

## ***Introduction of Herbarium and Identification of Plants Based on School Environments in Public Islamic Junior High School 2 of Gorontalo Regency, Indonesia***

Hartono D. Mamu<sup>1</sup>, Herinda Mardin<sup>2\*</sup>, Devi Bunga Pagalla<sup>3</sup>,  
Nur Mustaqimah<sup>4</sup>, Nurul Fajryani Usman<sup>5</sup>

<sup>1,2,3,4,5</sup>Biology Department, Mathematics and Sains Faculty, Universitas Negeri Gorontalo, Indonesia

\*[herindamardin@ung.ac.id](mailto:herindamardin@ung.ac.id)

**Kata kunci:**  
herbarium,  
identifikasi,  
tanaman,  
berbasis  
lingkungan  
sekolah.

**Abstrak** Pembelajaran materi struktur dan fungsi tumbuhan di tingkat sekolah menengah pertama masih menggunakan metode hapalan kepada peserta didik. Untuk itu, dibutuhkan media yang membantu peserta didik agar memiliki pengalaman belajar yang bermakna tanpa harus melalui metode menghafal. Pengenalan herbarium di sekolah sebagai media untuk mengkonkritkan materi dan menunjang dalam pembelajaran IPA serta identifikasi tanaman berbasis lingkungan sekolah yang memudahkan dalam membelajarkan materi struktur dan fungsi tumbuhan di kelas VIII di Madrasah Tsanawiyah Negeri 2 kabupaten Gorontalo menjadi tujuan dalam kegiatan pengabdian ini. Tahapan kegiatan menggunakan pendekatan partisipatif aktif terdiri dari 4 tahapan yaitu 1) persiapan; 2) koordinasi; 3) pelaksanaan; 4) evaluasi. Jumlah peserta didik yang mengikuti kegiatan adalah 30 orang serta dihadiri oleh kepala sekolah dan 3 orang guru. Kegiatan pengenalan herbarium dan identifikasi tanaman berbasis lingkungan sekolah berlangsung dengan lancar dan hikmah dilihat dari antusiasme peserta dalam mengikuti kegiatan dari awal hingga selesai. Pengenalan herbarium memberikan makna dan kesan kepada peserta didik karena mampu menambah pengetahuan kepada peserta didik mengenai salah satu metode/media untuk mengetahui takson tumbuhan. Identifikasi tanaman berbasis lingkungan sekolah menambah pengetahuan dan keterampilan kepada peserta didik MTs. Negeri 2 kabupaten Gorontalo dalam menunjang kegiatan pembelajaran di sekolah mengenai pengenalan dan deskripsi tanaman.

**Keywords:**  
herbarium,  
Identification,  
plant, based  
on school  
environments

**Abstract** Learning material on the structure and function of plants at the junior high school level still uses the rote method to students. For this reason, media is needed that helps students to have a meaningful learning experience without having to go through the memorization method. The introduction of herbariums in schools as a medium to concrete material and support science learning and plant identification based on a school environment that makes it easier to teach material on the structure and function of plants in class VIII at Madrasah Tsanawiyah Negeri 2 Gorontalo district is the goal in this service activity. The stages of activities using an active participatory approach consist of 4 stages, namely 1) preparation; 2) coordination; 3) implementation; 4) evaluation. The number of students who took part in the activity was 30 people and was attended by the principal and 3 teachers. The herbarium introduction and plant identification activities based on the school environment went smoothly and wisely, as seen from the enthusiasm of the participants in participating in the activity from start to finish. The introduction of the herbarium gives meaning and impression to MTs students. Negeri 2 Gorontalo district because it can increase knowledge to students about one method/media to determine plant taxon. Identification of plants based on the school environment increase knowledge and skills to MTs students. Negeri 2 Gorontalo district in supporting learning activities in schools regarding the introduction and description of plants.

