

## DRY HERBARIUM BASED ON LOCAL WISDOM TO IMPROVE STUDENT LEARNING OUTCOMES

Nadya Salsabila<sup>1</sup>, Sitti Rahmasari<sup>2</sup>, Makherus Sholeh<sup>3</sup>

<sup>1,2,3</sup>Universitas Islam Negeri Antasari Banjarmasin, [nadyasalsabila535@gmail.com](mailto:nadyasalsabila535@gmail.com)<sup>1</sup>,  
[sitti.rahmasari@uin-antasari.ac.id](mailto:sitti.rahmasari@uin-antasari.ac.id)<sup>2</sup>, [makherus@uin-antasari.ac.id](mailto:makherus@uin-antasari.ac.id)<sup>3</sup>

### ABSTRACT

*Learning outcomes are the abilities students gain during the learning process. Implementing learning is not always successful, sometimes some obstacles impact student learning outcomes resulting in no improvement. Thus, teachers must be able to use interesting learning media to maximize learning activities. One of the learning media that can be used is the Dry Herbarium media based on local wisdom in science learning. In this media, plant specimens that have the properties to be used as medicinal plants are dried, then the media can be used as a learning medium to help maximize learning. This research aims to describe the use of Dry Herbarium learning media based on local wisdom to improve student learning outcomes at MI Taman Pemuda Islam Keramat Banjarmasin. This research method uses quantitative methods with True Experimental research type and pretest-posttest control group design, the sampling technique used is purposive sampling, data collection through written tests, interviews, and documentation, and data analysis techniques using descriptive statistical analysis. The results of the research show that the results of class IV science learning at MI Taman Pemuda Islam Keramat Banjarmasin using the Dry Herbarium media based on local wisdom are in a good category with an average of 75.09. So it can be concluded that the use of Dry Herbarium media based on local wisdom can improve student learning outcomes in science learning.*

**Keywords:** Media, herbarium, learning.

## INTRODUCTION

Education is the key to advancing this nation. With a good education, it will increase the resources available to humans themselves. This refers to UUD Number 20 of 2003 concerning the national education system, namely Education is a conscious and planned effort to ensure teaching and learning conditions. Therefore, students can actively develop the potential for spiritual strength, self-discipline, character, intelligence, noble morals, and the abilities needed for themselves, society, and the nation. Education is mandatory for all people in Indonesia and all Indonesians have the right to receive education, in line with Constitution No. 20 Years. 2003 article 5, namely that every citizen has the right to obtain a quality education<sup>1</sup>. Therefore, the government designed nine years of compulsory education.

Technological developments in Indonesia are increasingly developing in various fields, such as the economic sector, health sector, social sector, and education sector. The existence of technology will be very helpful, especially in the field of education. Not only does it have a positive impact, but technological developments also hurt the world of education, impacting teachers and students. This was not utilized properly by the teacher. To achieve the learning objectives that have been designed, several components must be present, including learning models, learning methods, learning strategies, and learning media.<sup>2</sup> These are all important components in the teaching and learning process. In general, tools that help in the learning process are called learning media. To stimulate students' minds in learning using tools in the form of media<sup>3</sup>. How to communicate with verbal communication or using media intermediaries can influence students' memory, this is in line with Dwyer's theory.<sup>4</sup>

It can be said that good media is media that can be played by teachers and students directly, can be touched, or touched on the spot. The herbarium is one of the media that can help teachers when educating and developing students' experiences because this media is a collection of plants that are collected logically, then dried so that the plants can be stored and last for a long time and as capital for students' learning<sup>5</sup>. Apart from being used as a herbarium medium, we can also see it with children so they can find out the most common ways to make dry herbarium to produce products that can later be exhibited. AECT characterizes media as all channels and structures that can be used to convey

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<sup>1</sup> UUD No. 20, *Sistem Pendidikan Nasional*, 2003.

<sup>2</sup> M Rizal Fuadiy, "Evaluasi Pembelajaran Sebagai Sebuah Studi Literatur," *DIMAR: Jurnal Pendidikan Islam* 3, no. 1 (December 1, 2021): 173–97, <https://doi.org/10.58577/dimar.v3i1.83>.

<sup>3</sup> Ni Luh and Putu Ekayani, "Pentingnya Penggunaan Media Siswa," *Pentingnya Penggunaan Media Pembelajaran Untuk Meningkatkan Prestasi Belajar Siswa*, no. March (2021): 1–16.

<sup>4</sup> M. Asep Fathur Rozi, "Strategi Hubungan Masyarakat Dalam Pendidikan Islam," *EDUKASI: Jurnal Pendidikan Islam (e-Journal)* 5, no. 1 (2017).

