



Feasibility analysis of ethnobotany popular science books based on local wisdom in South Kalimantan: A literature review

Mahmudi Hasan*, Muhklisyah Amalia Putri, Siti Muzdalifah, Siti Hafsoh, M. Hanafi

Department of Biology Education, Faculty of Teacher Training and Education, Universitas Lambung Mangkurat, Banjarmasin, South Kalimantan, Indonesia, 70123

*Corresponding Author Email: 2210119210002@mhs.ulm.ac.id

Abstract. The preservation of ethnobotany knowledge in South Kalimantan faces modernization challenges, such as decreasing interest among younger generations and the limited integration of local wisdom into educational practices. Popular Scientific Books (BIP) serve as an educational solution to bridge traditional knowledge with the general public. However, not all ethnobotanical BIPs that have been developed have undergone comprehensive feasibility testing. This study aims to analyze the feasibility of ethnobotany BIPs based on local wisdom through a literature review. Article searches were conducted using Google Scholar, resulting in 605 documents. After selection based on language, open access availability, and subject relevance, 10 articles were identified and analyzed using the Systematic Literature Review method and *content* analysis techniques. The results indicate a growing trend in BIP development, with most studies reporting very high validity and practicality. A common pattern observed is the limited testing of BIP effectiveness. This study concludes that BIP is feasible for further development but should be complemented with evaluations of its impact on learning to optimize its role in education and the preservation of local wisdom. The findings are expected to serve as a reference for developing contextual biology teaching materials based on local knowledge.

Abstrak. Pelestarian pengetahuan etnobotani di Kalimantan Selatan menghadapi tantangan modernisasi berupa berkurangnya minat generasi muda dan minimnya integrasi kearifan lokal dalam pembelajaran. Buku Ilmiah Populer (BIP) menjadi solusi edukatif untuk menjembatani pengetahuan tradisional dan masyarakat umum. Namun, belum semua BIP etnobotani yang dikembangkan diuji kelayakan secara menyeluruh. Penelitian ini bertujuan untuk menganalisis kelayakan BIP etnobotani berbasis kearifan lokal melalui studi pustaka. Penelusuran artikel dilakukan menggunakan Google Scholar dan menghasilkan 605 dokumen. Setelah seleksi berdasarkan kriteria bahasa, akses terbuka, dan relevansi bidang, diperoleh 10 artikel yang dianalisis menggunakan metode Systematic Literature Review dan teknik content analysis. Hasil menunjukkan tren meningkatnya pengembangan BIP, dengan temuan bahwa sebagian besar telah diuji validitas dan kepraktisannya secara sangat baik. Pola umum yang ditemukan adalah masih terbatasnya uji efektivitas. Studi ini menegaskan bahwa BIP layak dikembangkan, namun perlu dilengkapi evaluasi dampak pembelajaran agar lebih optimal dalam pendidikan dan pelestarian kearifan lokal. Temuan ini diharapkan dapat menjadi acuan dalam pengembangan bahan ajar biologi kontekstual yang didasarkan pada pengetahuan lokal.

Received date: 31/07/2025
Accepted date: 17/08/2025
Published date: 03/09/2025

Keyword: ethnobotany; popular scientific book; local wisdom; South Kalimantan; feasibility

Introduction

Indonesia, as the largest tropical archipelago with complex geology, is endowed with abundant natural resources, including species diversity and a high level of endemism with more than 30,000 plant species (Fakri et al., 2025). Correspondingly, the country also has a rich wealth of traditional knowledge on plant utilization, making it a shared responsibility to preserve and pass on to future generations (Markolinda et al., 2025). One of the provinces that has high biodiversity is South Kalimantan (Mahdiyah et al., 2016). South Kalimantan is an area that has a variety of plant diversity that can be utilized in various fields, one of which is in the health sector. The general public also uses plants as medicine. In addition, it can be used as a reference and learning resource for all groups (Indriyani et al., 2023). Especially in South Kalimantan, this wealth of traditional knowledge about plant utilization has been passed down from generation to generation, manifested in values, norms, ethics, beliefs, customs, and procedures for human harmony with plants, which specifically aim for biocultural conservation (Wahyu, 2020). To preserve and disseminate this knowledge, popular scientific books have emerged as an effective educational medium, as they are able to present complex scientific information in a format that is easily digestible by the general public (Bucchi & Trench, 2021). Ethnobotany is a science that generally examines the close relationship between humans and plants, especially how plants have been utilized multifunctionally by people for centuries (Chakale et al., 2025). Ethnobotanical knowledge involves various aspects of study, including botany, ethno-pharmacology, ethno-ecology, ethno-socioanthropology, ethno-economics, and ethno-linguistics (Goss, 2023). Ethnobotanical knowledge has the potential to combine and integrate local and scientific knowledge to promote biocultural conservation efforts (Pei et al., 2020). Ethnobotanical studies can provide insights into how communities interact locally with their environmental resources, ethnobotanical studies have the potential to unite and integrate local and scientific knowledge to advance the goal of achieving biocultural conservation (Gaoue et al., 2017).

Local potential can be well utilized, one of which is by developing locally based learning resources (Putri et al., 2022). Popular scientific books are one of the teaching materials that can be used in the learning process and a means of connecting information with the community (Irianti & Mahrudin, 2021). Popular scientific books are learning media that are considered very effective because of their ability to present complete material with simple language, making it easier for readers to understand (Latifah et al., 2020). Other advantages include the use of easily digestible language, the inclusion of realistic illustrations, and the maintenance of scientific standards, although the information is often adapted from various sources (Ismail et al., 2024). Analyses in recent articles indicate that the weaknesses of ethnobotanical popular science books are no longer simply a simplification of content, but rather relate to the paradigm applied (Goss, 2023). A key improvement for popular science books derived from contemporary ethnobotanical research is the transformation from documentation to a collaborative process of equitable knowledge production (Sterling et al., 2017). In the context of ethnobotany, this type of book is expected to enrich people's insights, especially the younger generation, about the use of traditional plants as a means of education and knowledge preservation (Putri et al., 2022).

