used in every lesson (Magdalena et al., 2021; Batubara et al., 2021).

Learning media is part of the learning system in the form of objects and environments that can act as educational tools to assist teaching and learning activities and foster student learning motivation (Suryani & Ardianto, 2019; Moto, 2019), as well as an intermediary from the teacher to students so that they can change students' thinking about a material from abstract to concrete (Anjarwati et al., 2022; Khamidah et al., 2019). Learning media must be selected and adjusted in advance to the needs in order to solve learning problems (Panjaitan et al., 2021). Learning media is very diverse in its form, including audio (contains auditory messages so that it relies on the sense of hearing only) (Asmi, 2019; Swastyastu, 2020), audio visual (a combination of audio and visual media) (Pradilasari et al., 2019; Alfiltani, 2022; Swastyastu, 2020), and visual (rely on the sense of sight) (Suryana et al., 2022; Aspahani et al., 2020; Swastyastu, 2020; Habibati et al., 2022).

How to Cite:
According to Yeni et al. (2020); Layal et al. (2022) visual media is suitable for use and used as a reference in carrying out learning. Visual media is media that is presented through the main elements in the form of lines, shapes, colors and textures, and in its use this media only relies on the students’ sense of sight (Dewi et al., 2019). Furthermore, visual media consists of several types, namely print-verbal media, graphic print media, and non-print visual media (Purwasih, 2023). In accordance with Amri (2021) Print media is visual media that is made by printing and printing or offset. In print media messages are presented in the form of letters and pictures to further clarify the message or information presented.

Nowadays, technology-based learning media is very booming and very popular. Tsekeris (2019); Bi & Shi (2019); Mandasari & Aminatun (2022) in their research revealed education in the 21st century which is closely related to technology is now very booming its use in supporting learning activities, so it is very popular in education circles. However, print media is also still used, because it still has advantages that can be maintained or even improved. The advantages of print media, namely the presentation of information or messages in large quantities, information or messages can be studied based on the needs, interests, and speed of each student, easy to carry so that they can be studied anytime and anywhere, and interesting when equipped with pictures and colors (Laranti et al., 2023).

Booklet is a print media that has many advantages. Booklet is one of the print media that comes from a combination of books and leaflets in which there is a concise and illustrated message or information so that it can attract students’ interest to read it (Romika et al., 2022). Based on Dewi et al., (2020); Apriyeni & Gusti (2021) booklets are smaller in size than books and only consist of 5-48 pages. In general, based on research results, booklets can increase knowledge (Fitriani & Krisnawati, 2019; Yuliana et al., 2019), improving the results of study (Rani et al., 2020), improving the interests and students motivation in study (Syamsurizal & Ardianti, 2021; Muslimah et al., 2023), and as mass communication media (Itsna et al., 2022). As for universities, booklets can be used to better understand the concepts of the material taught and systematically allow students to learn to master various kinds of competencies that are required to the maximum (Harlis et al., 2021). Booklet as one of the print media used by teachers in learning should be made by teachers, because teachers are the spearheads of determining learning success so they must be able to design, manage, implement, and evaluate learning (Putri, et al., 2021; Susanah, et al., 2020; Wahid, 2018). From the description above, in this study a booklet of butterfly bean plant (Clitoria ternatea L.) was developed in learning Traditional Phytochemistry so that students have a new understanding and knowledge of butterfly bean plants both in terms of morphology to useful content in it. The butterfly pea plant is a type of plant that is used by the people of Indonesia and even in the world as medicine, ornamental plants, dyes, as food, and cosmetics. (Purba, 2020; Rahmadani et al., 2022; Pratim asari & Lindawati, 2018; Sumartini, 2020; Putri & Baharza, 2023; Rosidah et al., 2023; Taufik & Ainiyah, 2021; Izzulhaq et al., 2022; Rezaldi et al., 2022; Abdilah et al., 2022).