<sup>5</sup> Nour Alhasan and Hasan Akan, "Harran Üniversitesi Herbariumu ( Harran )' Ndaki Geofit Koleksiyonu Materyal ve Yöntem" 5, no. 1 (2021): 22–82.

messages or data<sup>6</sup>. The experience of teaching and educating is a correspondence cycle because there is a relationship between the teacher and students during teaching and education<sup>7</sup>. Local community groups in each region utilise and monitor natural resources to meet their daily needs, thereby creating local insight that is different from other regions. Regional insight has academic quality and plays a very important role in the world of education. The use of plants to be used as natural medicinal plants to build the body's immunity is no longer unusual for local people, so understanding this knowledge is very useful for students. Dry herbarium media can be used to apply and store information about the properties of plants in our daily lives. From initial observations, teachers' efforts to utilise dry herbarium learning media based on local wisdom are still lacking. Because teachers do not explore the use of objects in their natural surroundings which are usually used as learning resources, they need skills to master the process of making learning media, even with limited time in direct field studies. Educators should foster a sense of concern in students regarding the current state of our nature so that it is maintained and not harmed. According to Emmi Risma, in her research, it was revealed that herbarium media influences students' learning achievements with very good achievements compared to previous achievements<sup>8</sup>.

Based on the results of observations, problems were occurring in the field in the use of dry herbarium media, which had never been used of dry herbarium media, wich had never been used in the school, and a lack of knowledge regarding making learning media that could be used in the classroom learning process. The hypothesis in this research is that there will be changes in student learning outcomes when using dry herbarium media based on local wisdom.

The word media comes from the Latin medium which, in its true sense, means delegation or presentation. According to Gagne, the media are various parts of a student's current situation that can encourage him to learn. According to Briggs, learning media is an actual method for conveying items in learning materials such as books, films, recordings, etc.<sup>9</sup>. Educational media is defined as something that is used, seen, heard, or spoken, coupled with materials that support these activities, as a practical guide for analysing the characteristics of media and learning methods and their uses, a popular framework called the Cone of Experience. Dale can include in this framework 11 media, namely verbal symbols, visual symbols, recordings, films, educational television, actors, educational travel, prints, dramatic experiences, artificial experiences, and direct experiences full of purpose. In this framework, it is seen that students can achieve the benefits of abstract learning

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<sup>6</sup> Dikrullah, "Pengembangan Herbarium Book Sebagai Media Pembelajaran Biologi Pada Mata Kuliah Struktur Tumbuhan Tinggi Mahasiswa Jurusan Pendidikan Biologi UIN Alauddin Makasar," *UIN Alauddin Makasar* 13, no. 3 (2017): 1576–80.

<sup>7</sup> Nurul Audie, "Peran Media Pembelajaran Meningkatkan Hasil Belajar Peserta Didik," *Prosiding Seminar Nasional Pendidikan FKIP (Vol. 2, No. 1, Pp. 586-595)*. 2, no. 1 (2019): 586–95.

<sup>8</sup> Emmi Risma, *Pengaruh Penggunaan Media Herbarium Terhadap Hasil Belajar Ilmu Pengetahuan Alam Konsep Bagian-Bagian Tumbuhan Siswa Kelas IV SD Inpres Abangiang Kabupaten Gowa* (Makasar, 2022).

<sup>9</sup> Luh and Ekayani, "Pentingnya Penggunaan Media Siswa."

activities<sup>10</sup>. In general, media can avoid verbalism, arouse interest and inspiration, attract the attention of students, overcome limitations of space, time, and size, stimulate students in educational experiences, and provide an interesting feeling in learning.<sup>11</sup>

## METHOD

This research uses quantitative research methods with a true experimental research type. The design of this research is a pretest-posttest control group design. The design of this research is a pretest-posttest control group design. In this design, students' initial and final abilities can be seen using pretest and posttest questions. Sampling was taken randomly from a certain population, with a control group and an experimental group. By using a purposive sampling technique, which means samples are taken according to the researcher's needs in applicable regulations.

**Tabel 1.** Respondents

Narasumber	Total
Class IV A	22 Students
Class IV B	22 Students

A written test was carried out to determine initial and final abilities using dry herbarium media based on local wisdom. Students were given pretest questions at the beginning of the learning process before using dry herbarium media. After being given treatment in the experimental class, students then answered posttest questions to determine their final abilities after using dry herbarium media.

Interviews were conducted face-to-face with existing teachers. In this research, we discuss the achievement of learning outcomes using dry herbarium media based on local wisdom in fourth-grade science thematic learning at MI TPI Keramat Banjarmasin. Data analysis techniques in research are outlined in narrative form according to the data taken.

