

Feasibility of Booklet the Role of Biodiversity Based on Inventory of Post-Birth Medicinal Plant

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Abstract. Learning media is a tool used in the school that can help teacher in the teaching process. Media that is made according to needs can help students achieve learning goals effectively and efficiently. This research aims to determine the feasibility of booklet the role of biodiversity based on inventory of post-birth medicinal plants in Mekar Sari Village on the sub-material role of living things for life in class X. This study uses research & development by Sugiyono which consists of determining potential and problems, data collection, designing media, validating, finally revising the design. The validity of the booklet media was obtained through content validation carried out by five validators. Booklet media validation is viewed from three aspects, namely format, content and language. Validation analysis refers to Lawshe (1975), namely content validity ratio (CVR) and content validity index (CVI). The research results show an average CVR of 1.00 and resulting in a CVI of 1.00 in the valid category. The results of the analysis in this research can be concluded that booklet media is suitable for use as learning media.

Keywords: Feasibility, Media, Booklet

Introduction

Education is an important factor in nation building with the function of developing and improving a student's abilities. Teachers must be able to create fun and active learning conditions in the learning process (Arianti, 2017; Moto 2019; Nurhuda, 2020). Learning is an activity process that involves interaction between students and teachers with media in a environment school (Pane & Dasopang, 2017; Yanto, 2019; Yunita & Supriatna, 2021). In the teaching process the role of the teacher is very important, where a teacher is not only required to be able to master methods but must also be able to choose the right media to support an optimal learning process (Istiqlal, 2018; Paramita & Noornia 2018; Yestiani & Zahwa, 2020). Learning is a system in which there are a number of components that are interconnected with each other to achieve learning goals (Magdalena et al., 2021).

Learning media is a tool used by teachers to assist the process of learning activities, where the media carries messages or information that can help explain the material more clearly and objectives (Nurrita, 2018; Mahayani et al., 2018; Sapriyah, 2019). Learning media is an important factor in the learning process which is used to clarify the teaching material delivered by the teacher as a variation in verbal explanation of information (Tafonao, 2018; Magdalena et al., 2021; Wulandari et al., 2023). Learning media has the

advantage of facilitating interaction in the learning process between teachers and students and making learning more effective and efficient (Karo-Karo & Rohani, 2018).

Learning media has several types such as visual, audio and audiovisual media (Lestari et al., 2018). Visual media is presented through sight as a viewing medium for students to understand. An example of visual media is research conducted by Panjaitan et al. (2021) regarding visual media presented in booklet form. Audio media is media that can only be heard or only has sound elements. An example of visual media is research from Rubiyatin (2023) which is presented in the form of sound recordings as a learning medium in the classroom. Audio visual media is media that can display moving images and sound. Audio visual media can describe an event that can be seen repeatedly. An example of audio visual media is research from Sofiyah et al. (2023) which is presented in the form of a documentary film.

Booklets are medium that is combination of books and leaflets (Fitriasih & Ansori, 2019). Booklets are included in the print media group, where booklets are referred to as small books that contain information on certain discussion topics (Mahendrani & Sudarmin, 2015; Panjaitan et al., 2021). Booklets contain important information, the contents must be clear, easy to understand, and interesting when accompanied by pictures. Print-based booklet media has the advantage, namely practical information media and the process of conveying information using the media to students can be done at any time and adapted to target conditions. In addition to containing text, booklet also contains visuals or images so that it can create a sense of beauty as well as increasing understanding and motivation in learning (Pralisaputri et al., 2016; Putri, 2020; Sinaga et al., 2022; Hafizah et al., 2022)

Several studies show that learning using booklets can improve learning outcomes, knowledge, and foster student activity (Intika, 2018; Ananda et al., 2022; Nurrita, 2018; Nurfadhillah et al., 2021). Generally booklets as learning media are not only developed from the concept of material in books, but can also be developed from research results (Panjaitan et al., 2021). The media developed through booklet research are, the feasibility of learning media for the (*Hyphaene thebaeca* L.Mart) fruit (Panjaitan et al., 2022).