Ideally, every popular scientific book developed should go through expert/expert assessment and validation to ensure data accuracy (Hayati et al., 2022). In addition, a practicality test is needed from users regarding ease of use (Trimurti et al., 2019), as well as an effectiveness test to measure its learning impact (Widyanarti et al., 2024). This whole process is essential for comprehensive product improvement to match the feedback obtained (Walid, 2025). In fact, based on the results of a literature study of articles on the development of popular scientific books on ethnobotanical studies in South Kalimantan, a significant gap was found, namely not all popular scientific books developed met the eligibility criteria as teaching materials or learning resources (Putra et al., 2021).

The shortcomings in ethnobotanical popular science books have not fully integrated in-depth local cultural contexts, and have not been equipped with pedagogical elements such as learning activities, assessments, or concept maps that can support contextual learning. These limitations indicate that although the material raises local potential, it is not maximized to be used as a teaching resource in the educational process (Ismail et al., 2024). Many of them have not been tested for content validity, practicality of use, and effectiveness. Without such comprehensive testing, published books are vulnerable to not achieving their original purpose as educational media and knowledge preservation (Ishtihaiyah et al., 2022).

The learning process of ethnobotany has not developed optimally in the community. Along with the times and the emergence of various alternative sources, knowledge and utilization of traditional plants are increasingly rare (Putra et al., 2021). If this condition continues, it is feared that knowledge about ethnobotany in local communities, especially in the younger generation, will fade, which will have an impact on the erosion of local cultural preservation (Harumi & Asyiah, 2014). To overcome these problems, relevant and easily accessible learning resources are needed because today's younger generation tends to be more responsive to contextual, visual and communicative learning media. When local knowledge is only passed down orally or limited to cultural practices, the potential for loss of important information is greater in the midst of modernization. Therefore, the development of ethnobotanical Popular Scientific

easy to understand, equipped with attractive visuals, and can bridge the gap between traditional knowledge and modern scientific approaches. Research by Irianti & Mahrudin (2021) shows that contextually developed and scientifically validated teaching materials can significantly increase students' interest in learning and understanding of concepts. The development of ethnobotanical popular science books based on local potential has gone through a comprehensive feasibility test, including validity, practicality, and effectiveness, so that ethnobotanical insights can continue to be passed on and the preservation of local culture is maintained in the midst of modernization (Putra et al., 2021).

Several previous studies in South Kalimantan continue to examine the development and evaluation of popular scientific books in the field of ethnobotany. These studies can be categorized based on two main approaches. First, they focus on the content aspect through inventories and in-depth ethnobotanical studies of specific plants. For example, Hamidah et al. (2022) focused on ethnobotanical studies of *areca nut* (*Areca catechu*), Rahmah et al. (2021) studied bungur plants (*Lagerstroemia speciosa*), Putri et al. (2022) examined sengkuang (*Dracontomelon dao*), Fitriyani et al. (2022) on galam (*Melaleuca cajuputi*), to Aisyah (2024) who studied jasmine (*Jasminum sambac*). These studies comprehensively document the utilization of plants from various aspects, ranging from botany, pharmacology, ecology, socio-anthropology, economics, to linguistics.

These studies focused on partial evaluation of the developed BIP products. Of the 10 studies analyzed, the majority (8 studies) used the Tessmer development method, which emphasizes formative evaluation to produce practical and effective products. This evaluation approach specifically measures two main aspects: material validity by experts and practicality or readability by users (students). The results showed very high consistency; almost all BIP products developed were declared "very valid" by expert validators and obtained "very good" criteria in the practicality test.

While this series of studies has successfully proven that the development of individual ethnobotanical BIPs for various plant species in South Kalimantan is feasible, there has been no comprehensive analysis that synthesizes these findings to draw general conclusions. Success has been proven at the scale of individual projects, but the big picture of methodological trends, consistency of results, and collective potential of these efforts has not been mapped. Therefore, this article aims to analyze the feasibility of developing a local wisdom-based ethnobotanical Popular Science Book (BIP) in South Kalimantan through a literature study. This analysis will synthesize findings from 10 previous studies to provide a full picture of the potential content, level of validity and practicality, as well as the dominant development methodology used, to confirm that BIP development is a generally feasible and effective approach for the conservation of ethnobotanical knowledge in the region.

Ethnobotany in South Kalimantan holds a wealth of local knowledge that is very important to be tested in the form of popular scientific books that are easy to understand, but until now there has been no comprehensive assessment of the potential of ethnobotany books that emphasize local wisdom. In contrast to previous studies that are general in nature, this study explores in detail and specifically, which lies in an in-depth literature study analysis to identify and synthesize information regarding the feasibility test status of popular scientific books related to local wisdom-based ethnobotany in South Kalimantan. This is a key strength of this article, which will fill a gap in existing studies by identifying how local wisdom is applied and presented, and make a significant contribution to the development of quality ethnobotanical books that are aligned with the local context.

Based on the urgency of this literature study, which is the provision of relevant and accessible learning resources through the development of locally-based ethnobotanical popular science books by testing feasibility, validity, practicality, and effectiveness, it is supported by previous research gaps, which show that many existing ethnobotanical popular science books have not been thoroughly tested for validity, practicality, and effectiveness. This literature study aims to analyze the feasibility of ethnobotanical popular science books based on local wisdom in South Kalimantan from literature studies. Thus, it is expected to provide in-depth insight into the quality and relevance of these books, and ultimately be able to formulate specific suggestions for the development of future ethnobotanical publications that are not only scientifically rigorous but can also reflect the wealth of local knowledge in an authentic and accessible way to the general public.