## 1. INTRODUCTION

Learning in junior high school and equivalent has its own dynamics. Especially in science learning which consists of biology, physics and chemistry lessons. Science teachers sometimes find it difficult to teach abstract biological material, so they need media in the learning process. Many students consider science subjects to be difficult subjects because of the many memorization and terms and the many concepts that are difficult to understand. Students become unmotivated and enthusiastic to memorize material, for example the Latin names of plants and the structure and function of plants (Setyawati, E., 2018). Learning media is needed by science teachers in concretizing science material, especially biology. One of the learning media used in science learning to teach the material on the structure and function of plants in class VIII is using a dry herbarium at school (Artayasa, I. P., et al., 2021). It is important for teachers to know how to make simple herbarium and insectarium to make it easier to teach science material, especially biology to students (Tomia, W. L., 2020; Rosa, E., et al., 2020; Primawati, S. N., et al., 2021).

Herbarium is a place to store dried and wet plant specimens. Herbarium consists of 2 types, namely wet and dry herbarium. Wet herbarium can be made from plant specimens preserved using a solution of alcohol and formalin with a 70% alcohol ratio while only 4% formalin (Rahmawati, R., 2020). The role of herbarium is of course important in the world of science, especially in the field of plant science or botany. Through the use of herbarium, a wide variety of plants found in Indonesia, even plants from abroad, we can recognize and see them. Based on the type of use, herbarium can be divided into 4 types, namely 1) international herbarium; 2) National or Regional Herbarium; 3) Local Herbarium; 4) special herbarium.

The benefits of the herbarium consist of 1) materials for the study of flora and vegetation because the herbarium label contains data for this; 2) is tangible evidence that the plant has ever existed at the location or place where the plant collection was carried out; 3) is a means of plant identification; 4) as the correct name identification; 5) as a data bank. The function of the herbarium as a medium for identifying plants is, of course, important for teachers in schools to use the herbarium in teaching science material. In addition, teaching science material to students using a herbarium is also able to improve students' soft skills (Tomia, W. L., 2020).

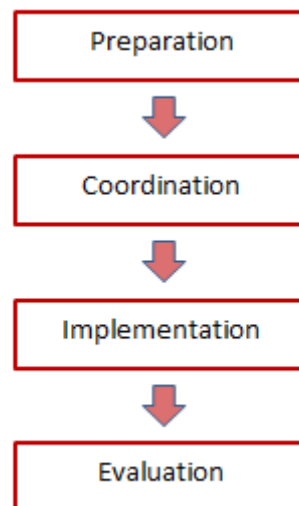
Learning becomes meaningful if students have a memorable learning experience. Learning the structure and function of plants and the process of identifying plants by looking directly at the plants or through the herbarium media will be easier to understand. Identification of plants is an activity that is often done by students at school, especially in science lessons. The presence of plants in the school environment can make it easier for activities to identify plants. School-based learning has been effective in improving student learning outcomes (Sari, N. L. I. P., et al., 2013; Saputra, S., 2016).

Based on the description above regarding the importance of introducing herbariums to students and identifying plants based on the school environment, we carried out service activities at Madrasah Tsanawiyah Negeri 2 Gorontalo Regency with the aim that students have interest, motivation and knowledge about making herbariums and plant identification based on the environment school.

## 2. METHOD

The introduction of herbariums in schools as a medium to concrete material and support science learning and plant identification based on a school environment that makes it easier to teach material on the structure and function of plants in class VIII at Madrasah Tsanawiyah Negeri 2, Gorontalo district, is the goal in this service activity. Learning the material on the structure and function of plants not only by rote method but by bringing students directly to the school environment to identify and see the structure and function of plants so that learning becomes meaningful and students have a fun learning experience.

The activities of introducing herbarium and plant identification based on the school environment use an active participatory approach and the lecture method. The active participatory approach applied to this service activity is able to make participants active in the forum and actively ask questions and discuss. The activity stages consist of 4 (four) stages, namely 1) preparation; 2) coordination; 3) implementation; 4) evaluation. The stages of this service activity can be seen in Figure 1 below.