One of the topics taught in biology learning is the sub-material on the use of biodiversity in Indonesia which is contained in the independent curriculum. This sub-material is contained in the learning outcomes included in phase E, where at the end of this phase students have the ability to create solutions to problems based on local or global issues from their understanding of the diversity of living things and their roles, viruses and their roles, the application of biotechnology, components ecosystems and interactions between components and environmental changes. According to Nurhayati & Wijayanti (2016) biodiversity has various roles and is used in various areas of life to maintain human survival, its uses range from being used as clothing, food and shelter and so on. Apart from that, various species of plants and animals are used as medicinal ingredients. One of the effective media to use in the learning process is booklets (Puspita et al., 2017). Booklets containing information along with picture illustrations will help students understand the material and the attractive and practical form of booklets will make it easier for students to learn (Pralisaputri et al., 2016).

Medicinal plants are plant species that are believed to have medicinal properties in curing a disease or increasing the body's resistance (Larassati et al., 2019). Traditional medicine comes from the experiences of ancestors or forefathers which are passed down from generation to generation so that, they become habits and are maintained by the community (Marpaung, 2018). The use of medicinal plants still plays an important role in the lives of rural communities as natural traditional medicine from generations of experience, especially for mothers after giving birth to restore their health. According to Marpaung (2018) local knowledge about using plants for medicine is generally owned by the community, but this local wisdom has not been well documented such as types of medicinal plants, potential uses, processing methods and how to obtain these plants which

must be inventoried. According to Wibisono & Azham (2017) inventory of medicinal plants is an activity carried out to collect data on all medicinal plants in an area. The purpose of this inventory is to find out species of plants that exist in an area that are used as medicine.

The booklet learning media developed in this research contains the results of an inventory of plants with medicinal properties for postpartum in Mekar Sari Village. It is hoped that this booklet media will become a learning medium on the role of the biodiversity and it can increase students insight and knowledge about local community wisdom in the use of medicinal plants. The aim of this research is to determine the suitability of the sub-material booklet media on the role of biodiversity from the results of an inventory of plants with medicinal properties for postpartum mothers as a learning medium.

Methods

This form of research is research and development (Sugiyono, 2015). Research & development consists of ten stages, but in this research there are only 5 stages, namely up to design revision (Figure 1). The stage of this research include (1) potential and problems; this stages is the use of medicinal plants for traditional medicine by the community and interview with biology teacher to find out information about use of learning media in the school, (2) stage of data collection; this stage is the collection of various species medicinal plants used by mothers after giving birth in Mekar Sari Village, Sungai Raya District, Kubu Raya Regency for development of media content in the sub-material learning process of the role of biodiversity, (3) stage of product design; this stage is designing learning media in the form of booklets which begins with analyzing learning outcomes, creating a booklet draft, guiding the booklet design and making the booklet, (4) stage of design validation; this stage is validating the booklet media to see the suitability of the booklet as a learning medium, (5) stage of revision desain; revision of design are made based on suggestions given by five validators, so that the media created is better.

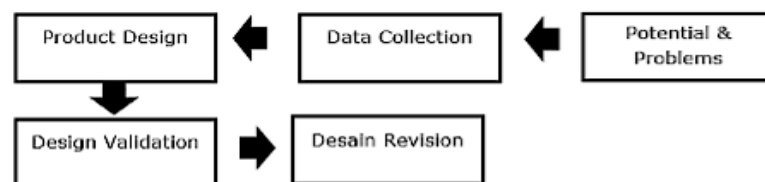


Figure 1. Stages of research development

Media validation was carried out by five validators, namely two PMIPA lecturers and three high school biology teachers using a validation sheet which contained three aspects, namely format, content and language. The validation instrument consists of a booklet media instrument validation sheet and a booklet media validation sheet. There are 13 criteria on the booklet media validation sheet whose assessment uses a Likert scale, namely very good with a value of 4, good with a value of 3, poor with a value of 2 and not good with a value of 1.

The results of the validation of the booklet media were analyzed using analysis referring to the Lawshe (1975) procedure using CVR to assess the suitability of the criteria for items with the aspects being measured, and CVI to state that overall the booklet has good content validity. Media is declared appropriate and valid if it obtains a value of 0.99 or 1.00 (Figure 2).

