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Ethnobotany of Limnocharis Flava (L.) Buch in Bakumpai Dayak Community of Bagus Village, Barito Kuala District as A Popular Scientific Book

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Abstract. Ethnobotany describes the relationship between plant benefits and communities over generations. Limnocharis flava (L.) Buch. is one of the plants utilized by Bakumpai Dayak community in Bagus Village and can be studied ethnobotanically. This research aims to describe the ethnobotanical study of Limnocharis flava (L.) Buch. in the Bakumpai Dayak community of Bagus Village, Barito Kuala District, and to determine the validity and readability of the content of the popular scientific book developed on the ethnobotany of genjer. This research used the development research method based on Plomp's model (1997) to develop teaching materials in the form of a popular scientific book. The results of this development research show six aspects/studies of genjer ethnobotany: genjer botanical study has a round stem (globosus), genjer ethno-pharmacological study as a remedy for tonsillitis and appetite enhancer supplement, genjer ethno-ecological study based on its growing conditions already meeting optimal conditions, genjer ethno-socioanthropological study as a complementary vegetable for wedding and celebration events, genjer ethno-economic study used as a mixture for raw vegetables and sold in markets, and genjer ethno-linguistic study named "genjir" by the Bakumpai Dayak community due to its aligned growth. The validity test results for developing the popular scientific book show highly valid results with an average score of 3.5. The readability test results for the content of the popular scientific book show very good results, with an average score of 89.5%.

Keywords: bakumpai dayak; content readability; ethnobotany; popular scientific book

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INTRODUCTION

The forests in South Kalimantan are tropical forests rich in biodiversity, especially plant diversity. This region is known for its abundant medicinal plants, with many plants utilized by local communities (Asa et al., 2017; Lovadi et al., 2014; Suryana, 2009). In educational studies, the utilization of plant diversity is commonly referred to as Ethnobotany. According to Hakim (2014), ethnobotany emerges to gather information and enhance the community's understanding of a plant's functions deeply.

Knowledge describing biodiversity, conservation of biological resources, and traditional plant knowledge is termed ethnobotanical studies (Tapundu et al., 2015). On the other hand, ethnobotanical studies also explore plant taxonomy and

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the use of plants for specific tribal or customary ceremonies and natural resource management (Najmah et al., 2022; Rahayu, 2017; Sari, 2024).

There are six studies in ethnobotany: ethnobotany, ethno-pharmacology, ethno-ecology, ethno-socioanthropology, ethno-linguistics, and ethno-economics. Efforts to preserve the local community's knowledge of plant utilization to prevent extinction are one of the benefits of studying ethnobotany (Dharmono, 2019). Several studies on plants in South Kalimantan include Garvita (2015), who researched the traditional medicinal plant use for facilitating childbirth by the Meratus Dayak tribe in South Kalimantan, Susanti (2015), who studied the ethnobotany of local swamp vegetables in Martapura market, South Kalimantan, and Saefiana et al. (2022) who examined the ethnobotanical study of Nauclea subdita (Bangkal) in the Bakumpai Dayak community of Bagus Village, Barito Kuala District, as a Popular Scientific Book. Widya (2018) researched Ethnobotany and Characteristics of Swamp Vegetables in Banjar Regency, South Kalimantan. Based on the research results, six types of swamp vegetables were identified, including Kangkung (Ipomoea aquatica), Genjer (*Limnocharis flava (L.) Buch*), Talas (*Colocasia esculenta*), Kelakai (*Stenochlaena palustris*), Supan-supan (*Neptunia oleracea*), and Talipuk (*Nymphaea pubescens*).

Based on several previous ethnobotanical studies, it can be understood that plants in nature are often utilized for specific purposes, ranging from low plants to tall ones, including herbs, shrubs, and trees. Many plants in South Kalimantan are found in habitats such as swamp forests, coastal forests, and riverbanks. One of the swamp plants that can be utilized is genjer (*Limnocharis flava (L.) Buch*).

Based on previous observations, several plant species were found in the Bagus Village area, precisely under the Rumpiang Marabahan bridge, which is also utilized by the surrounding community. These include genjer (*Limnocharis flava (L.) Buch*), putat (*Planchonia valida (Bi.*), bangkal (*Nauclea subdita*), bamban (*Donax canniformis*), jambu agung (*Syzygium malaccense*), and waru (*Hibiscus tiliaceu*), making this area a great research potential.