**Figure 1.** Stages of Service Activities

### *1. Preparation stage*

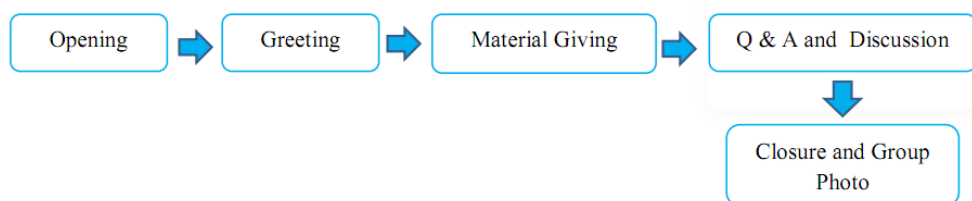
At this preparatory stage, initial observations at school and interviews with science teachers were carried out regarding the science materials taught at school. Analysis of the needs of students in the science learning process at school and the learning media needed by teachers in teaching the material on the structure and function of plants in class VII MTs. State 2, Gorontalo district.

### *2. Coordination Stage*

At this stage, coordination was carried out with the principal, Mrs. Masita Naue, M.Pd. related to the implementation of this service activity. This coordination includes things that need to be prepared by both parties as well as the facilitator, the time and place for the implementation of service activities.

### 3. Implementation Stage

The herbarium introduction and plant identification activities based on the school environment will be held on Wednesday, June 15, 2022, at 09.00 to 12.00 WITA at the Madrasah Tsanawiyah Negeri 2 Dormitory Building Hall, Gorontalo Regency. The number of lecturers in the Department of Biology at the State University of Gorontalo who became facilitators in this service activity was 5 people and the number of students who took part in the activity was 30 people and was attended by the principal and 3 teachers. The implementation stage starts from the opening activities, remarks by the head of the service team and the school principal, giving material by resource persons, namely Ms. Devi Bunga Pagalla, S.Si., M.Sc., question and answer and discussion and ends with closing activities and group photos. The scheme of the implementation stage can be seen in Figure 2 below.



**Figure 2.** Activity Implementation Stage Scheme

### 4. Evaluation Stage

The evaluation stage is carried out to see the enthusiasm of the participants in this service activity, as well as a reference for following up on this service activity. At other times and opportunities, we will carry out the next activity, namely direct training on making dried herbarium to class VIII students at Madrasah Tsanawiyah Negeri 2, Gorontalo Regency.

## 3. RESULTS AND DISCUSSION

The herbarium introduction and plant identification activities based on the school environment ran smoothly and wisely based on the enthusiasm of the participants in participating in the activity from start to finish. At the beginning of the activity, it started with an opening which was attended by all participants in the activity totaling 30 students of class VIII MTs. Negeri 2 Gorontalo Regency, 5 lecturers majoring in biology at the State University of Gorontalo as facilitators, principals and 3 teachers in the hall of the MTs dormitory building. Negeri 2 Gorontalo Regency at 09.00 WITA. This was followed by the giving of the first remarks by the head of the service team as well as the activity facilitator, namely Dr. Hartono D. Mamu, M.Pd and the second speech by the principal of MTs. Negeri 2 Gorontalo Regency, namely Mrs. Masita Naue, M.Pd. while at the same time opening the herbarium introduction and plant identification activities based on the school environment. The opening ceremony of this service activity can be seen in Figure 3 below.



Figure 3. Service Activities Opening Ceremony

After the event was opened by Mrs. Masita Naue, M.Pd. as principal of MTs. Negeri 2 Gorontalo Regency, then proceed to the main event, namely the presentation of material by the resource person, namely Ms. Devi Bunga Pagalla, S.Si., M.Pd. guided by the moderator Mrs. Nur Mustaqimah, S.Pd., M.Pd. related to the introduction of herbarium and plant identification based on the school environment. An overview of the provision of material by resource persons to participants can be seen in Figure 4 below.