**Method**

This research is a study that uses the development method or R&D (Research and Development). Development in this study was carried out by collecting information through literature studies related to butterfly pea plants, compiling booklets, validating booklets, and revising booklets based on suggestions from the two validators. The literature study stage is the initial stage carried out to find information about the general description of the butterfly pea plant and the utilization of the butterfly pea plant by the people of Indonesia and even other countries. The preparation of this booklet refers to Panjaitan & Tenriawaru (2022), namely determining the title of the booklet and arranging the components in the booklet such as editing margins, letters, images, and colors. After preparing the booklet, the next step is booklet validation. Aspects assessed in the validation test are aspects of format, content, and language. An assessment of the eligibility of the booklet is carried out by the validator according to their expertise in biology or biology learning. The final stage is to analyze the validation data by the two validators referring to Gregory (2013) and the validation criteria referring to Amir et al. (2015).

![Figure 1. Research flow](image_url)
Result and Discussion

The results of the information in the research obtained through literature study activities are compiled and presented in booklets as a form of learning media. Paper as the material used in the preparation of this butterfly pea booklet is 14.8 x 21 cm (A5) in size which was made using Microsoft Word 2016. The results of the booklet validation analysis carried out by two validators are presented in Table 1.

The results of the analysis obtained from the validator's assessment on the aspects of format, content, and language with a total of 10 criteria obtained a validation value of 1.00 which means it has a very high validity category. The overall average regarding the assessment according to these criteria obtained a value of 1.00 with a very high validity category.

Table 1. The Validator's Assessment of The Developed Booklet Media

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Criteria</th>
<th>Validator</th>
<th>Validity</th>
<th>Annotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Booklet media cover design</td>
<td>3</td>
<td>4</td>
<td>1,00    Validity Very High</td>
</tr>
<tr>
<td></td>
<td>The practicality of booklet media is brought</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The suitability of the type and size of the letters used</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Media booklets are arranged systematically</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Layout of the contents of the booklet</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td>Appropriateness of plant names, pictures, and descriptions of medicinal plants</td>
<td>4</td>
<td>4</td>
<td>1,00    Validity Very High</td>
</tr>
<tr>
<td></td>
<td>The connection between the information presented in the booklet and its suitability with the student's level of academic ability</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete pictures and information presented in the booklet</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>The use of language that is simple and easy to understand</td>
<td>4</td>
<td>4</td>
<td>1,00    Validity Very High</td>
</tr>
<tr>
<td></td>
<td>The use of language and sentences in the booklet is in accordance with the General Guidelines for Indonesian Spelling (PUEBI)</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td>1,00    Validity Very High</td>
<td></td>
</tr>
</tbody>
</table>

Aspect of Format

The format aspect in this study obtained a value of 1.00 with a very high validity category. This is in line with the results of research by Panjaitan, Titin, & Wahyuni (2020), that the aspect of the booklet format developed is valid with a value of 1.00 (very high validity). The criteria for this format aspect consist of five, namely the cover design of the booklet media, the practicality of the booklet media being carried, the suitability of the type and size of the letters used, the booklet media are arranged systematically, and the layout of the booklet contents. The criteria for the format aspect in the assessment of booklets are based on the results of previous studies, which include the cover design of the booklet media, the practicality of the booklet media, the suitability of the type and size of the letters used, the booklet media are arranged systematically, and the layout of the booklet contents (Panjaitan & Tenriawaru, 2022). The first criterion is the cover design of the booklet media, which has a value of 1.00 in the very high validity category. This means that the cover design of this booklet media meets color suitability, represents the contents of the booklet, displays clear and attractive images (Figure 2).

![Figure 2. Booklet Cover Design (In Bahasa)](image-url)
As stated by Muswita et al. (2020) the harmony between the combination of colors, letters, and images on the cover can provide an illustration or description of the content so that it can attract readers' interest.

