

Ethnobotany Study Tradition Buang Abu Melayu Sambas as a Biology Learning Resource

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Received: June 13, 2024

Revised: August 3, 2024

Accepted: October 25, 2024

Published: October 31, 2024

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DOI: [10.29303/jppipa.v10i10.8096](https://doi.org/10.29303/jppipa.v10i10.8096)

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Abstract: The district of Sambas has a variety of cultures and traditions. The distinctive characteristic of the district of Sambas is embodied in the uniqueness of the buang abu tradition, which differs from the tradition in other areas. Besides, the tradition involves the use of some local plants. The research is aimed at identifying the types of plants used in the process of buang abu and identifying the suitability and validity of the potential of the plant types in the process of buang abu in Malay Sambas as a source of biological learning. The research uses qualitative descriptive methods. The quality of the potential of plants used in the buang abu tradition as a source of biological learning in the interpretation is very worthy, with a 100% presentation. The relevance of the material to the study of ethnobotany of the tradition of buang abu Melayu Sambas is consistent in achieving basic competence on the material of the high school level, namely biodiversity, classification of living creatures, plantae, growth and development of living beings, and the structure and function of tissues in plants.

Keywords: Buang abu tradition; Learning resources; Plants; Sambas district

Introduction

Ethnobotany is a branch of science that combines botanical knowledge with cultural, anthropological, and ecological aspects to study the complex interactions between humans and plants in everyday life (Tania et al., 2023). It involves understanding the way people in a culture view, exploit, and preserve the diversity of plants around them. Ethnobotany covers the use of plants for food, feed, medicine, rituals, and other activities (Fauzy & Asy'ari, 2020).

West Kalimantan is one of the regions with diverse cultures and traditions (Barella et al., 2023). One of the areas that still preserves culture and traditions is the Sambas district. Sambas district has a variety of cultures and traditions, including customary processions of weddings, saprahan, tepung tawar, bepapas, and buang abu. The characteristic of the district is embodied in the unique tradition of buang abu that is very different from the tradition in other areas, and there are several plants that are used in the process of the tradition. The tradition

of casting the ashes is carried out after the circumcision procession (Madriani, 2021). As the era evolved, the tradition of buang abu began to be abandoned by society, especially the younger generation. That's evident from the many younger generations who don't understand the traditional ritual of ashes. Seeing the problem requires an effort to preserve culture, one of which is the implementation of ethnobotany-based learning.

Based on the results of interviews with the teacher of biology at N 1 Jawai High School, we obtained information that, in the process of learning biology, teachers have not used ethnobotany as a source of learning. In the learning process, teachers use more packaged books or textbooks. The use of ethnobotany as a biological learning resource can add to the variation of plant-related material in high school.

Some research suggests that ethnobotany can be integrated into learning devices (Nurjanah et al., 2024) found that the implementation of biology-based learning is to apply learning devices by combining the

How to Cite:

Nurdiana, N., Rahayu, H. M., & Qurbaniah, M. (2024). Ethnobotany Study Tradition Buang Abu Melayu Sambas as a Biology Learning Resource. *Jurnal Penelitian Pendidikan IPA*, 10(10), 7894–7903. <https://doi.org/10.29303/jppipa.v10i10.8096>

material and environmental, cultural, and social elements that exist in the surrounding environment.

From the above exposure, researchers are interested in doing on the ethnobotany study of the Malay buang abu tradition of Sambas as a biological learning source. Learning resources can provide a broad perspective on the interaction between humans and the environment, enriching the understanding of biology by involving cultural and social aspects. Combining ethnobotany as a biological learning resource not only enriches learning participants' understanding but also builds bridges between local science and culture (Musliha et al., 2023). The research is aimed at identifying the types of plants used in the process of buang abu to identify the suitability and validity of the potential of plant types in the Process of Ashes Disposal of Malay Sambas as a source of learning biology.

Method

This research uses a descriptive-qualitative approach. This type of research seeks information and applies an appropriate interpretation to it. The potential of plants in the process of breaking Malay buang abu Sambas as a source of learning biology is outlined in this research using data collected from interviews with the native peoples, the Jawai community, Jawai South District, Tekarang District, and high school biology teachers.