Research Methods

Methods can be divided into several sections which include:

1) Type

This research method uses a *systematic literature review* (SLR) research type, which uses secondary data obtained from various sources of scientific papers and current literature. Data was searched starting in September through the Google Scholar page with the keyword "Development of Ethnobotanical Popular Scientific Books" based on these keywords 922 articles were found and the 10 most relevant ones were selected, the determination of article

selection was determined based on the inclusion and exclusion criteria in Table 1 adapted from Fajeriadi et al. (2024). Data collection techniques were carried out by collecting key information from each article based on research findings. Furthermore, the data analysis technique used was descriptive analysis

2) Data source and time

Data for this study were collected from various trusted *database* sources, especially Google Scholar and other accredited journal *databases* relevant to the field of ethnobotany and the development of popular scientific books. The process of searching and collecting data was carried out systematically on July 24-27, 2025. This timeframe was set to ensure the completeness and novelty of the literature accessed, while limiting the focus to

3) Data collection techniques

The data collection technique in this literature study research was conducted through a *systematic literature review*, which is an approach to analyzing and understanding existing knowledge from previous studies related to specific phenomena, issues, or themes (Trimurti et al., 2019). This method was chosen to identify, evaluate, and summarize the results of previous studies related to the topic of ethnobotany and popular science book development, especially in the South Kalimantan area. The data collection process began with a thorough search on trusted *databases*, namely Google Scholar and several accredited scientific journal *websites*. The keywords used in the search included a combination of the words "ethnobotany", "popular scientific book", "book development". The publication time limit was set from 2020 to 2024 to ensure that the information obtained was relevant and up-to-date.

4) Data analysis techniques

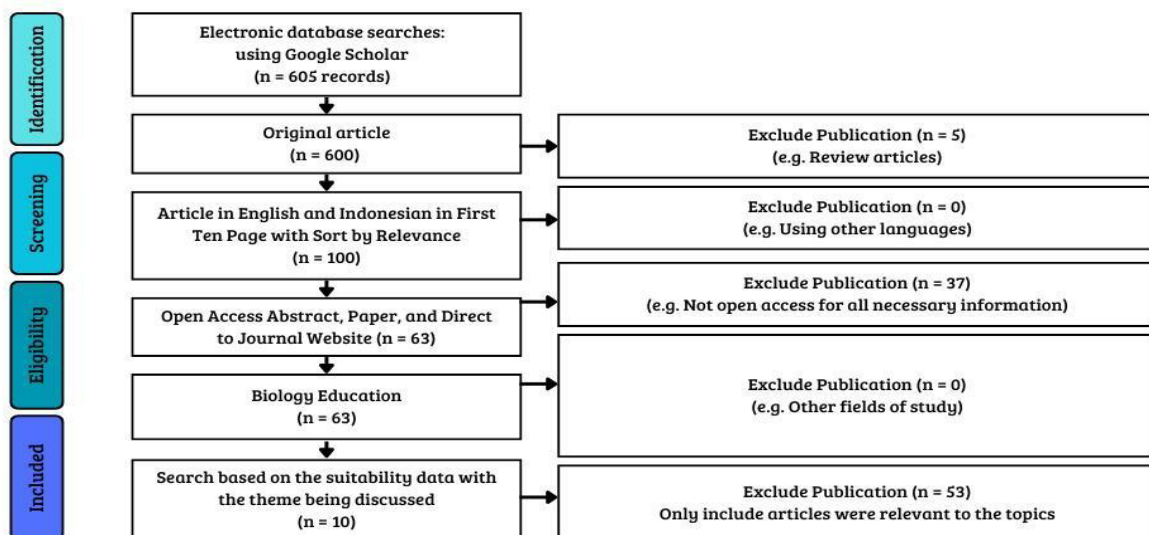


Figure 1 PRISMA model chart

This data was analyzed using *Content analysis* technique. *Content Analysis* is one of the most reliable methods of text analysis. *Content Analysis* sees data as symbols. The focus is on meaning, purpose, impact, and hidden messages in the text-things that are often difficult to reach with ordinary qualitative methods. From the aspect of purpose, *Content Analysis* aims to *explain (to explain)* variables from real symptoms (*observable*) instead of understanding (*to understand*) phenomena as the purpose of the interpretive paradigm, and is predictive (Rahardjo, 2017). Technically, the scope of *content analysis* includes: classifying signs or symbols used in a series of events, using certain criteria to classify, and applying specific analytical techniques to make a prediction. There are three important things that must be fulfilled in this method, namely: objective (impartial), carried out systematically (regular and planned), and the results can be generalized (applies to similar cases in general) (Abdurrohman, 2024).

Results and Discussion

Articles used in the feasibility analysis process of the Popular Scientific Book of Ethnobotany based on Local Wisdom in South Kalimantan: This Literature Study as many as 10 articles. The articles used come from *Google Scholar* sources. All of these articles were reviewed using the content analysis method to obtain information on the feasibility of using popular scientific books based on local wisdom.