Figure 4. Material Giving

### 3.1 Introduction to Herbarium

Herbarium is a plant or part of a plant that is preserved by drying it into a dry specimen. Herbarium is also commonly referred to as a collection of specimens that have been dried (Stern, M. J., & Eriksson, T., 1996) over a long period of time (Bridson, D. & Forman, L. 1992). Herbarium is a plant specimen that is preserved through a drying process and then labeled for easy access and archive storage (Bose, A., & Paria, N. D., 2020). Herbarium consists of 2 types, namely wet herbarium and dry herbarium. Wet herbarium is usually for specimens that are watery and soft, for example the fruit of a plant (Samsali, O., 2008; Waqfin, M. S. I., et al., 2020). Wet specimens are stored and preserved using solution components such as formalin and alcohol. Meanwhile, dry herbarium is only for plant specimens that are easy to dry and do not take long in the drying process (Setyawan, A. D., et al., 2005).

Herbarium can be used as a learning media (Dahlia, D., 2020; Handayani, T. T., et al., 2020) as well as a learning resource and support in the science learning process in junior high school or equivalent on structural material and class VIII plant functions. Through the use of herbarium media as a learning resource and support in the classroom, it can make students experience a more fun and interesting learning experience in recognizing and describing plants (Mertha, I. G., et al., 2018) . In addition, other benefits of the herbarium are 1) as a teaching aid in learning biology and science in schools; 2) as a research medium; 3) as an identification tool; 4) can be used for herbarium exchange between regions and countries; 5) as evidence of diversity; 6) as a reference specimen to publish new specimens; 7) as a plant specimen data bank. The introduction of the herbarium gives meaning and impression to MTs students. Negeri 2 Gorontalo district because it adds knowledge to students about one method/media to find out plant taxon.

The importance of introducing herbariums in schools as a medium to facilitate and support science learning (Artayasa, I. P., et al., 2021) so as to attract the interest and motivation of students in learning about the structure and function of plants at school. Through the use of dry herbarium, both teachers and students can understand the structure and characteristics of plants even without having to look at the plant habitat or pick them directly (Nisaa, R. A., et al., 2019). The process of making a dry herbarium is carried out in steps, namely drying plant material, giving sublimate, attaching plant material to paper and giving a label, then giving identity to plants according to the taxon of the plant, it can even reach the stage of not only sticking it on paper but also putting it together. and bound into a herbarium book (Nisaa, R. A., et al., 2019; Hafida, S. H. N., et al., 2020; Dahlia, D., 2020; Handayani, T. T., et al., 2020; Rahayu, T., & Hayati, A., 2020; Srimulat, F. E., 2021; Huda, A. M., & Ami, M. S., 2021). The stages of making dried herbarium can be seen in Figure 5 below.



**Figure 5.** Stages of Making Dried Herbarium

### 3.2 School Environment Based Plant Identification

The identification of plants based on the school environment has often been done by teachers in the learning process (Mertha, I. G., et al., 2018). The school environment for learning consists of the environment inside the classroom and outside the classroom. Of course, in carrying out plant identification activities based on the school environment, it is necessary to use an active learning model with various strategies and student-centered approaches. Assisted with learning media such as dry herbarium and wet herbarium. By using a dry herbarium, identifying plants will be easier. However, even by looking directly at the plants that are in the school environment, they are also much better at identifying plants (Pantiwati, Y., 2015).

Based on stature or habitus, plants are divided into trees, shrubs, herbs and shrubs. Trees are woody plants that have a main stem while shrubs do not have a main stem but have branching trunks. While shrubs are woody plants that have branches, grow close to the ground and do not have upright stems. Meanwhile, herbs have soft stems because they are not woody, grow short and small and the stems are wet because they contain water. The process of identifying plant species becomes easier for students because examples already exist in the school environment. Identification of plants based on the school environment increase knowledge and skills to students of MTs Negeri 2 Gorontalo district in supporting learning activities in schools regarding the introduction and description of plants on plants structure and function.

After giving the material by the resource person, it was followed by a question and answer session and discussion. Participants were given the opportunity to ask questions to resource persons regarding the material for introducing herbariums and identifying plants based on the school environment. Giving herbarium material in this service activity is the first thing and experience for students. They had never received any material related to herbarium before, so the participants were very interested and enthusiastic in asking and discussing how to make dried herbarium. This makes students interested and motivated to make their own herbarium at school considering the many benefits of herbarium. In addition, the herbarium can also be made as a beautiful herbarium that can be an economical value product such as key chains, bookmarks and others (Rahayu, T., & Hayati, A., 2020). An illustration of the enthusiasm of the participants in asking questions in this service activity can be seen in Figure 6 below.