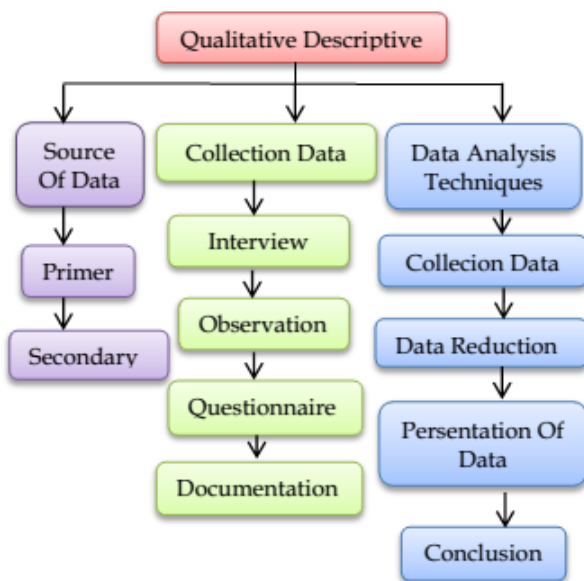


Figure 1. Research flow

The primary data source is obtained from the results of interviews received from the customary people and the community of Jawai District, Jawai South District, and Tekarang District about the tradition of decommissioning Malay buang abu Sambas, which is potentially a source of learning biology. Secondary data

sources are obtained from scientific papers, books, and documentation of image results that can help research data.

To calculate the percentage of teacher selevation towards the study of ethnobotany of the Malay buang abu tradition, Sambas, as a biological learning resource, used the following equation:

$$P = \frac{f}{N} \times 100\% \tag{1}$$

Description:

P = Percentage number

F = Total score obtained

N = Maximum score

Furthermore, the percentage of the results of plant raising is analyzed according to the criteria of the indicator of the category of potentials, as shown in Table 1.

Table 1. Rubric Category Potentials of Plants in the Tradition of Buang Abu Melayu Sambas as a Biology Learning Resource

Percentage	Interpretation
81% ≤ score ≤ 100%	Very Feasible
61% ≤ score ≤ 80%	Feasible
41% ≤ score ≤ 60%	Fairly Feasible
21% ≤ score ≤ 40%	Not Enough Feasible
0% ≤ score ≤ 20%	Infeasible

Result and Discussion

The ethnobotany of the Malay buang abu tradition of Sambas reveals the use of local plants for spiritual purposes. This tradition reflects the close links between local culture and local flora, demonstrating local wisdom in the sustainable use of natural resources. Ethnobotany research on these practices can help understand cultural and ecological values as well as the potential for local-based product development (Dirgari et al., 2022).

The tradition of casting buang abu is a ritual of cleansing people who have been circumcised or chopped after three days of circumcison. In Sambas society, this tradition is carried out in order to give thanks to the transition of the circumcised from children to adolescents. Based on information from the local community, the ritual is carried out after the incubation, and usually local people perform this ritual during the school holidays. As for the phase of the tradition of dumping Malay buang abu, Sambas is as follows (Rino et al., 2022): a) nyarrok (saru' atau saru'); b) bepapas; c) penjamuan; d) pray.

Saru', or saru', is one of the words in the Sambas language that means calling. So the notion is a person who is in charge of inviting or inviting people to attend devotion.

In this bepapas, the rice that has been smoothed together with langir, turmeric, lime leaves, and pineapple seeds and mixed with water repellent is inserted into the coconut barrel, or kasai. Secondly, the leaves of the hanjuang, mali leaves, bintaro leaves, and ribu leaves are bound together as a tool for bepapas. The leaves were soaked into a cage full of kasai (Srikanto et al., 2023).






The penjamuan was made in a way that involved many people sitting around the feast that was prepared by the host. The meal served is not full rice, but drinks and cookies that are typical of Malay Sambas. As for the








jamuan that people often use, it's ketupat lontong, ketupat pulut, brown sugar apem cake, bubur aya' and a banana for 40 days.

After the penjamuan, the guests and the hosts pray together, led by the religious leaders in the village, called the master labbai. This is done for the salvation of the circumcised and guests who are present.