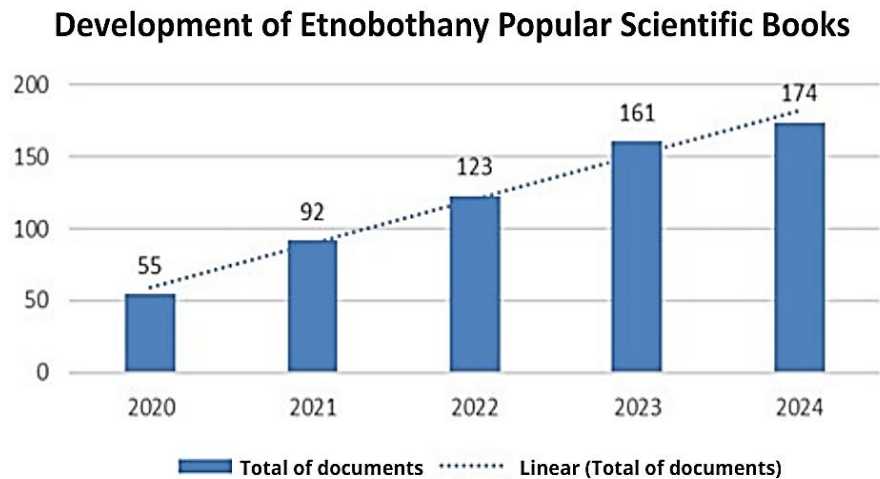


Figure 2 Diagram of total documents from 2020 to 2024

Based on this diagram of keywords in the search for article sources on Google Scholar, there is a continuous increase in the number of works produced from 2020 to 2024, which indicates an increase in the development of ethnobotanical popular scientific books each year (see Figure 2). In 2020, the number of documents was recorded at 55, then increased to 92 in 2021, and continued to show a substantial increase until it reached 174 documents in 2024. This pattern indicates a rapidly growing interest from scientific researchers in the development of ethnobotanical-based teaching materials in formats that are more accessible to the general public. This increase may reflect an awareness of the urgency of preserving and disseminating traditional knowledge that is increasingly vulnerable to modernization (Walid, 2025).

This positive trend is in line with global developments in the field of science communication, which continues to seek innovative methods to bridge the gap between scientific research and public understanding (Widyanarti et al., 2024). The increase in the number of documents, especially in the popular science book category, indicates a shift away from conventional scientific publications towards formats that are more adaptive for non-formal education (Bucchi & Trench, 2021).

Local wisdom about ethnobotany in South Kalimantan has great potential to be preserved and disseminated through Popular Scientific Books. The process of developing this teaching material has proven to be very feasible and able to produce educational products that are of high quality, valid, and practical to use. This can be seen from the results of the research contained in the article which provides observational data that shows an increase in the development of scientific books and their feasibility. The results of the review can be proven by some of the results of the article review which are written in tabular form which includes code, article title, researcher (year), method and findings.

Table 1 Results of Literature Collection and Review

Code	Title	Researcher (Year)	Method	Findings
BIP01	Ethnobotany of <i>Areca catechu</i> L. (<i>Areca</i> nut) of Dayak Bakumpai Bantuil Tribe of Barito Kuala Regency in the Form of a Popular Scientific Book.	Hamidah, H., Mahrudin, M., & Irianti, R. (2022)	Formative Evaluation of the Tessmer Model	Areca nut is used as medicine, ceremonial material, and has economic value. The Dayak Bakumpai people call it "simpa". The BIP was developed through expert and practical tests.
BIP02	Ethnobotanical study of sengkuang (<i>Dracontomelon dao</i>) in Sabuhur Village, Jorong District, Tanah Laut Regency as a popular science book	Putri, T.D.Y., Dharmono, D., & Utami, N. H. (2022).	Formative Evaluation of the Tessmer Model	The ethnobotanical research of the Sengkuang plant covered six aspects: as a medicine for diarrhea, greening, cultural symbols, building materials, and known for generations by the name "Sengkuang". The developed BIP was validated with Very Valid results (86.11%) and Very Good practicality (88.7%).
BIP03	Ethnobotany of <i>Sandoricum koetjape</i> Burm. f. Merr. (Kecapi) of Dayak Bakumpai Bantuil Tribe of Barito Kuala Regency in the Form of Popular Scientific Book	Hayati, T., Mahrudin, M., & Irianti, R. (2022).	Formative Evaluation of the Tessmer Model	Kecapi is utilized as medicine, food, building material, and cultural element by the Dayak Bakumpai tribe, known as "katapi" or "ketapi". The developed BIP is highly valid and practical.