**Figure 6.** Question and answer session

## 4. CONCLUSIONS

The conclusions from the activities of introducing herbarium and plant identification based on the school environment are as follows.

1. The herbarium introduction and plant identification activities based on the school environment went smoothly and wisely, as seen from the enthusiasm of the participants in participating in the activity from start to finish.
2. The introduction of the herbarium gives meaning and impression to MTs students. Negeri 2 Gorontalo district because it increase knowledge to students about one method/media to determine plant taxon.
3. Identification of plants based on the school environment increase knowledge and skills to MTs students. Negeri 2 Gorontalo district in supporting learning activities in schools regarding the introduction and description of plants on plants structure and function.

### **Acknowledgments**

A big thank you to the Madrasah Tsanawiyah Negeri 2 Gorontalo district, especially to the principal, Mrs. Masita Naue, M.Pd. who have facilitated and supported the implementation of this activity.

### **References**

- Artayasa, I. P., Muhlis, M., & Ramdani, A. (2021). Penyuluhan Pembuatan Awetan Tumbuhan dan Hewan Sebagai Media Pembelajaran IPA. *Jurnal Pengabdian Magister Pendidikan IPA*, 4(2).
- Bose, A., & Paria, N. D. (2020). Seedling Herbarium: A Priority. *Bangladesh Journal of Plant Taxonomy*, 27(1), 201-204.
- Bridson, D. and Forman, L. 1992. *The Herbarium Handbook, Revised Edition*. Royal Botanic Gardens, Kew, Great Britain, pp. 4.
- Dahlia, D. (2020). Development of Herbarium Book as Biology Instructional Media in Plant Morphology Subject for Biology Education Undergraduate Students, University of Pasir Pangaraian. *Bioeducation Journal*, 4(1), 10-19.
- Hafida, S. H. N., Ariandi, A. P., Ismiyatin, L., Wulandari, D. A., Reygina, N., Setyaningsih, T., & Amin, M. A. K. (2020). Pengenalan Etnobotani Melalui Pembuatan Herbarium Kering di Lingkungan Sekolah MI Muhammadiyah Plumbon, Wonogiri. *Buletin KKN Pendidikan*, 2(2), 79-83.
- Handayani, T. T., Sumardi, S., & Ekowati, C. N. (2020). Pelatihan Pembuatan Herbarium Sebagai Pengayaan Media Pembelajaran IPA-Biologi Bagi Guru SMP MGMP IPA di Kecamatan Way Tenong Kabupaten Lampung Barat. *Proseding PKM-CSR*, 3, 806-809.
- Huda, A. M., & Ami, M. S. (2021). Pengembangan Herbarium Berbasis Tumbuhan dalam Upacara Adat Brokohan Bayi di Kabupaten Jombang. *JoEMS (Journal of Education and Management Studies)*, 4(5), 1-6.
- Mertha, I. G., Al Idrus, A., Ilhamdi, M. L., & Zulkifli, L. (2018). Pelatihan Teknik Pembuatan Herbarium Kering dan Identifikasi Tumbuhan Berbasis Lingkungan Sekolah di SMAN 4 Mataram. *Jurnal Pendidikan dan Pengabdian Masyarakat*, 1(1).
- Nisaa, R. A., Lestari, S., & Astuti, Y. (2019). Pelatihan Pembuatan Herbarium Sebagai Salah Satu Pengembangan Media Pembelajaran Biologi Berbasis Lingkungan di SMA Muhammadiyah 1 dan 2 Tangerang. *Jurnal Pengabdian Masyarakat MIPA Dan Pendidikan MIPA*, 3(1), 4-10.
- Pantiwati, Y. (2015). Pemanfaatan Lingkungan Sekolah sebagai Sumber Belajar dalam Lesson Study untuk Meningkatkan Metakognitif. *Jurnal Bioedukatika*, 3(1), 27-32.