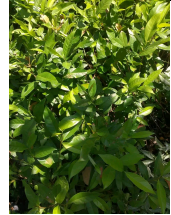
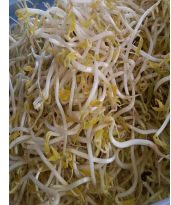


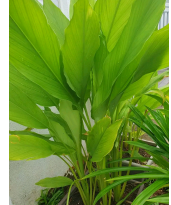


Based on the result of observations, there are 26 types of plants that are used in the tradition of chasing Malay buang abu Sambas, which could potentially be a source of learning. These are described as follows:

Table 2. Plants Used in Traditional Processes

Plant Species	Description
 <p data-bbox="103 851 399 862">Bintaro (<i>Cerbera manghas</i> L.)</p>	<p data-bbox="638 636 1484 743">The leaves are lancet-shaped, with the ends sloping. Small, white, or creamy flowers. Has a round fruit with hard skin. One of the characteristic features of the bintaro plant is its large seeds, which contain toxic compounds (Tania Amelya et al., 2023).</p>
 <p data-bbox="103 1088 399 1099">Carrots (<i>Daucus carota</i> L.)</p>	<p data-bbox="638 862 1484 991">The carrots have roots and fibers. The leaves of the carrots are shaped like a leaf clump. Carrots have flowers at the ends of plants. The shape of the double pay has a red-white color. The flower lies on the same fence as the tank (Oktavia & Tasliyah, 2022).</p>
 <p data-bbox="103 1315 399 1325">Cranberries (<i>Capsicum annum</i> L.)</p>	<p data-bbox="638 1088 1484 1218">The peach structure of the pepper plant begins with very strong roots that consist of primary and secondary roots. The leaves belong to single oval-shaped leaves or lances with folding returns. The fruit is round-shaped and lengthy. The seeds of the peaches are purple, white, or yellowish and have hard skin (Lepa et al., 2023).</p>
 <p data-bbox="103 1541 399 1552">Coconut (<i>Cocos nucifera</i> L.)</p>	<p data-bbox="638 1315 1484 1358">The morphology of coconuts consists of roots, stems, leaves, flowers, and fruits. The coconut has a fissile root, a coconut rod that always leads upwards and doesn't branch. The structure of the coconut leaf consists of the leaf rod, leaf axis bone, and leaf thread. It usually begins to bloom at the age of 6-8 years (Riono et al., 2022).</p>
 <p data-bbox="103 1852 399 1862">Garlic (<i>Allium sativum</i> L.)</p>	<p data-bbox="638 1541 1484 1670">It grows and accumulates to a height of about 30-75 cm. From the base of the stem grows a small, fiber-shaped root that is abundant and has a length of less than 10 cm. The garlic forms a white-colored bubble (A'yuni Fatkhi Fajriyati et al., 2022).</p>

Plant Species	Description
	<p>The white yeast is rooted in fibers and belongs to the monocotile or one-piece class. There are ginger beams that shine under the ground. The ginger is like a bulb to store food. Long ginger leaves with parallel leaf bones (Fathiah, 2022).</p>
<p>Ginger (<i>Zingiber officinale var. amarum</i>)</p>	
	<p>Has a single flower of small size with a length of 1-2 cm. Dried flowers will be brown and spicy because they contain essential oils (Hastuti & amanda Lestari, 2021).</p>
<p>Gingerbread (<i>Syzygium aromaticum L.</i>)</p>	
	<p>This plant has roots and fibrous roots. The stems are green, thick, soft, and not branched. Leaves that grow on the tips of small trunks and curve into the slopes of a medium or are starting to grow flower. Cabbage flowers can reach more than 20 cm and have a weight between 0.5 and 11.3 kg (Givethee et al., 2023).</p>
<p>Green Cabbage (<i>Brassica oleracea var. Botrytis L.</i>)</p>	
	<p>It has a single leaf and face-to-face leaf layout and has a lancet leaf shape. The edge of the leaf is flat, and the surface of the sheet shall be smooth on the top, on the base, and upon the ends, and shall be shaped like a leaf (Najmah et al., 2022).</p>
<p>Hanjuang (<i>Cordyline fruticosa</i>)</p>	
	<p>This plant has a single leaf with a facing layout and a glabrous leaf surface. Bisexual, fragrant, and white. Bowl-shaped calyx. The fruit is a berry that has a seed that is red to purple when the fruit is ripe (Rosmainar, 2021).</p>
<p>Lime (<i>Citrus hystrix DC</i>)</p>	
	<p>It has a double-seeded compound leaf with two pairs, a primary leaf bone of between 5 and 14.5 cm, close hair, and a gland near the base of the leaf rod.</p>
<p>Langir (<i>Albizia saponaria</i>)</p>	
	<p>It has roots with a rounded, high-fiber arrangement and grows vertically straight with a symposial fiber with a circular shape. This plant has a compact leaf with a face-to-face layout; the edges of the leaves are scattered, and the flowers are compact (Amalia et al., 2023).</p>
<p>Mali (<i>Leea indica (Burm.F) Merr.</i>)</p>	
	<p>It is a seasonal plant of the monocotile class and has seeds in the shape of a lump, roots of fibers, stems shaped from a series of leaves that support each other, and leaves in the form of a lanceolate of young green to old green.</p>