The environment around us serves as a good learning space and can be utilized as a source of knowledge, especially regarding plants. This is because our flora (plants) are diverse, making them an optimal learning resource. Using teaching media or learning resources based on local wisdom can make learners closer to the learning object, stimulate learners to be more active, enhance and enrich learners' knowledge and abilities regarding learning materials, and increase mastery of theory using examples found in the field.

Efforts to create locally potential-based learning benefit learners regarding human resources, economy, geography, ecology, and information and communication technology (Asmani, 2012; Susapti, 2022).

According to Putri et al. (2021), learning resources based on local potential in South Kalimantan have not been widely utilized or developed, especially popular scientific books about plants. However, popular scientific books can greatly facilitate understanding of learning materials, making using locally-based learning resources highly beneficial for students.

There is information from lecturers that teaching materials regarding the study of ethnobotany concerning local plants are still relatively scarce and limited in the Biology Education Program at the Faculty of Teacher Training and Education of Lambung Mangkurat University. Therefore, further

research and development are needed. This limitation can hinder learning processes based on local plants. However, locally-based teaching materials are undoubtedly very useful, making it easier for students to study ethnobotanical studies of local plants in South Kalimantan.

The research problem of this study is how the ethnobotany of *Limnocharis flava (L.) Buch* (genjer) is in the Bakumpai Dayak community of Bagus Village, Barito Kuala District, and what is the feasibility of the popular scientific book covering validity and readability developed on Ethnobotany of *Limnocharis flava (L.) Buch* (genjer) in the Bakumpai Dayak community of Bagus Village, Barito Kuala District. This is because no ethnobotanical research has been conducted in riverbank areas, where most communities often utilize the surrounding plants for various purposes in daily life. Therefore, further research and development efforts are necessary to ensure the information and knowledge obtained are properly documented.

Based on the above description, the researcher is interested in conducting "Ethnobotanical Study of *Limnocharis flava (L.) Buch.* (Genjer) in the Bakumpai Dayak Community of Bagus Village, Barito Kuala District, as a Popular Scientific Book." This research aims to describe the ethnobotanical study of *Limnocharis flava (L.) Buch.* (Genjer) in the Bakumpai Dayak community of Bagus Village, Barito Kuala District, and to determine the validity and readability of the content of the popular scientific book developed on the ethnobotany of genjer.

METHOD

This genjer ethnobotanical study uses the research and development method with Plomp's model (1997), consisting of 5 phases: 1) preliminary investigation phase, 2) design phase, 3) realization or construction phase, 4) testing, evaluation, and revision phase, and 5) implementation phase, using a snowball sampling technique.

The snowball sampling technique identifies, selects, and samples within a network or chain of continuous relationships. The researcher presents a network through a sociogram of interconnected circles and lines. Each circle represents a respondent or case, and the lines indicate the relationship between respondents or cases (Agusven et al., 2022; Neuman, 2003; Nurdiani, 2014). According to Sugiyono (2017), snowball sampling is a technique for sampling data sources, which initially are few but increase over time because the limited data sources cannot provide satisfactory data.

The research was conducted on the Bakumpai Dayak community in Bagus Village, Barito Kuala District, and two lecturers from the Biology Education Program at the Faculty of Teacher Training and Education of Lambung Mangkurat University (ULM) served as expert validators. Additionally, five students who had taken ethnobotany courses participated as subjects for testing the produced products. Data collection for the syllabus (RPS) of the ethnobotany course, with learning outcomes from CPMK 1 to CPMK 5, and the development of teaching materials were carried out at the Biology Education Program, Faculty of Teacher Training and Education, ULM, Banjarmasin.

The creation and development of this popular scientific book took place over four months, from August to December, including proposal preparation, data collection, data analysis, and research report writing. Data collection was conducted in September. The popular scientific book, validated by experts, will be matched with criteria according to Dharmono et al. (2020).