- Primawati, S. N., Harisanti, B. M., Utami, S. D., Dewi, I. N., & Sumarjan, S. (2021). Pelatihan Pembuatan Herbarium Sebagai Media Pembejalaran di Sekolah Bagi Guru MTs Dharut Tayyibin Batu Jai Kabupaten Lombok Barat. *Jurnal Pengabdian UNDIKMA*, 2(1), 43-49.
- Rahayu, T., & Hayati, A. (2020). Pelatihan Keterampilan Herbarium Kering Modern Bagi Guru dan Siswa di SMK Negeri 2 Batu. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, 5(2), 123-130.
- Rahmawati, R. (2020). *Pengembangan Herbarium Book Tumbuhan Paku Sebagai Media Pembelajaran IPA Materi Klasifikasi Makhluk Hidup Siswa Kelas VII*. (Doctoral Dissertation, IAIN Bengkulu).
- Rosa, E., Ekowati, C. N., & Sumardi, S. (2020). Bimbingan Teknik Pembuatan Insektarium Bagi Guru-Guru Ipa di Smp Way Tenong Kabupaten Lampung Barat. *Prosiding PKM-CSR Konferensi Nasional Pengabdian kepada Masyarakat dan Corporate Social Responsibility*, 3, 816-820.
- Samsali, O. (2008). Tumbuhan Epifit Berkhasiat Obat di Sepanjang Jalur Pendakian Cemara Sewu Gunung Lawu. Institutional Repository. <https://digilib.uns.ac.id/dokumen/detail/12008>
- Saputra, S. (2016). Pengaruh Model Pembelajaran Discovery Learning Berbasis Lingkungan Sekolah Terhadap Hasil Belajar Siswa Pada Materi Keanekaragaman Hayati. *JESBIO: Jurnal Edukasi dan Sains Biologi*, 5(2).
- Sari, N. L. I. P., Manuaba, I. B. S., Fo, M., & Ardana, I. K. (2013). Model Pembelajaran Generatif Berbasis Lingkungan Sekolah Berpengaruh Terhadap Hasil Belajar IPA Siswa Kelas V SD Gugus I Abiansemal. *MIMBAR PGSD Undiksha*, 2(1).
- Setyawan, A. D., Indrowuryatno, I., Wiryanto, W., Winarno, K., & Susilowati, A. (2005). Mangrove Plants In Coastal Area Of Central Java: 1. Species Diversity. *Biodiversitas Journal of Biological Diversity*, 6(2).
- Setyawati, E. (2018). Upaya Peningkatan Hasil Belajar IPA Melalui Model Pembelajaran Discovery Learning Pada Peserta Didik. *Ilmu Pendidikan: Jurnal Kajian Teori Dan Praktik Kependidikan*, 3(1), 50-59.
- Srimulat, F. E. (2021). Pelatihan Pembuatan Herbarium Sebagai Media Perkuliahan Taksonomi Tumbuhan Tingkat Rendah. *Jurnal Edu-Bio: Education and Biology*, 3(1), 9-14.
- Stern, M. J., & Eriksson, T. (1996). Symbioses in Herbaria: Recommendations For More Positive Interactions Between Plant Systematists and Ecologists. *Taxon*, 45(1), 49-58.
- Tomia, W. L. (2020). *Pembuatan Herbarium Sebagai Media Pembelajaran IPA-Biologi Untuk Mengembangkan Soft Skills Siswa Kelas VII di SMP Negeri 41 Buru Kecamatan Air Buaya Kabupaten Buru*. (Doctoral dissertation, IAIN Ambon).
- Waqfin, M. S. I., Fanani, M. R., & Luyunah, L. (2020). Potensi Herbarium untuk Meningkatkan Kreatifitas dan Peluang Bisnis Melalui Digital Marketing. *Jumat Ekonomi: Jurnal Pengabdian Masyarakat*, 1(1), 36-42.