No. of Panelists	MinValue
5	0.99
8	0.75
9	0.78
10	0.62
14	0.51
15	0.49
35	0.31
40	0.29

Figure 2. Minimum values of CVR

Results and Discussion

The media booklet presented in this research contains the role of the biodiversity as medicine, namely post-natal care for the Madurese tribe in Mekar Sari Village which uses medicinal plants as traditional medicine. There are pictures of plants, common name, scientific name, benefits, and processing methods for each treatment concoction. The results of previous research regarding development show that a learning media first needs to be validated to determine the suitability of the media as a learning media (Nau & Buku, 2020; Panjaitan et al., 2021; Fajri et al., 2022; Panjaitan et al., 2022). The result of validation data analysis in this research can be seen in Table 1.

Table 1. Results of validation and analysis of booklet media data

Aspects	Criteria	Validator Number					CVR	Description
		1	2	3	4	5		
Format	1. Suitable A5 booklet size (21cm x 14.8 cm)	4	4	4	4	4	1.00	Valid
	2. The cover design has a harmonious combination of colors and images and can reflect the contents of the booklet	4	3	4	4	4	1.00	Valid
	3. Suitability of the type and size of letters on the booklet	4	3	4	4	4	1.00	Valid
	4. Systematic arrangement of booklets	3	4	3	4	3	1.00	Valid
	5. Clarity of the image display presented in the booklet	4	4	4	4	4	1.00	Valid
	6. Suitability of the layout of the booklet information content	4	4	4	4	4	1.00	Valid

Content	7. Suitability of the flow of learning objectives with the content of sub-materials on the use of biodiversity in Indonesia	4	3	4	4	4	1.00	Valid
	8. Accuracy of the display of data from the research results in the presentation of the material content in the booklet	4	3	4	4	4	1.00	Valid
	9. Appropriateness of plant names and pictures of medicinal plants in the booklet	4	4	4	4	4	1.00	Valid
	10. Accuracy of supporting reference list	3	3	3	3	3	1.00	Valid
Language	11. The language and sentences used in the booklet are in accordance with the rules of the Pedoman Umum Ejaan Bahasa Indonesia (PUEBI)	4	4	4	4	4	1.00	Valid
	12. The sentences used are interesting and easy to understand	4	4	4	4	4	1.00	Valid
	13. The use of sentences does not give rise to multiple interpretations and misunderstandings	4	4	4	4	4	1.00	Valid

Value of CVI

1.00 Valid

Description :

CVR = Content Validity Ratio

CVI = Content Validity Index

In the validation results of the booklet learning media, it was found that the CVR value for each criterion met the minimum value of Lawshe (1975), namely 1.00. There are three aspects to the assessment, namely format, content and language aspects. The format aspect consists of six criteria, namely suitability of the booklet size A5 or 21cm x 14.8 cm, getting a CVR value of 1.00, cover design having a harmonious combination of colors and images and being able to reflect the contents of the booklet, getting CVR value of 1.00, suitability the type and size of the letters in the booklet received CVR value of 1.00, the

systematic arrangement of the booklet received CVR value of 1.00, the clarity of the appearance of the images presented in the booklet received CVR value of 1.00, and the suitability of the layout of the information content of the booklet received CVR value 1.00.

The content aspect which consists of four criteria, namely the suitability of learning achievements and learning objectives with the sub-material content of the role of the biodiversity of living things for life received CVR value 1.00, the accuracy of the data display of the research results "Feasibility of booklet the role of biodiversity based on inventory post-birth medicinal plant" in the presentation of the material content in the booklet received CVR value 1.00, the suitability of plant names, pictures and descriptions of medicinal plants in the booklet received CVR value 1.00, and the accuracy of the list of supporting references received CVR value 1.00. The language aspect consists of three criteria, namely the language and sentences used in the booklet in accordance with the rules of Pedoman Umum Ejaan Bahasa Indonesia (PUEBI) get CVR value 1.00, sentences used in interesting and easy to understand language get CVR value 1.00, the use of sentences that do not give rise to multiple interpretations and misunderstandings gets a CVR value of 1.00. For validators there are five according to Lawshe (1975) with average CVR 1.00 and for the CVI value obtained value 1.00. In this way, the booklet media is declared valid and suitable for use as learning media.