The second criterion is the practicality of the booklet media which is brought to a score of 1.00 with a very high validity category. This shows that the booklet media that has been made meets practical indicators, namely easy to store, easy to carry, and easy to use. As revealed by Agustin, Asrizal, & Festiyed (2021); Babinčáková & Bernard (2020); Nurdiyanti, Wadj, & Fadhiyah (2022) that media practicality is a criterion that shows the ease of use so that it can create quality learning and can broaden students' insights. The third criterion is the suitability of the type and size of the letters used to obtain a value of 1.00 with a very high validity category. The booklets in this study were written consistently, meaning that the type and size of the letters used were the same on each page (Figure 3). The typeface used in the booklet media is Times New Roman and the size used is for message or information exposure size 12 and for image descriptions size 11, spacing 1.5, top and left margins measuring 2 cm, bottom and right margins measuring 1 cm, and the paper used is 14.8 x 21 cm (A5) and the materials used are glossy paper for the cover and HVS for the contents of the booklet. This, as a whole, is stated to be in accordance with the media booklet. As stated by Nuraini & Waluyo (2021) that the use of letters in an appropriate and appropriate manner can influence the reader regarding the readability of the message conveyed. In addition, the readability of writing is also affected by spacing (Mustari et al., 2020). The fourth criterion is related to the systematic preparation of booklets. The validation results by the validator are 1.00 with a very high validity category. This booklet media is structured by containing three parts, namely the opening, main, and closing. In the opening part of the booklet media includes the cover, preface, and table of contents; the core part includes an overview of the butterfly pea plant and the utilization of the telan plant, summary, formative tests and answer keys; and the closing section includes a bibliography, glossary, and index (Figure 4). As stated by Panjaitan et al. (2021) that the components in the booklet should be arranged systematically so that it makes it easier for the reader to build his thinking power when reading the booklet. The fifth criterion is the layout of the contents of the booklet. An assessment of this criterion obtained a value of 1.00 with a very high validity category, which means that the contents of the booklet have fulfilled the proportional component of placement, are neat, and are easy to understand. The contents of this booklet media contain a general description of the butterfly pea plant and its use.

Figure 3. The Use of Alphabet In Booklet (In Bahasa)
Aspect of Content

The content aspect in this study obtained a value of 1.00 with a very high validity category. This is in line with the results of research by Panjaitan, Titin, & Wahyuni (2020), that the content aspect of the developed booklet is valid with a value of 1.00 (very high validity). In this content aspect, there are three criteria, namely the suitability of plant names, pictures, and descriptions of medicinal plants, the relationship between the information presented in the booklet and its suitability with the student’s level of academic ability, and the completeness of the pictures and information presented in the booklet. The first criterion is the conformity of plant names, pictures, and descriptions of medicinal plants with a value of 1.00 in the very high validity category. This shows that the media booklet has presented the name, picture and description of the butterfly pea plant appropriately (Figure 5). Regarding the suitability of text and images in booklets, Oktaviani et al. (2021) stated that the suitability between text and images can trigger user interest in reading the information presented in the booklet. The second criterion is the relationship between the information presented in the booklet and its suitability with the level of students’ academic ability, which scores 1.00 in the very high validity category. This shows that booklet media are interrelated, easy to understand, and in accordance with the level of student academic ability. As stated by Hanisah et al. (2022); Dani, (2023) that information conveyed that is relevant to academic abilities can build the integrity of students’ thinking concepts. The third criterion is the completeness of the pictures and information presented in the booklet, which scores 1.00 in the very high validity category. In this booklet, an overview section of the butterfly pea plant is presented with pictures so that booklet users know the shape and characteristics of the butterfly pea plant. In addition, for each discussion regarding the use of butterfly pea plants, pictures are presented to support the elaboration of the description (Figure 6). Based on the assessment by the validator, the colors in the images in this booklet need to be contrasted and sharpened. In line with this, Andriyani & Suniasih (2021) revealed that learning media that is equipped with pictures and presented in an attractive way can make it easier for users to remember the messages conveyed. In addition, images can also clarify abstract material so that it can help readers understand the material (Winarto et al., 2020; Jeong & So, 2020).