Table 1 Validity criteria based on score

Score	Criteria	Description
3.26-4.00	Very valid	No revision required
2.51-<3.26	Valid	Minor revision required
1.76-<2.51	Less valid	Major revision required
1.0-< 1.76	Invalid	Total revision required

Meanwhile, the readability of this popular scientific book by the five students will also be matched with modified criteria according to Dharmono et al. (2020).

Table 2 Readability criteria based on score

No	Criteria	Description
1.	80%-100%	Excellent
2.	70%-< 80%	Good
3.	60%-< 70%	Fairly Good
4.	50% -< 60%	Poor
5.	< 50%	Very Poor

RESULT AND DISCUSSION

Observations on the ethnobotanical study of *Limnocharis flava (L.) Buch* (genjer) in the Bakumpai Dayak community of Bagus Village, Barito Kuala District, covered botanical, ethnopharmacological, ethnoecological, ethnosocioanthropological, ethnoeconomic, and ethnolinguistic studies, yielding the following results:

Ethnobotanical Study

Table 3 Validity criteria based on score

No	Criteria	Description
1	Botany	The plant blooms with compound umbels that are yellow and located in the axils of the leaves. It bears compound fruits consisting of 3-5 green capsule-like structures. It has elongated, smooth-edged compound leaves with a green color. It grows to a height of about 18 cm with brown fibrous roots.
2	Ethnopharmacology	Used for treating tonsillitis and as a dietary supplement to increase appetite.
3	Ethnoecology	Limnocharis flava (L.) Buch. (genjer) is used as a green plant but is not utilized by livestock. Typically, genjer is a habitat and food source for insects such as grasshoppers, ants, spiders, and butterflies.
4	Ethnoeconomics	The stems, young leaves, flowers, and fruits of genjer are used for personal purposes and are sold for approximately Rp. 2500-5000 per bunch.
5	Ethnosocioanthropology	Genjer is used as a complement to vegetable dishes during weddings and ceremonies. The parts used are the stems, young leaves, and young flowers and fruits.
6	Ethnolinguistics	The Bakumpai Dayak community in Bagus Village, Barito Kuala District, commonly refers to genjer as "Genjir," named so by the local community due to its orderly growth.

Botanical Study

Based on field identification results regarding the botanical study of genjer plants, the plant's classification is as follows

Kingdom : Plantae
Subkingdom : Tracheobionta
Super Division : Spermatophyta
Division : Magnoliophyta

Class : Liliopsida
Subclass : Alismatidae
Order : Alismatales
Family : Limnocharitaceae
Genus : Limnocharis
Spesies : *Limnocharis flava* (L.) Buch. (Sumber : (Hasanah, 2022; Prastisi, 2019; Tjitrdsosoepomo, 1995)

Based on morphological observations of genjer plants for the Botanical Study, genjer plants have a brown fibrous root system (*radix adventicia*). According to Chaidir et al. (2016) these roots are called adventitious because they do not originate from the original root. Genjer plants have inflorescences consisting of 2-6 flowers. Genjer flowers only bloom in the morning around 7 a.m. each day when the sun rises, and only one flower blooms from the total number of inflorescences. The genjer stem is herbaceous, contains a lot of water, is thick and round, and measures approximately 15-50 cm long (Isa et al., 2014; Steenis, 2006).

Genjer has single leaves complete with curved leaf veins, with the widest part of the leaf located in the middle and tapering towards the tip. Its fruit is round and not fleshy, containing seeds wrapped in follicles. The seeds are dark brown with serrated edges (Marfiana, 2022).

Ethnopharmacological Study

According to the Bakumpai Dayak community in Bagus Village, genjer plants can be used as a remedy for tonsillitis. As a dietary supplement to increase appetite, a practice passed down from generation to generation. This is consistent with the statement by Atmojo (2013) that the use of plants as traditional medicine has been the knowledge of communities since ancient times from their ancestors.

Genjer plants also have antibiotic properties, heal wounds quickly, maintain skin and digestive health, and can lower cholesterol levels. In addition to being consumed as a vegetable, gender leaves, and flowers contain cardenolides, flavonoids, and polyphenols that can increase appetite (Ifora et al., 2018; Isa et al., 2014).