Code	Title	Researcher (Year)	Method	Findings
BIP04	Ethnobotany of hanjuang in Sabuhur Village, Tanah Laut Regency as a popular scientific book	Najmah, L., Dharmono, D., & Riefani, M. K. (2022).	Formative Evaluation of the Tessmer Model	The ethnobotany of hanjuang includes medicinal, ornamental, ceremonial, economic, and belief functions, and is known as a shrub plant. The developed BIP was highly valid (94.7%) and excellent in practicality (93.0%).
BIP05	Ethnobotany of <i>Melaleuca cajuputi</i> (sub-species cumingiana) between the Sabuhur River as a popular scientific book.	Fitriyani, F., Dharmono, D., & Riefani, K. M. (2022).	Formative Evaluation of the Tessmer Model	Galam (<i>Melaleuca cajuputi</i>) is a tree and is utilized as medicine, building material, greening, and firewood. The developed BIP is highly valid and worthy of further study.
BIP06	Ethnobotanical Study of Bungur Plants (<i>Lagerstroemia speciosa</i>) in the Bukit Tamiang Forest Area of Tanah Laut Regency as a Popular Scientific Book	Rahmah, S.M., Dharmono, D., & Putra, A. P. (2021).	Tessmer Model Formative Evaluation	The ethnobotany of <i>Lagerstroemia speciosa</i> includes six aspects. The developed BIP is highly valid (90.3%) and practical (3.7%). The book is suitable for Ethnobotany enrichment and easy to understand, but the material is still limited so further development is needed.
BIP07	Ethnobotany of <i>Crataeva adansonii</i> (Tigaron) in Dayak Bakumpai Tribe, Bagus Village, Barito Kuala Regency in the form of a Popular Scientific Book.	Syakran, M., Dharmono, D., & Utami, N.H. (2022).	Formative Evaluation of the Tessmer Model	<i>Crataeva adansonii</i> is utilized as medicine, shade, and food by the Dayak Bakumpai people, under the name "tigaron". The developed BIP was highly valid (3.56) and its readability was excellent (94%).
BIP08	Ethnobotanical Study of <i>Cassia alata</i> L. (Gelinggang) in Dayak Bakumpai Community of Bagus Village, Barito Kuala Regency as a Popular Scientific Book	A Handayani, D., Dharmono, R Irianti (2022)	Research and Development Plomp model	<i>Cassia alata</i> L. or "gelinggang" is known to the Banjar and Bakumpai people, and is used limitedly for fuel and greening. The plant is naturally sustainable. The developed BIP is highly valid (90.97%) and its readability is excellent (91.66%).
BIP09	Ethnobotanical Study of <i>Donax caniniformis</i> K. Schum. (Bamban) in Dayak Bakumpai Tribe of Bantuil Village, Barito Kuala Regency in the Form of Popular Scientific Book.	Afifah, K. E., Mahrudin, M., & Irianti, R. (2022).	Formative Evaluation of the Tessmer Model	The ethnobotany of bamban includes medicinal functions, reforestation, traditional ceremonies, crafts, and is known as a single-leaf herb. The name "bamban" comes from the words bamboo and plait. The developed BIP is highly valid and excellent in practicality.
BIP10	Ethnobotanical Study of <i>Cerbera manghas</i> (Bintaro) in Dayak Bakumpai Community of Bagus Village, Barito Kuala Regency as a Popular Scientific Book.	Putri, S. E., Dharmono, D., Irianti, R. (2022)	Research and Development Plomp model	The ethnobotany of bintaro, including its use as a fever remedy, greenery, machete cover, and fishing bait is behind its local naming as "carapan". This study showed very positive validity test results and excellent content readability tests.

Based on Table 1, the articles analyzed related to the development of ethnobotanical popular science books based on local wisdom in South Kalimantan, it was found that aspects of validity and practicality became the main focus in the product feasibility test. Almost all articles (BIP01, BIP02, BIP03, BIP04, BIP05, BIP07, BIP08, BIP09, BIP10) explicitly mentioned the existence of expert validation tests and/or practicality tests. For example, the popular science book on the Sengkuang plant (BIP02) had a validity of 86.11% and a practicality of 88.7%, while the book on Hanjuang (BIP04) achieved a validity of 94.7% and a practicality of 93.0%. Similarly, the books on Kecapi (BIP03) and Gelinggang (BIP08) were also declared highly valid and practical or excellent in readability. This shows the researchers' commitment to ensuring the scientific accuracy of the content and the ease of use of the books as educational media.

This finding is in line with many teaching media development studies at the national and international levels that emphasize content validity as a fundamental prerequisite before the product is disseminated (Trimurti et al., 2019). Practicality is also a major concern because it determines user acceptance of teaching materials (Irianti & Mahrudin, 2021). Popular science books that have gone through expert validation tend to be more trustworthy, which is crucial for ethnobotanical topics that involve sensitive traditional knowledge and are often passed down orally (Latifah et al., 2020).

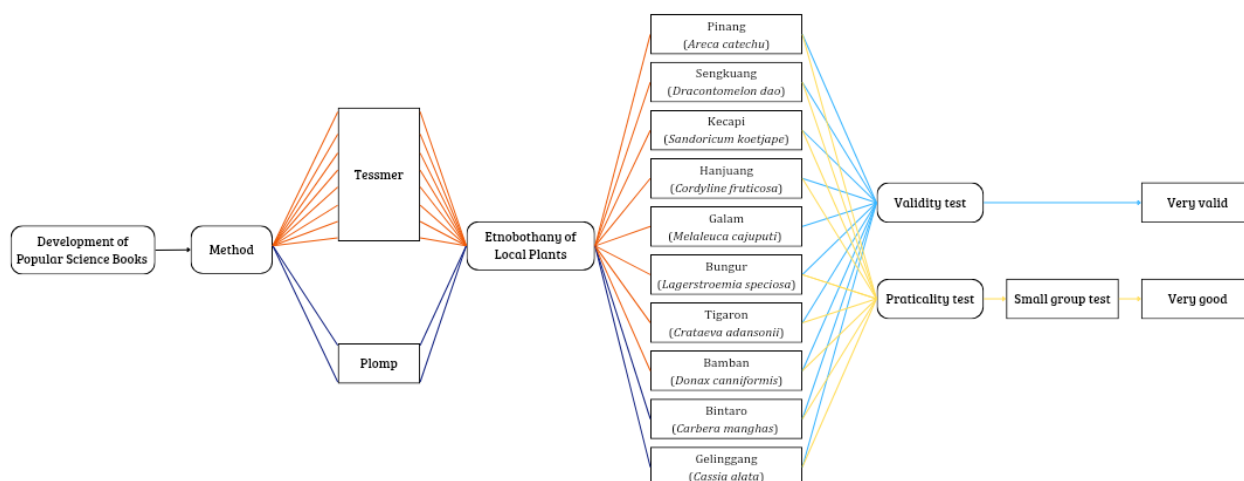


Figure 3 Chart of BIP development patterns

Based on the findings in Figure 3, further analysis of the 10 articles revealed significant gaps in effectiveness testing. Of all the articles reviewed, none explicitly reported the results of an effectiveness test on the use of ethnobotanical popular science books in increasing user understanding or awareness. Some articles only mentioned that the book was "worthy of further study with good product quality" (BIP05) or "showed very positive results" (BIP10) based on validity tests, without any quantitative data on learning impact. This is in contrast to contemporary educational media development research trends that increasingly demand empirical evidence of product impact on learning outcomes or changes in user behavior (Ahmadi et al., 2017). For example, research on the development of biology textbooks outside the ethnobotanical context often includes an effectiveness test through pre-test and post-test to measure the improvement of student understanding (Lutfiani, 2023). The absence of this effectiveness test suggests that, although the books are content-valid and practical, their true potential in conveying ethnobotanical knowledge and preserving local wisdom has not been fully measured or empirically proven. This is crucial considering that the main purpose of popular scientific books is to disseminate knowledge and increase public literacy (Putri et al., 2022).