Plant Species	Description
	
<p>Padi Bonar (<i>Oryza sativa</i> L.)</p>	
	<p>This plant has a round fruit. When ripe, it splits into two and forms like a leaf. The meat looks thick and acidic (Idhar et al., 2022).</p>
<p>Pala (<i>Myristica fragrans</i>)</p>	
	<p>Pandan has a leaf that smells fragile. Fine-sized single leaf, and it's just as small. Pandan, it's got a stalk that's gone. Pandan also has roots that produce fiber (Mursyida & Febriani, 2021).</p>
<p>Pandan Parfums (<i>Pandanus amaryllifolius</i> Roxb.)</p>	
	<p>Pine has a fuzzy root. It grows upright with a monopodial clutch and a round-shaped stem, characteristic of the stem that has a loop of leaf marrow (nodus). It has a thickened leaf and the shape of a lance. The characteristic feature of the fruit is that it has fibers (Hamidah et al., 2022).</p>
<p>Pineapple (<i>Areca catechu</i> Linnaeus)</p>	
	<p>Structural modifications of stems, such as stems, stolons, and reefs. Generally, the leaves of the potatoes are thick and have a long, round-shaped strip of leaves. The potato stems have the characteristics of being book-shaped, loose, and non-wood. The potatoes have two burning systems: a rope and a fiber (Mustofa, 2019).</p>
<p>Potatoes (<i>Solanum tuberosum</i> L.)</p>	
	<p>The red garlic leaves are cylindrical, hole-shaped, pale-green, and leaf placement is found on relatively short rods. It has oval-shaped and purple-white bulbs with shallow, branched, and scattered fibrous roots (Hikmahwati et al., 2020).</p>
<p>Red Onion (<i>Allium cepa</i> L.)</p>	
	<p>A thousand is a nail plant that binds and wraps around other plants that are close to it, epiphytically or terrestrially. The thorns were round, smooth, and green. The leaves were old and greener.</p>
<p>Ribu (<i>Lycodium flexuosum</i>)</p>	

Plant Species	Description
 <p data-bbox="105 398 579 431">Salam (<i>Syzygium polyanthum</i> (Wight.) Walp.)</p>	<p data-bbox="635 183 1498 269">This plant has a single leaf with a facing layout and a glabrous leaf surface. Bisexual, fragrant, and white. Bowl-shaped calyx. The fruit is a berry that has a seed that is red to purple when the fruit is ripe (Nurhayati et al., 2024).</p>
 <p data-bbox="105 636 343 668">Sprout (<i>Vigna radiate</i>)</p>	<p data-bbox="635 431 1498 549">Germination is a biological process that occurs when a grain of green beans is in a dormant (inactive) state and becomes a new seed, commonly called a touge. The seed of the green bean has three main parts: the skin of the seed, the coteledon, and the body (Lorenza, 2023).</p>
 <p data-bbox="105 873 491 905">Strawberris (<i>Coriandrum sativum</i> L.)</p>	<p data-bbox="635 668 1498 808">They are round and too long on the seed part, and the number of seeds on each leaf is 4-6 pieces. Colored white on the flower part with a number of 6-8 flowers. The leaf part is green and has the shape of a rainbow. It has one blade and a five-piece blade with a shorter blade position than a blade (Setiawan et al., 2022).</p>
 <p data-bbox="105 1110 486 1142">Sweetwood (<i>Cinnamomm burmanii</i>)</p>	<p data-bbox="646 905 1498 1056">It grows vertically and can reach a height of 18 meters. Wooden, branched, brown-green, single-leaf, lance-shaped, ends and base sloping, flat edges. The flowers are small, appearing from the leaves, with fine-haired, yellow-colored crowns. Small seeds and round-shaped eggs. The skin of the stem contains damsel, lender, and aqueous oil that is soluble (Baguna & Kaddas, 2021).</p>
 <p data-bbox="105 1347 475 1379">Turmeric (<i>Curcuma domestica</i> Val.)</p>	<p data-bbox="667 1164 1498 1261">Turmeric has a flat leaf edge and a sloping leaf tip, a fuzzy stem, a rounded stem shape, a monopodial clutch, and a smooth, wet-textured stem surface. Kunyit also has a fuzzy root (Adisa et al., 2022).</p>
 <p data-bbox="105 1584 550 1617">White Ketan (<i>Oryzasativa</i> L. var <i>glutinosa</i>)</p>	<p data-bbox="635 1379 1498 1498">Seasonal plants of the monocotile class have untransparent and characteristic-odor seeds, fibrous roots, and shaped stems from a series of leaf releases that support each other. Rice is more sticky than rice in general, so it is not used as a meal.</p>
 <p data-bbox="105 1821 526 1854">40 Day Banana (<i>Musa acumunata</i> Linn.)</p>	<p data-bbox="635 1617 1498 1735">A 40-day banana has a vertical stem habitat, a strawberry stem. The leaf shape is on the base part, with one side turning and one side leaving. This banana has a gash-shaped heart. This banana has a straight shape, with the ends of the fruit sloping, and has no seed (Ika Rochdjatun Sastrahidayat & Djauhari, 2023).</p>