Ethnoecological Study

Based on interviews with several Bakumpai Dayak community members in Bagus Village, it was found that *Limnocharis flava (L.) Buch.* (genjer) is used as a green plant but is not utilized by livestock. Typically, genjer is a habitat and food source for insects such as grasshoppers, ants, spiders, and butterflies. The following table presents data on environmental parameter measurements around the research site.

Table 4 Environmental parameters of genjer plants

No	Parameter	Observation Results	Literature
1.	Light Intensity	6.520 - >20.000 Lux	27->42000 lux*
2.	Wind Speed	0,0 –2 m/s	03-1.9m/s*
3.	pH of soil	5.9 - 6.8	4-6*
4.	Soil Moisture	97 - 100%	73.14%-91.57%*
5.	Air Humidity	48 - 67%	70%-90%*
	Air Temperature	32-34°C	25°C–30°C*

Source: *Hardiansyah et al. (2018)

Ethno-Economics Study

Ethno-economic study is one of the branches of ethnobotany that deals with the economic benefits of a plant (Dharmono, 2019). Based on interviews with the Bakumpai Dayak community in Bagus Village, Batola District, the stems, young leaves, flowers, and fruits of genjer are used for personal purposes and are sold for approximately Rp. 2,500-5,000 per bunch.

Ethno-Socioanthropological Study

Based on interviews regarding the benefits of genjer plants in the Ethno-Socioanthropological study, genjer plants complement vegetable dishes during weddings and ceremonies. The parts used are the stems, young leaves, and young flowers and fruits. The processing method involves thoroughly washing all parts of the plant and boiling them in boiling water until slightly wilting. Once cooled, they are mixed with grated coconut and a little sliced shallots, salt, and seasoning according to taste, and a little shrimp paste can also be added. This dish can be served with other dishes for wedding or ceremony guests.

The reciprocal relationship between nature and culture can influence human knowledge about plants, animals, or other elements, resulting in myths or beliefs about what is permissible. As a result, some traditions contain moral values about certain actions. This behavior is taught and believed to be passed down through generations (Dharmono, 2019).

Ethno-Linguistics Study

Ethno-linguistics studies the basis of naming or referring to a plant in several regions, usually known through generations (Dharmono, 2019). Based on interviews with the Bakumpai Dayak community in Bagus Village, Barito Kuala District, they generally refer to genjer as "Genjir," which is named so by the local community due to its orderly growth. This naming is believed to originate from the local community, which was then passed down by earlier generations. Knowledge about the origin of this name is not always taught to future generations due to the relatively low level of curiosity.

Validity of Popular Scientific Books (PSB)

The validation process by experts aims to review the initial product that has been made, and later, this product will be revised according to the suggestions and inputs given during the validation process (Emzir, 2010; Puslitjaknov, 2008). The validated book is a popular scientific book entitled "Ethnobotany of Limnocharis flava (L.) Buch" as seen in Figure 1.

Figure 1 Front and back cover of PSB

The Popular Scientific Book (PSB) created was validated by two Biology Education lecturers from FKIP ULM, as presented in Table 5.

Table 5. Results of Popular Scientific Book Validation

Writing Indicator	Validator		Average
	1	2	
A. Coherence	3	4	3.5
Each paragraph in the PSB has a main idea			
Linking sentences using conjunctions.	3	3	3
Ideas presented sequentially	3	4	3.5
Sentences direct readers to understand the content	4	3	3.5
Total			3.37
B. Readability	3	4	3.5
Text content is suitable for age/educational level			
Sentences and word count can measure reader level	4	3	3.5
Total			3.5
C.Vocabulary: expressions, verbs, excessive choices, Limited use of expressions	3	4	3.5
Words or expressions used do not involve excessive vocabulary.	3	4	3.5
Total			3.5
D.Active and passive sentences	3	4	3.5
Using active and passive sentences			
Total			3.5
E. Format	3	4	3.5
In the form of scientific writing displaying evidence in the form of systematically arranged data or images			
Total			3.5
F.Writing method	3	4	3.5
Simplicity and attractiveness of writing.			
Total			3.5
G.Application, implications Using real-world problems to engage readers	3	4	3.5
Total			3.5
H.Definitions and explanations	3	4	3.5
Using descriptions, examples, analogies, or metaphors to facilitate reader understanding			
			3.5
I.Other style devices: narration, humor, analogies	4	3	3.5
Using analogies to explain complex ideas.			
Using narration to explain presented ideas.	4	4	4
Total			3.5
Total Score			53
Average Score of Validation			3.5
Validation Criteria			Very Valid