Format Aspect

The format aspect consists of six criteria, namely the suitability of the booklet size A5 or 21cm x 14.8 cm. The cover design has a harmonious combination of colors and images and can reflect the contents of the booklet, suitability of the type and size of the letters on the booklet, systematic arrangement of the booklet, clarity of the image display presented in the booklet, suitability of the layout of the booklet's information content. The first criterion is the suitability of the booklet size, where the booklet developed has a size appropriate to A5 or 21cm x 14.8cm obtaining a CVR value of 1.00.

The second criterion is that the cover design has a harmonious combination of colors and images and can reflect the contents of the booklet, where the media developed gets a CVR value of 1.00 with valid information. The cover of the booklet is designed to be adjusted with a combination of background color, shape, image displayed and matching letters so that it reflects the contents of the booklet. As research presented by Muswita et al. (2020); Putri (2020) where the harmony between the image, the combination of background colors and the letters on the cover can provide an overview of the contents of the booklet, which will attract readers' interest (Figure 3).



Figure 3. Booklet cover view

The third criterion is the suitability of the type and size of the letters on the booklet, where in this criterion the CVR value is 1.00 with valid information. Writing sentences uses a combination of Century, Times New Roman and Arial formats with font size 11-22 on booklet media. In line with research from Kartika (2015) using a good combination of letters and sizes will provide an attractive combination look better and the information or material in the media is easily conveyed.

The fourth criterion is the systematic preparation of the booklet, where this criterion obtains CVR value 1.00 with valid information. The booklet media is arranged systematically starting from the cover, foreword, table of contents, list of pictures, learning outcomes, learning objectives, concept map, introduction, sub-material on the role of the biodiversity, information on the use of the diversity of living things as medicines used by the people of Mekar Sari Village, glossary and bibliography. The arrangement of the components in the booklet is arranged systematically with the aim of making it easier for readers to think when reading the booklet. This is in line with research by Karo-Karo & Rohani (2018); Paramita et al. (2018); Intika (2019) so that booklet media can function and play a role in supporting effective learning, it needs to be arranged systematically (Figure 4).

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Gambar 19. Gambir (<i>Uncaria gambier</i>)	13
Gambar 20. Upacara Ngaben Bali	14
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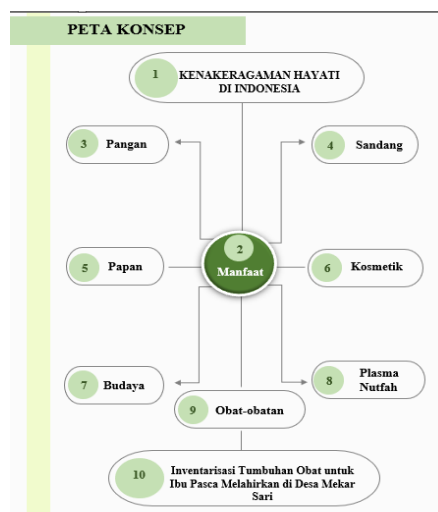
Capaian Pembelajaran & Tujuan Pembelajaran

Capaian Pembelajaran

Akhir fase E, peserta didik memiliki kemampuan menciptakan solusi atas permasalahan-permasalahan berdasarkan isu lokal atau global dari pemahamannya tentang keanekaragaman makhluk hidup dan peranannya, virus dan peranannya, penerapan bioteknologi, komponen ekosistem dan interaksi antar komponen serta perubahan lingkungan

Tujuan Pembelajaran

- Melalui pembelajaran menggunakan media *booklet* peserta didik dapat mendeskripsikan macam-macam peranan keanekaragaman makhluk hidup bagi kehidupan
- Melalui pembelajaran menggunakan media *booklet* peserta didik dapat menjelaskan contoh tumbuhan berkhasiat sebagai obat serta pemanfaatannya di lingkungan sekitar