The scientific implications of the results of this study confirm that the development of ethnobotanical Popular Scientific Books (BIPs) is a relevant strategy in responding to the challenges of modernization. On the one hand, modernization presents a threat to the sustainability of local knowledge due to shifting values, lifestyles and learning preferences of the younger generation. the growth of information and communication technology has triggered the phenomenon of modernization, which has created complicated dynamics in Indonesian society, especially with regard to upholding traditional cultural values in the face of global popular culture (Sabila et al., 2025). However, on the other hand, modernization also opens up great opportunities through technological advances and broad access to information. Modernization that encourages changes in various aspects of life, including in the field of science and technology (IPTEK) has had a significant impact on public education and communication (Wulandari et al., 2025). In this context, BIP is a bridge that is able to package the wealth of traditional knowledge in a format that is more adaptive, attractive and in accordance with the times. This indicates substantial potential for the integration of ethnobotany into the biology curriculum more systematically, not only as descriptive knowledge, but as an instrument to foster awareness of biodiversity and the role of indigenous peoples (Ismail et al., 2024).

The integration of local wisdom-based ethnobotany through popular scientific books naturally supports contextual learning. The material presented becomes more relevant and meaningful to students because it is directly related to their environment and culture (Syakran et al., 2022). This connection encourages *meaningful learning*, where new information is internalized through assimilation with existing knowledge schemes, thus improving retention and conceptual understanding. Furthermore, by understanding the complex relationships between humans and plants in ecological and cultural systems, this learning process has the potential to lead to *deep learning*, which is a substantive understanding that goes beyond memorization of facts, towards analysis and synthesis of ecological and conservation information. This approach is in line with modern curriculum demands that emphasize the development of higher-order thinking skills (Dewi et al., 2025).

However, the gaps identified in the effectiveness tests in most of the articles reviewed highlight crucial areas that require more attention in biology education research. Developers of ethnobotanical teaching materials need to be encouraged not only to produce valid and practical products, but also to evaluate the impact of learning empirically. Verification of effectiveness is essential to ensure that efforts to preserve ethnobotanical knowledge through books actually achieve the goal of increasing biological literacy and conservation awareness among the younger generation (Sabila et al., 2025). Without evidence of effectiveness, the potential of ethnobotanical popular science books as a

catalyst for changes in knowledge and attitudes becomes unverified, potentially hindering the achievement of national program goals related to strengthening character education, cultural preservation, and sustainable development that appreciates local wisdom (Ismail et al., 2024).

These findings underscore the urgency of developing a holistic and standardized feasibility test model for popular science books based on local wisdom in biology education. The model should include clear indicators for content and construct validity, practicality of use in the field, and effectiveness in changing readers' cognition and affection. Implementation of this model will support efforts to create biology teaching materials that are not only scientifically accurate, but also culturally relevant, accessible, and have a real impact on future biocultural preservation, in line with the vision of the national program to produce cultured and environmentally sound human resources (Hunt et al., 2023).

Conclusion

This research confirms that the development of ethnobotanical popular science books (BIPs) based on local wisdom in South Kalimantan is a very feasible and relevant initiative. Analysis of the ten research articles showed an increasing publication trend from 2020 to 2024, reflecting a growing research interest in disseminating traditional knowledge in the modern era. Consistently, these studies reported that the developed books achieved "very valid" and "excellent" levels of content validity and practicality of use. This indicates a strong commitment from researchers to ensure scientific accuracy and easy access to learning materials. Articles analyzed related to the development of ethnobotanical popular science books based on local wisdom in South Kalimantan, found that aspects of validity and practicality became the main focus in the product feasibility test. Almost all articles (BIP01, BIP02, BIP03, BIP04, BIP05, BIP07, BIP08, BIP09, BIP10) explicitly mentioned the existence of expert validation tests and/or practicality tests. For example, the popular science book on the Sengkuang plant (BIP02) had a validity of 86.11% and a practicality of 88.7%, while the book on Hanjuang (BIP04) achieved a validity of 94.7% and a practicality of 93.0%. Similarly, the books on Kecapi (BIP03) and Gelinggang (BIP08) were also declared highly valid and practical or excellent in readability. This shows the researchers' commitment to ensuring the scientific accuracy of the content and the ease of use of the books as educational media. Analysis of the 10 articles showed a consistent pattern in the focus of ethnobotanical BIP development, namely on the aspects of validity and practicality. Almost all studies used formative evaluation models, particularly the Tessmer model, and ignored empirical effectiveness testing. This pattern suggests that although the product is considered feasible and practical, the evaluation of learning impact is still an aspect that needs to be strengthened in future research.