Based on the average validation score from two validators in Table 5 above, the teaching materials in the form of a popular scientific book developed obtained a very valid criterion with a score of 3.5. Based on the average validity score in Table 5 above, the teaching materials developed procedurally and theoretically are very valid or suitable for use. This is in line with Hera et al., (2014) that a popular scientific book with valid criteria is a quality teaching material suitable for use in learning (Ghani et al., 2019).

Readability of Popular Scientific Book (PSB)

Individual testing of the produced product is important to ensure that the developed product meets the needs and can be used independently or in groups in the field. Readability testing is a

benchmark for the suitability of the product with the material or content that will be used by students (Dharmono et al., 2020). The following data presents the results of individual testing conducted by students.

Table 6. Results of Individual Testing by Students

Statement	Student				
	M1	M2	M3	M4	M5
Each section studied is easy to understand.	3	3	3	4	4
The entire PSB content is complete (Cover, editorial, preface, table of contents, introduction, main content, references, index, glossary).	4	3	4	4	4
The words used are easy to understand.	4	3	4	4	3
The quality of the images is good, and their meaning can be understood.	3	4	4	4	3
Typographical errors or grammatical errors are not found.	4	3	3	3	3
The photo on the cover is clear, and its meaning can be understood	3	4	4	4	3
Total	21	20	22	23	20
PSB Readability Score (%)	87.5%	83.3%	97.7%	95.8%	83.3%
Average (%)	89.5%				
Readability of Content Criteria	Very Good				

Based on the results of individual testing by 5 students, as shown in Table 6, it falls into the criteria of very good, indicating that the teaching materials in the form of a popular scientific book developed are very good with a score of 89.5%, thus being suitable for use in terms of appearance, material presentation, and benefits to support ethnobotany courses and other references.

CONCLUSION

The results of this development research show six aspects/studies of ethnobotany of the genjer plant, namely botanical studies, ethno-pharmacological studies, ethno-ecological studies, ethno-socioanthropological studies, ethno-economic studies, and ethno-linguistic studies. The botanical study of genjer has a round stem, the ethno-pharmacological study of genjer as a remedy for tonsillitis and a supplement to increase appetite, the ethno-ecological study of genjer based on its growth requirements already meets optimal conditions, the ethno-socioanthropological study of genjer as a complementary vegetable for urap at weddings and ceremonies, the ethno-economic study of genjer used as a mixture for fresh vegetables and sold in markets, and the ethno-linguistic study of genjer named "genjir" by the Dayak Bakumpai people because of its clustered growth. The validity test results of the development of the popular scientific book show very valid results with an average score of 3.5. The readability test results of the popular scientific book development show very good results, with an average score of 89.5%. This research encountered difficulties in the design of the popular scientific book because the researcher lacked proficiency in design applications. Therefore, it is recommended for future research to focus on developing design processes and mastering several design applications. The research developed by the researcher only reached the prototype stage and underwent expert review and one-to-one testing; it is advisable to continue testing to the next stage to determine the results of the next research phase.

REFERENCES

Agusven, T., Satriadi, Hafizni, R., Santoso, N. K., & Hasnarika.

(2022). *Dasar metodologi penelitian kualitatif*. Batam: CV Rey Media Grafika.

Asa, K., Budiman, E., & Pakpahan, H. S. (2017). Pengembangan sistem informasi keanekaragaman hayati data pohon dan endemik pada hutan hujan tropis kalimantan. *Prosiding Seminar Nasional Ilmu Komputer Dan Teknologi Informasi*, *2*(2), 85–90. https://e-journals.unmul.ac.id/index.php/SAKTI/article/view/750/pdf

Asmani, J. M. (2012). *Buku panduan internalisasi pendidikan karakter di sekolah*. Yogyakarta: Diva Press.