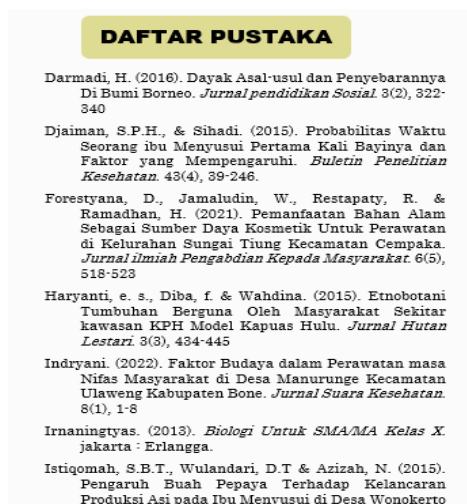
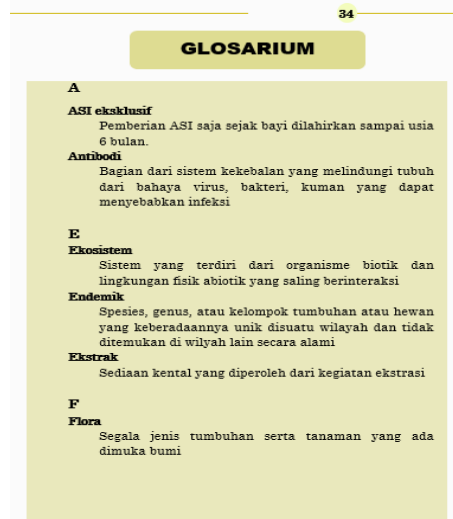


Figure 4. Systematic preparation of media booklets

The fifth criterion is the clarity of the image display presented in the booklet, where this criterion obtains CVR value 1.00 with valid information. In the booklet media the images displayed are clear and not blurry and images of plants with medicinal properties are presented with original images. The aim is to make the appearance of the image clear so that it is easy to recognize and the information conveyed can be effective in learning (Paramita et al., 2018; Rahmad et al., 2018; Hilmansyah, 2020) (Figure 5).



Figure 5. Clarity of image display in the booklet

The sixth criterion is the suitability of the layout of the information content of the booklet used by the community in Mekar Sari Village. In this booklet each type of medicinal plant is equipped with a picture of the plant, common name, scientific name, benefits and processing methods. The results of the validator's assessment of this criterion are that the content presentation layout is neat, easy to understand and proportional with a CVR value 1.00 valid information.

Content Format

The content aspect consists of four criteria, namely suitability of learning outcomes, learning objectives with the sub-material content of the role biodiversity of living things for life, accuracy of the display of data from research results "feasibility of booklet the role of the biodiversity based on inventory of post-birth medicinal plants" on the presentation of the material content in the booklet, the suitability of plant names and pictures of medicinal plants in the booklet, the accuracy of the list of supporting references.

The first criterion is suitability of learning outcomes, the learning objectives to be achieved with the sub-material content of the role of the biodiversity. This criterion obtains CVR value 1.00 with valid information. The contents of the booklet are designed from the flow of learning objectives and then the learning outcomes of phase E which are used as a

guide in formulating learning objectives in accordance with the content and supporting sub-material, especially the role of living things for life in the independent curriculum. According to Dewi & Wayan (2023) in implementing the independent learning curriculum, teachers are given freedom and adapt various learning tools that can be adapted to students. The suitability of the content of the booklet with the phase E learning outcomes and learning objectives is included as an indicator of the suitability of a media (Mahayani et al., 2018; Sapriyah, 2019; Junengsih et al., 2023).

The second criterion is the accuracy of the data display resulting from research into the suitability of the booklet media in the presentation of the material content in the booklet, where this criterion obtained CVR value 1.00 with valid information. The booklet shows postnatal care in Mekar Sari Village using plants with medicinal properties. The accuracy of research data displayed in the material is very important to support learning media, where accurate and appropriate research results can provide understanding to readers (Mahendrani & Sudarmin, 2015; Muntamah, et al., 2020; Sinaga et al., 2022; Hafizah et al., 2022) (Figure 6).