Figure 4. Parts of booklet (in bahasa)

Figure 5. Presentatation of Butterfly Plant Information (In Bahasa)

Butterfly pea plant plant is one of the plants widely used by the community. Its uses are quite diverse, including food coloring, textile coloring, medicine, ornamental plants, cosmetics, and vegetables.
As revealed by Gamage, Lim, & Choo (2021) that this plant is used as animal feed, environmentally friendly insecticides, nitrogen-fixing plants, food coloring, ornamental plants, as a food and dessert drink, and as a vegetable in Southeast Asia. In addition, this plant is also used in traditional medicine, such as treating anasarca disorders, ascites, liver disorders, hemicrania, irritation of the urethra and bladder, and enlargement of the stomach viscera. The medicinal properties of this plant have been tested for validity, namely having antioxidant, antidiabetic, and hepatoprotective activities (Lakshan et al., 2019). The phytochemical content found in butterfly pea plants is very diverse, including tannins, flavonoids, saponins, triterpenoids, carbohydrates, phenolic flavonoids, flavanol glycosides, proteins, alkaloids, anthraquinones, anthocyanins, stigmasite 4-ene-3, 6 diones, volatile oils, and steroids. The seeds of the butterfly pea plant contain cinnamic acid, finotin, cyclotide, and beta sitosterol so that they are efficacious as antimicrobials. Furthermore, the flowers of the butterfly pea plant contain flavonoids, anthocyanins, flavanol glycosides, kaempferol glycosides, quercetin glycosides, cyclotides, and myricetin glycosides so that the flower parts are useful as anticancer and antimicrobial agents. The leaves of the butterfly pea plant also contain chemical compounds, namely cyclotides, flavonoids, polyphenols, terpenoids, saponins, and quinones so that they have antimicrobial, anti-inflammatory, antidiabetic, and antirheumatic properties. The stem of the butterfly pea plant contains cyclotide so that it can act as an antimicrobial. The roots of the butterfly pea plant contain saponins, alkaloids, flavonoids, fatty acids, delfinidin 3,3',5' triglucosides, phenols, cyclotides, and betasitosterol so that they can be efficacious as antidepressants and antimicrobials (Purba, 2020; Refwalu et al., 2023; Abriyani, 2023; Yazhini et al., 2023).

Aspect of Language
The language aspect in this study obtained a score of 1.00 with a very high validity category. This is in line with the results of research by Panjaitan, Titin, & Wahyuni (2020), that the language aspect of the developed booklet is valid with a value of 1.00 (very high validity). In this aspect of language, there are two criteria, namely the use of language that is simple and easy to understand, and the use of language and sentences in the booklet in accordance with the General Guidelines for Indonesian Spelling (PUEBI). The first criterion regarding the use of language that is simple and easy to understand and the use of language obtains a value of 1.00 with a very high validity category. This shows that the booklet media in this study does not lead to multiple interpretations, is straightforward, communicative, and understandable (Figure 7).
Panjaitan et al. (2021); Nuraini & Waluyo (2021) revealed that suitability in the use of language in booklet media can help readers to understand the intent of the contents of the booklet and help learn the information that has been presented so that it does not cause double interpretations. The second criterion, namely regarding the use of language and sentences in the booklet in accordance with the General Guidelines for Indonesian Spelling (PUEBI), obtained a value of 1.00 with a very high validity category. As stated by Sari & Setiawan, (2018); Linda et al. (2021) that the suitability of sentences with rules really needs attention, because it can affect the use of the right word so that this makes it easier for the reader to understand the content of the material.

Conclusion

The booklet which contains an overview of the butterfly pea plant and the utilization of the butterfly pea plant can be used as a student learning medium with an average validity value for each aspect of format, content, and language of 1.00 (very high validity category).

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Conflicts of Interest

The authors declare no conflict of interest.

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