The potential of plants that are used in the process of the Malay Sambas buang abu tradition as a source of biology learning is based on the criteria of learning

resources obtained on the basis of the results of the filling of the angket by the biological teacher.

Table 3. Categorical Potentials of Plants in the Tradition of Buang Abu Melayu Sambas as a Biology Learning Resource

Aspects	Percentage	Interpretation
Clarity of potential	100%	Very Feasible
Clarity of objectives	100%	Very Feasible
Suitability of objectives	100%	Very Feasible
Clarity of information that can be revealed	100%	Very Feasible
Clarity of exploration guidelines	100%	Very Feasible
Clarity of expected gains	100%	Very Feasible
Average	100%	Very Feasible

On the aspect of clarity, the target gets a 100% presentation with a very decent interpretation. This is because the purpose of biology learning can be achieved from the results of ethnobotany research on the tradition of the Sambas Malayan buang abu.

On the aspect of clarity, the target material gets a 100% presentation with a very decent interpretation. This is because cultural-based learning resources can make biology lessons more interesting and can help students in the learning process.

On the aspect of clarity, the information disclosed gets a 100% presentation with a very decent interpretation. It is due to the plants in the ethnobotany studies of the tradition of throwing Malay buang abu. Sambas as a source of learning biology has clear information or material that corresponds to KI and KD.

On the clarity aspects of the exploration guidelines, get a 100% presentation with a very decent interpretation. This is due to the study of the ethnobotany tradition of throwing Malay buang abu. Sambas as a source of learning biology can solve the problems that exist in learning and can be used well by pupils and teachers.

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On the clarity aspects of the exploration guidelines, get a 100% presentation with a very decent interpretation. This is due to the study of the ethnobotany tradition of throwing buang abu. Melayu Sambas as a source of learning biology can solve the problems that exist in learning and can be used well by pupils and teachers.

The suitability of the material to the potential of the plants used in the Malay ash dumping tradition of Sambas is seen on the basis of the biology curriculum of the high school classes X, XI, and XII of the K13 curriculum. The quantity of material that corresponds to its potential can be seen in the following table.

Table 4. High School Biology Teaching Materials that Correspond to the Potential of Plants in the Tradition of Abandoning Abu Melayu Sambas

Class	Material	Compatibility	
		Yes	No
X	Biodiversity	√	
	Classification of living things	√	
XI	Plantae	√	
	Growth and development of living things	√	
XII	Tissue structure and function in plant	√	

From the filling of the lifting responses of the teacher, the validity and suitability of the potential of plants to the process of the tradition of deployment of Malay buang abu Sambas has met a very worthy interpretation used as a biological learning resource. As for the criteria of learning sources (Fahrizi et al., 2023) they include: 1) clarity of potential; 2) objective clarity; 3) objective compatibility; 4) information clarity that can be disclosed; 5) exploration guidelines clarity; and 6) expected acquisition clarity.