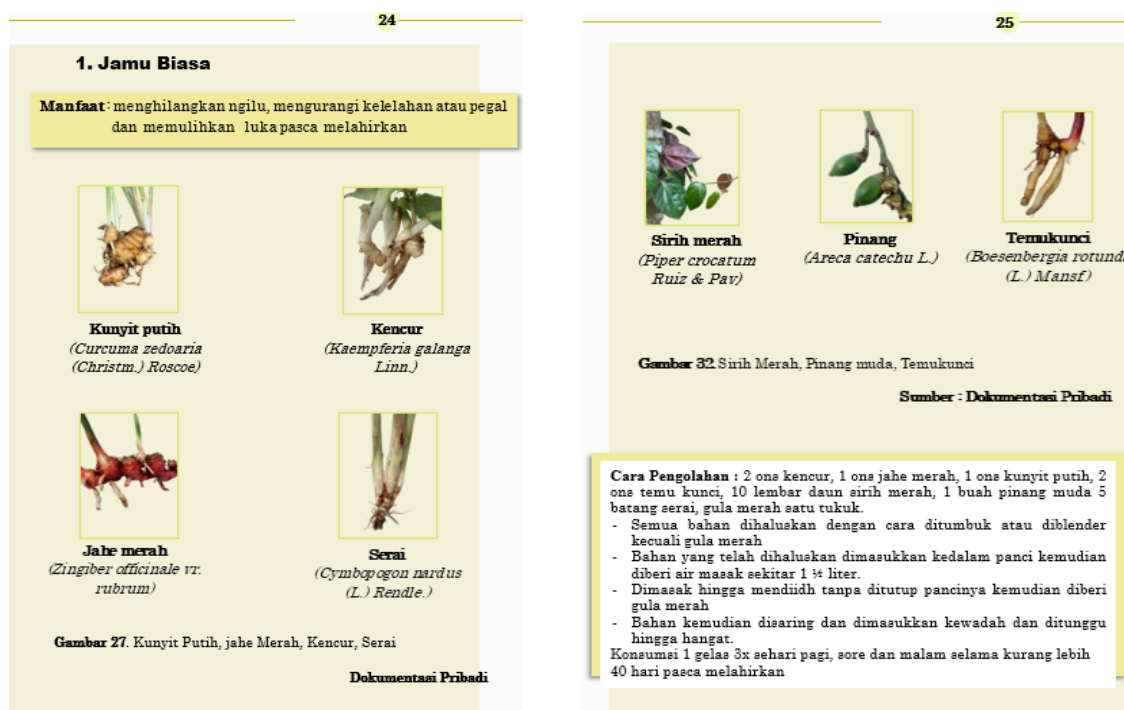


Figure 6. Types of treatment with postnatal medicinal plants

The third criterion is the suitability of the name of the plant and the picture of the medicinal plant in the booklet, where this criterion obtains CVR value 1.00 with valid information. Based on the assessment of the validator, the writing of the names and pictures of the plants in the booklet is appropriate. This suitability is important, because it will become a special attraction for the media (Rizawayani et al., 2017).

The fourth criterion is the accuracy of the list of supporting references. Based on this criterion, the CVR value is 1.00 with valid information. The literature used in booklet media is mostly up to date. This is stated in the reference literature by Kementerian Pendidikan dan kebudayaan (2014), where literature has been published for at least the last 10 years and it is better to use many primary reference sources, one of which is articles

published in scientific journals as much as 80%. There is some literature in the booklet that is under 10 years old or not up to date, so there are comments and suggestions from validator 5 who provide suggestions for using literature that is up to date or more than 10 years old in the booklet media. Improvements were made to the up to date literature on page 1 and page 19 (Figure 7).