Atmojo, S. E. (2013). Pengenalan etnobotani pemanfaatan tanaman sebagai obat kepada masyarakat desa cabak jiken kabupaten blora *Jurnal Illmiah WUNY, 1*(1).https://10.0.85.71/jwuny.v15i1.3529

Chaidir, L., Yuliani, K., & Qurrohman, B. F. T. (2016). Eksplorasi dan karakterisasi tanaman genjer (Limnocharis flacva (L.) buch. di kabupaten pangandaran berdasarkan karakter morfologi dan agronomi. *AGRIS - International System for Agricultural Science and Technology*, *3*(2), 53–66. https://doi.org/10.15575/967

Dharmono, D. (2019). *Bahan ajar etnobotani*. Banjarmasin: Lambung Mangkurat University Press.

Dharmono, D., Mahrudin, M., & Riefani, M. K. (2020). Keterbacaan handout struktur populasi tumbuhan rawa dalam meningkatkan keterampilan berpikir kritis mahasiswa pendidikan biologi. *BIO-INOVED: Jurnal Biologi-Inovasi Pendidikan*, *1*(2), 105–110. http://dx.doi.org/10.20527/binov.v1i2.7864

Emzir, E. (2010). *Metodologi penelitian pendidikan: kuantitatif dan kualitatif*. Jakarta: Rajawali Pers.

Garvita, R. V. (2015). Pemanfaatan tumbuhan obat secara tradisional untuk memperlancar persalinan oleh suku dayak meratus di kalimantan selatan. *Warta Kebun Raya*, *13*(21), 51–58.

Ghani, G. Al, Dharmono, D., & Amintarti, S. (2019). Validitas buku etnobotani tumbuhan maranthes corymbosa di kawasan hutan bukit tamiang kabupaten tanah laut. *BIO-INOVED : Jurnal Biologi-Inovasi Pendidikan*, *1*(2), 90–98. http://dx.doi.org/10.20527/binov.v1i2.7862

Hakim, L. (2014). *Etnobotani dan Manajemen kebun pekarangan Rumah : Ketahana pangan, kesehatan dan argowisata*. Malang: Penerbit Selaras.

Hardiansyah, H., Noorhidayati, N., & Mahrudin, M. (2018). Keragaman jenis vegetasi di kawasan rawa tanpa pohon desa bati-bati kabupaten barito kuala sebagai materi pengayaan mata kuliah ekologi lahan basah. *Prosiding Seminar Nasional Lingkungan Lahan Basah*, *3*(1), 170–175. http://dx.doi.org/10.20527/wb.v10i1.5462

Hasanah, U. (2022). *Fitoremediasi logam tembaga (Cu) oleh tanaman genjer (Limnocharis flava) dari sawah di daerah malang berdasarkan variasi konsentrasi dan waktu pemaparan [Skripsi]* [Universitas Islam Negeri Maulana Malik Ibrahim Malang]. http://etheses.uin-malang.ac.id.

Hera, R., Khairil, K., & Hasanuddin, H. (2014). Pengembangan handout pembelajaran embriologi berbentuk kontekstual pada perkuliahan perkembangan hewan untuk meningkatkan pemahaman konsep mahasiswa di universitas muhammadiyah banda aceh. *Jurnal EduBio Tropika*, *2*(2).

Ifora, I., Fauziah, F., & Delita, R. R. (2018). Aktivitas anti-inflamasi

ekstrak etanol herba genjer (Limnocharis flava (L.) Buchenau) pada tikus putih jantan. *Jurnal Farmasi Higea*, *10*(1). http://dx.doi.org/10.52689/higea.v10i1.176

Isa, I., Jahja, M., & Sakakibara, M. (2014). Potensi tanaman genjer (Limnocharis flava) sebagai akumulator logam Pb dan Cu. Gorontalo. *Laporan Peneltian FMIPA: Universitas Negeri*.

Lovadi, I., Takoy, D. M., & Linda, R. (2014). Tumbuhan berkhasiat obat suku dayak seberuang di kawasan hutan desa ensabang kecamatan sepauk kabupaten sintang. *Jurnal Protobiont Program Studi Biologi*, *2*(3), 122 – 128.