Acknowledgement

The authors would like to thank Lambung Mangkurat University, Faculty of Teacher Training and Education, Department of Biology Education, for facilitating the publication of this article. The lecturers of the course, Prof. Dr. H. Muhammad Zaini M.Pd., Prof. Dr. H. Aminuddin Prahutama Putra, M.Pd., and Hery Fajeriadi, S.Pd., M.Pd. who have guided and directed the work on this article. Appreciation is also expressed to the researchers whose studies on ethnobotany and the development of popular scientific books in South Kalimantan have become primary data sources and the main basis for this literature study. Acknowledgments are addressed to those who have provided support in the completion of the article, in accordance with the established guidelines

References

- Abdurrohmah, A. (2024). Tren penggunaan metode penelitian pendidikan pada Jurnal Internasional. *Indonesian Journal of Islamic Religious Education*, 2(1), 45–63. <https://injure.org>
- Ahmad, F., Witanto, Y., & Ratnaningrum, I. (2017). Pengembangan media edukasi "Multimedia Indonesian Culture" (MIC) sebagai penguatan pendidikan karakter siswa sekolah dasar. *Jurnal Penelitian Pendidikan*, 34(2), 127–136. <https://lib.unnes.ac.id/37234/>
- Bucchi, M., & Trench, B. (2021). Routledge handbook of public communication of science and technology. In *Routledge Handbook of Public Communication of Science and Technology*. <https://doi.org/10.4324/9781003039242>
- Chakale, M. V., Mooki, O., Nko, K. I., Sedupane, G., & Aremu, A. O. (2025). Batswana ethnobotany: An appraisal of the uses of botanicals for diverse purposes among local communities in Botswana and South Africa. *South African Journal of Botany*, 184, 1010–1050. <https://doi.org/10.1016/j.sajb.2025.06.040>

- Dewi, A. R., Eka Wati Maily, M., Nur Cahyani Safitri, F., Nor Zaitunnah, P., & Laili Mala, Z. (2025). Deep learning dalam pembelajaran MI tinjauan literatur dalam meaningful learning mindful learning dan joyful learning. *10*(2), 584–592. <https://ejurnal.stkip-pessel.ac.id/index.php/kp/article/view/580/413>
- Fakri, F., Isnaini, N., Nasution, A. M., Bakri, K. T., Illian, D. N., Muhni, A., & Andry, M. (2025). Ethnopharmaceutical study of medicinal plants in the geothermal area of Ie Seum, Aceh Besar: Exploring traditional knowledge and pharmacological potential. *Jurnal JPS*, *8*(2), 1160–1166. <https://doi.org/10.36490/journal-jps.com.v8i2.864>
- Gaoue, O. G., Coe, M. A., Bond, M., Hart, G., Seyler, B. C., & McMillen, H. (2017). Theories and major hypotheses in ethnobotany. *Economic Botany*, *71*(3), 269–287. <https://doi.org/10.1007/s12231-017-9389-8>
- Goss, A. (2023). Decolonizing botany: Indonesia, UNESCO, and the making of a global science. *Journal of the History of Biology*, *56*(3), 495–523. <https://doi.org/10.1007/s10739-023-09734-8>
- Harumi, R. A., & Asyiah, I. N. (2014). *Pengembangan modul pembelajaran muatan lokal etnobotani masyarakat Using di SMA Negeri 1 Giri Banyuwangi*. Universitas Jember Repository. <https://repository.unej.ac.id/handle/123456789/63750>
- Hayati, T., Mahrudin, M., & Irianti, R. (2022). Etnobotani *Sandoricum koetjape* Burm.f. Merr. (Kecapi) Suku Dayak Bakumpai Bantuil Kabupaten Barito Kuala berbentuk buku ilmiah populer. *JUPEIS: Jurnal Pendidikan dan Ilmu Sosial*, *1*(4), 67–80. <https://doi.org/10.57218/jupeis.vol1.iss4.323>
- Hunt, C. A., Jones, M. E., Bustamante, E., Zambrano, C., Carrión-Klier, C., & Jäger, H. (2023). Setting up roots: Opportunities for biocultural restoration in recently inhabited settings. *Sustainability*, *15*(3), 1–18. <https://doi.org/10.3390/su15032775>
- Indriyani, S., Shalehah, S., & Ilmiah, N. (2023). Pemanfaatan jenis-jenis tumbuhan obat pada masyarakat Kalimantan Selatan sebagai sumber belajar. *Konstruktivisme: Jurnal Pendidikan dan Pembelajaran*, *14*(2), 162–170. <https://doi.org/10.35457/konstruk.v14i2.2674>
- Irianti, R., & Mahrudin, M. (2021). Analisis kepraktisan buku ilmiah populer keanekaragaman jenis ikan berbasis penelitian sebagai bahan pengayaan mata kuliah zoologi vertebrata konsep ikan. *Wahana-Bio: Jurnal Biologi dan Pembelajarannya*, *13*(1), 52–59. <https://doi.org/10.20527/wb.v13i1.9599>
- Ishthifaiyah, N., Zaini, M., & Badruzsaufari, B. (2022). Implementation of popular science book development of herbal planting in an attempt to settle the student's senior high school critical thinking skills. *BIO-INOVED: Jurnal Biologi-Inovasi Pendidikan*, *4*(1), 66–74. <https://doi.org/10.20527/bino.v4i1.11112>
- Ismail, I. A., Mawardi, Kurniawati, D., Arif, K., & Nofrialdi, R. (2024). Dari warisan leluhur ke laboratorium modern: Etnosains mewarnai pembelajaran IPA berbasis Kurikulum Merdeka. *Zenodo*. <https://doi.org/10.5281/zenodo.14323693>
- Latifah, N., Dharmono, & Zaini, M. (2020). Validity of a popular scientific book: Diversity of species of Anacardiaceae family in improving students' critical thinking skills. *Jurnal Pendidikan Biologi Indonesia*, *11*(2), 138–145. <https://d1wqtxts1xzle7.cloudfront.net/109136723/pdf-libre.pdf>
- Lutfiani, A. (2023). *Pengembangan booklet keanekaragaman tanaman obat sebagai sumber belajar biologi kelas X (Skripsi)*. IAIN Syekh Nurjati Cirebon. <https://repository.syekhnurjati.ac.id/15024/>
- Mahdiyah, D., Anggrita, S., Adriana, P., Vidia, S. P., Al, R., & Fauzi, N. (2016). Pemanfaatan kekayaan hayati lokal: Teh fermentasi dari kelakai (*Stenochlaena palustris*) sebagai produk kewirausahaan. In *Prosiding Seminar Nasional* (Vol. 7, pp. 1–23). <https://download.garuda.kemdikbud.go.id/article.php?article=2259792>
- Markolinda, Y., Sawirman, S., Ramadani, M., Yusya, F., Husna, N., Azmi, F., Surya, R. F., Taufiqurrahman, R. A., & Boru Panjaitan, M. L. D. (2025). Indigenous knowledge for disaster mitigation and climate threats in Mentawai, Indonesia. *Jambá: Journal of Disaster Risk Studies*, *17*(1), 1–10. <https://doi.org/10.4102/jamba.v17i1.1877>
- Pei, S., Alan, H., & Wang, Y. (2020). Vital roles for ethnobotany in conservation and sustainable development. *Plant Diversity*, *42*(6), 399–400. <https://doi.org/10.1016/j.pld.2020.12.001>
- Putra, N. H. M. S., Dharmono, D., & Mahrudin, M. (2021). Validitas buku ilmiah populer etnobotani tumbuhan *Gliricidia maculata* di kawasan hutan Bukit Tamiang Kabupaten Tanah Laut. *Wahana-Bio: Jurnal Biologi dan Pembelajarannya*, *12*(1), 1–7. <https://doi.org/10.20527/wb.v12i1.8489>
- Putri, S. E., Dharmono, D., & Irianti, R. (2022). Kajian etnobotani *Cerbera manghas* (Bintaro) pada masyarakat Dayak Bakumpai Desa Bagus Kabupaten Barito Kuala sebagai buku ilmiah populer. *JUPEIS: Jurnal Pendidikan dan Ilmu Sosial*, *1*(4), 139–152. <https://doi.org/10.57218/jupeis.vol1.iss4.376>
- Putri, T. D. Y., Dharmono, D., & Utami, N. H. (2022). Kajian etnobotani tumbuhan sengkuang (*Dracontomelon dao*) di Desa Sabuhur Kecamatan Jorong Kabupaten Tanah Laut sebagai buku ilmiah populer. *JUPEIS: Jurnal Pendidikan dan Ilmu Sosial*, *1*(2), 33–42. <https://doi.org/10.55784/jupeis.Vol1.Iss2.36>
- Rahardjo, M. (2017). Studi kasus dalam penelitian kualitatif: Konsep dan prosedurnya. *Development Studies Research*, *3*(1), 43–50. <https://repository.uin-malang.ac.id/1104/>
- Sabila, N., Safitri, D., & Sujarwo. (2025). Pelestarian nilai budaya melalui pendidikan di tengah arus globalisasi. *Jurnal Intelek Insan Cendikia*, *2*(4), 7641–7651. <https://jicnusantara.com/index.php/jiic>