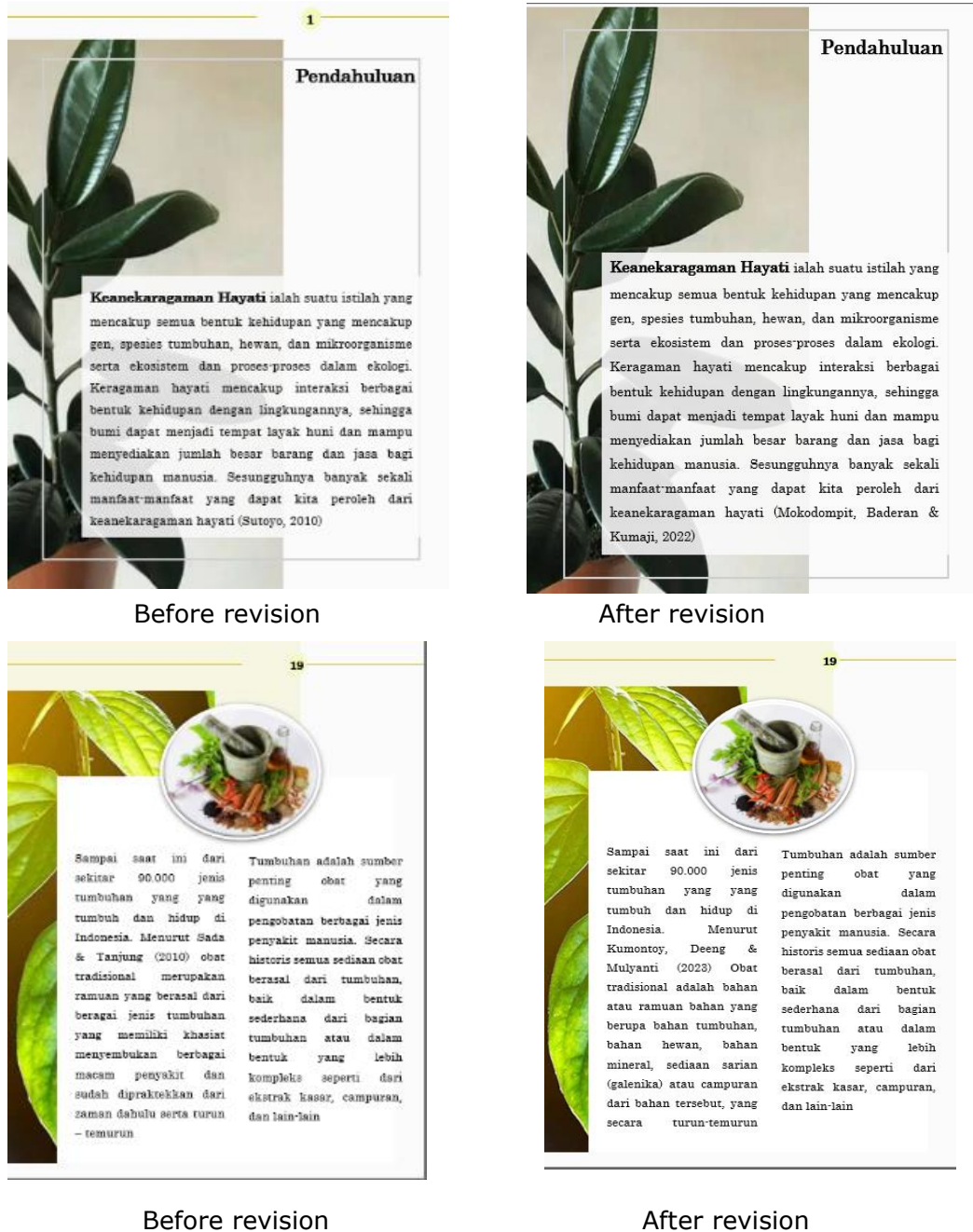


Figure 7. Improvement of year reference sources for literature in booklet media

Aspect of Language

The language aspect consists of three criteria, namely the language and sentences used in the booklet are in accordance with the rules of the Pedoman Umum Ejaan Bahasa

Indonesia (PUEBI), the sentences used are in interesting and easy to understand language, the use of sentences does not give rise to double interpretations and misunderstandings. The first criterion is that the language and sentences used in the booklet are in accordance with the rules of the Pedoman Umum Ejaan Bahasa Indonesia (PUEBI). This criterion obtains a CVR value of 1.00 with valid information. In line with the opinion of Muzaki et al. (2019) where Pedoman Umum Ejaan Bahasa Indonesia (PUEBI) that can be used as a reference in writing Indonesian effectively and being able to speak Indonesian well and correctly.

The second criterion is that sentences are used in interesting and easy to understand language. This criterion obtains a CVR value of 1.00 with valid information. In line with the opinion of Syahidi et al. (2019) where language that is interesting and easy to understand in the educational media that is created is very important, because language that is easy to understand will make it easier for media users to learn the concepts of the material presented in the media being developed. Using language that is easy to understand is very necessary when creating learning media.

The third criterion is that the use of sentences does not give rise to double interpretations and misunderstandings, where this criterion obtains CVR value 1.00 with valid information, because the sentences contained in the booklet media do not give rise to double interpretations. This is in line with the opinion of Muntamah et al. (2022) the language in the sentences used does not give rise to double or multiple interpretations in media that is developed based on the correct material concept, it will be accepted by students and can increase learning motivation.

Conclusion

Booklet learning media on the sub-material of the role of biodiversity based on inventory of post-birth medicinal plants with an average CVR validation value 1.00 and CVI value 1.00 in the valid category. The booklet media was declared valid and suitable for use as learning media.

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