Potential clarity is an object that has potential as a source of learning when the object contains problems that can be revealed in attaching and teaching and learning activity. The availability of objects in this assessment is based on the tradition of dumping Malay buang abu (Puspitasari & Salamah, 2021). The information that can be drawn from this research is biodiversity, classification of living organisms, plantae, growth and development of living things, and structure and function of tissues in plants.

The objective is the clarity of the observation objective (objects) and the objective of the orientation (subjects). The objective is to provide students in high school classes X, XI, and XII with particular biological materials such as biodiversity, classification of living creatures, plantae, growth and development of living organisms, and structure and function of tissues in plants. In general, high school students are 12 years of age or older, so they can think abstractly (Purbosari & Putri, 2022).

Appropriation of learning resources to a purpose: learning resources should be selected based on what objectives will be achieved by using such resources (Muthoharoh & Nugroho 2023). The plants that were discovered were the kind of plants used in the process of the Malay Sambas buang abu removal tradition. Students can observe, identify, classify, and analyze the types of plants found. Participants will be able to learn about the types of biodiversity, the classification of living creatures, the plantation, the growth and development of living things, and the structure and function of tissues in plants used in the process of traditional buang abu (Nursela et al., 2023).

The information revealed is the process and research results. Information is a process; students can

implement scientific methods in field observation activities. The information that can be revealed in this study is that there are 26 kinds of plants that belong to the classes of dicotile and monocotile. Objects found in the field will give a real experience to the student, making lessons more concrete and non-verbal (Rahmawati & Sriyati, 2024).

Clarification of guidelines for exploration of work procedures in the field starts with the determination of research objects, tools, and materials, methods of work, data analysis, and conclusion drawings (Kabani et al., 2023). This research is done with the determination of objects, namely the Malay Sambas community, then the tools and materials, which are books, pencils, cameras, and guidelines for interviews. Based on the results of the data verification by the biology teacher, it can be concluded that the tradition of releasing Malay buang abu as Sambas can be used as a source of learning biology.

The clarity of the result is the existence of cognitive, effective, and psychomotor acquisition. The potential of the plants used in the Malay Sambas buang abu tradition can be used as a biological learning resource because they are expected to acquire cognitive, effective, and psychomotor aspects (Khastuti et al., 2024). A cultural and traditional learning resource that utilizes local plants will enhance the knowledge, attitudes, and skills of students (Nurul-Firdaus et al., 2020).

Conclusion

Based on the results of the research, there are 26 types of plants used in the Sambas Malay buang abu tradition process, namely *Cordyline fruticosa*, *Leea indica* (Burm.F) Merr., *Cerbera manghas* L., *Lycodium flexuosum*, *Cocos nucifera*, *Oryza sativa* L., *Oryzasativa* L. var *glutinosa*, *Albizia saponaria*, *Citrus hystrix* DC, *Areca catechu* Linnaeus, *Allium sativum* L., *Allium cepa* L., *Syzygium aromaticum* L., *Myristica fragrans* Houtt., *Coriandrum sativum* L., *Zingiber officinale* var. *amarum*, *Capsicum annum* L., *Syzygium polyanthum* (Wight.) Walp., *Cinnamomum burmanii*, *Musa acumunata* Linn., *Daucus carota* L., *Vigna radiate*, *Solanum tuberosum* L., *Brassica oleracea* var. *Botrytis* L., dan *Pandanus amaryllifolius* Roxb. The potential feasibility of plants used in the buang abu tradition as a biology learning resource in interpretation is very feasible with a percentage of 100%. The suitability of the material to the ethnobotanical study of the Sambas Malay tradition of Sambas Malay buang abu tradition is suitable in achieving basic competencies in high school level material, namely biodiversity, classification of living things, plantae, growth and development of living things, and the structure and function of tissues in living things, and the structure and function of tissues in plants.

Acknowledgments

Thanks to the Sambas Malay community for their hospitality and willingness to share their knowledge about the ash disposal tradition and the teachers of SMA N 1 Jawai, so that the research can be carried out well.

Author Contributions

The writing of this paper was facilitated by the guidance of two supervisors.

Funding

This research was independently funded by the researchers.

Conflicts of Interest

The authors declare no conflict of interest.

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