- Sterling, E. J., Filardi, C., Toomey, A., Sigouin, A., Betley, E., Gazit, N., Newell, J., Albert, S., Alvira, D., Bergamini, N., Blair, M., Boseto, D., Burrows, K., Bynum, N., Caillon, S., Caselle, J. E., Claudet, J., Cullman, G., Dacks, R., ... Jupiter, S. D. (2017). Biocultural approaches to well-being and sustainability indicators across scales. *Nature Ecology & Evolution*, 1(12), 1798–1806. <https://doi.org/10.1038/s41559-017-0349-6>
- Syakran, M., Dharmono, D., & Utami, N. H. (2022). Etnobotani *Crataeva adansonii* (Tigaron) pada Suku Dayak Bakumpai Desa Bagus Kabupaten Barito Kuala berbentuk buku ilmiah populer. *JUPEIS: Jurnal Pendidikan dan Ilmu Sosial*, 1(4), 105–114. <https://doi.org/10.57218/jupeis.vol1.iss4.340>
- Trimurti, C. P., Muhartono, D. S., Karundeng, D. R., Chasanah, U., Nasir, W. M. N. W. M., Risambessy, A., Roziqin, M. S. C. R. A., Hafianti, S., Farid, A., Masrom, A. N., Susanti, A. R., Wikaningtyas, S. U., Asmorowati, S., Hanani, R., Setiawan, J., Pramestidewi, C. A., & Supriadi, Y. N. (2019). *Metodologi penelitian: Pendekatan kuantitatif dan kualitatif*. STIE WW Press. <http://eprint.stieww.ac.id/2724/>
- Wahyu. (2020). Kearifan lokal dalam perspektif budaya Banjar. *Cross-Border*, 3(2), 226–240. <https://journal.iaisambas.ac.id/index.php/Cross-Border/issue/view/66>
- Walid, A. (2025). *Ethnosains dan kearifan lokal kota Bengkulu*. UIN FAS Bengkulu Repository. <http://repository.uinfasbengkulu.ac.id/id/eprint/4220>
- Widyanarti, T., Syahrani, R. H., Fadhilah, N., Adawiyyah, N., Setiawaty, S. H., & Putri, A. O. A. (2024). Tantangan dan inovasi dalam komunikasi antar budaya di era globalisasi. *Interaction Communication Studies Journal*, 1(3), 24–35. <https://doi.org/10.47134/interaction.v1i3.3320>
- Wulandari, M., Umma, P. S., Sehati, I. R., & Safitri, S. (2025). Dampak perkembangan IPTEK terhadap perubahan sosial dan dinamika kehidupan. *WISSEN: Jurnal Ilmu Sosial dan Humaniora*, 3(2), 258–264. <https://doi.org/10.62383/wissen.v3i2.782>