Najmah, L., Dharmono, & Riefani, M. K. (2022). Etnobotani hanjuang di desa sabuhur kabupaten tanah laut sebagai buku ilmiah populer. *JUPEIS: Jurnal Pendidikan Dan Ilmu Sosial*, *1*(2). https://doi.org/10.55784/jupeis.Vol1.Iss2.32

Neuman, W. L. (2003). *Social research methods: Qualitative and quantitative approaches*. Boston: Allyn and Bacon.

Nurdiani, N. (2014). Teknik sampling snowball dalam penelitian lapangan. *ComTech Jurnal BINUS University*, *5*(2), 1110–1118. https://doi.org/10.21512/comtech.v5i2.2427

Plomp, T., & N., N. (1997). *An Introduction to educational design research*. Netzodruk: Enchedde.

Prastisi, I. A. (2019). *Produksi es krim kaya serat berbasis bubur genjer (Limnocharis Flava)*. [Skripsi]. [Universitas Lampung]. http://digilib.unila.ac.id

Puslitjaknov. (2008). *Pusat Penelitian Kebijakan dan Inovasi Pendidikan Badan Penelitian dan Pengembangan Departemen Pendidikan*. Jakarta: Depdiknas.

Putri, N. M., Wiraningtyas, A., & Mutmainah, P. A. (2021). Perbandingan metode ekstraksi senyawa aktif daun kelor (Moringa Oleifera): Metode maserasi dan microwave-assisted extraction (Mae). *Jurnal Pendidikan Kimia Dan Ilmu Kimia*, *4*(2). https://dx.doi.org/10.31602/dl.v4i2.5931

Rahayu, W. (2017). *Kajian etnobotani potensi tanaman obat di desa buniara kecamatan tanjungsiang kabupaten subang [Skripsi]* [Universitas Pasundan]. http://repository.unpas.ac.id/31104/

Saefiana, S., Sukmawati, F. D., Rahmawati, R., Rusnady, D. A. M., Sukatin, S., & Syaifuddin, S. (2022). Teori pembelajaran dan perbedaan gaya belajar. *Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar*, *3*(1), 150–158.

Sari, A. P. (2024). *Studi etnobotani pemanfaatan jenis- jenis tumbuhan obat tradisional oleh suku anak dalam di dusun selapik sebagai bahan pengayaan taksonomi tumbuhan*. [Skripsi]. [Universitas Jambi]. https://repository.unja.ac.id.

Steenis, V. (2006). *Flora* (Cetakan Ke). Jakarta: PT. Pradya Paramita.

Sugiyono, S. (2017). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Jakarta: Alfabeta.

Suryana, S. (2009). Pengujian aktivitas ekstrak daun sirih (Piper betle Linn.) terhadap Rhizoctonia sp. Secara In Vitro. *Buletin Littro Fakultas Kehutanan Institut Pertanian Bogor*, *20*(1), 92–98. https://repository.pertanian.go.id/bitstreams/7962ea4b-2168-4f1d-a763-602081b8bef6/download

Susanti, H. (2015). Studi etnobotani sayuran lokal khas rawa di pasar martapura kalimantan selatan. *Ziraa'ah Majalah Ilmiah Pertanian*, *40*(2), 140–144.

Susapti, P. (2022). *Implementasi*

pendekatan saintifik pada pembelajaran ipa berbasis muatan lokal di mi mangunsari kota salatiga. [Skripsi]. [Institut Agama Islam Negeri (IAIN) Salatiga]. http://e-repository.perpus.uinsalatiga.ac.id/13745/

Tapundu, A. S., Anam, S., & Ramadhanil. (2015). Studi etnobotani tumbuhan obat pada suku seko di desa tanah harapan, kabupaten sigi, sulawesi tengah. *Jurnal Biocelebes*, *9*(2), 66–86.

Tjitrdsosoepomo, G. (1995). *Morfologi tumbuhan. Gajah Mada*. Yogyakarta: University Press.

Widya, F. (2018). *Etnobotani dan Karakterisasi Tumbuhan Sayuran Khas Rawa di Kabupaten Banjar Kalimantan Selatan [Skripsi]* [Universitas Lambung Mangkurat]. http://digilib.ulm.ac.id/archive/digital/detailed.php?code=2176