The research was conducted on July 27, 2023. The research location was MI TPI Keramat Banjarmasin Jl. Keramat Raya RT. 17 No. 21 Sei Bilu Village, East Banjarmasin District, Banjarmasin City, South Kalimantan Province. The research instrument is validated first by experts in the field of science so that it can be tested on students. The tests used are validity and reliability tests. After that, students will be asked to answer pretest and posttest questions to determine students' abilities before and after using the media, and then the data will be calculated using SPSS 26 for normality tests, homogeneity tests, and difference tests to determine differences in student learning outcomes.

<sup>10</sup> Ani Cahyadi, *Pengembangan Media Dan Sumber Belajar: Teori Prosedur*, ed. M. Iqbal Asy Syauqi, *Laksata Indonesia*, vol. 53 (Banjarmasin: Laksita Indonesia, 2019).

<sup>11</sup> Ali Mudlofir and Evi Fatimatur Rusydiyah, *Desain Pembelajaran Inovatif* (Jakarta: PT RajaGrafindo Persada, 2017).

## DISCUSSION

### Instructional Media

The word media comes from the Latin medium, which, in its true sense, means delegation or presentation. According to Gagne, the media are various parts of a student's current situation that can encourage him to learn. According to Briggs, learning media is an actual method for conveying items in learning materials such as books, films, recordings, etc.<sup>12</sup>. According to the National Education Association, learning media is a correspondence method, both printed and heard, including innovations in learning media equipment and places. The media does not display the "world" in general; the media is just an endless method of depicting the world through indirect correspondence<sup>13</sup>. For example, a history educator invites students to study heritage temples in Yogyakarta. The teacher uses media in the form of photo slides of the Borobudur temple to overcome the impossibility of bringing the temple to class because students cannot see the actual temple directly. Thus, the media provides alternative opportunities for educators, enabling the presentation of material that may not be easily accessible. This allows teachers to deliver content that may be unsafe or where adequate facilities for practical exercises are not available. For example, this could involve scenarios such as a science laboratory emitting potentially harmful radiation.

According to Fleming, the media is a problem or tool that intervenes between two parties and reconciles them. The term mediation refers to its use or role, namely the efficient management of relationships between the two main parties in the student's learning process and learning content. Apart from that, mediators can also reflect the understanding that learning systems that fulfill the role of mediation, from teachers to more sophisticated devices, can be called media. In short, media is a tool used to convey information or messages from the messenger to the recipient of the message during learning<sup>14</sup>. After understanding the idea of media, another thing we must know is the reason why media is so important in the educational experience. The term learning means initial planning or design that must be designed as a job to teach students. For this reason, in learning, students do not just collaborate with educators as one of the learning resources but can interact with all learning resources used to achieve the best learning goals<sup>15</sup>. The role and use of learning media in the learning process is that media, as part of the framework for learning, has abilities and tasks that are very important for the harmony of learning. media has an essential position as a basic part of learning and is very vital because media is an inseparable part of learning, Without learning media, it will not run and be successful positively<sup>16</sup>.

<sup>12</sup> Luh and Ekayani, "Pentingnya Penggunaan Media Siswa."

<sup>13</sup> Nunuk Suryani, Achmad Setiawan, and Aditin Putria, *Media Pembelajaran Inovatif Dan Pengembangannya* (Bandung, 2019).

<sup>14</sup> Azhar Arsyad, *Media Pembelajaran*, ed. Asfah Rahman (Jakarta: PT RahaGrafindo Persada, 2020).

<sup>15</sup> Ahdar Djamaluddin and Wardana, *Belajar Dan Pembelajaran, CV Kaaffah Learning Center*, 2019.

<sup>16</sup> Mudlofir and Rusydiyah, *Desain Pembelajaran Inovatif*.

Media is seen as an element that can expand the continuity of developing experiences. This is because media plays an important role and can directly or indirectly influence students' inspiration, interests, and considerations in progress, as well as having the option to depict dynamic material more clearly. Apart from media, which can make learning clearer and can control and present things that are difficult for students to reach, learning media is very important for education and learning practice because it can support the achievement of learning goals well. And what's even more rapid is that learning media is not just a tool for ongoing learning but is a technique for learning.

### **Natural Science Learning**

The most perfect creatures created by God are humans, but animals and plants are also created by God, but they are not given a mind like humans. Human perfection is a created creature equipped with reason, while animals only have lust. Through continuous thinking and thinking activities, knowledge comes. At its first birth, science was not differentiated into science and social science but was simply called science. But as time progressed and the scope of natural science became wider, scientists and experts began to divide and group science into natural science. and social sciences, but now the word science means referring to natural sciences (Sujana 2014).

The science learning process in elementary schools aims to provide opportunities for students to cultivate natural curiosity, improve their ability to ask questions, find answers to natural phenomena based on evidence, and develop critical thinking<sup>17</sup>.

### **Dry Herbarium Learning Media**

A herbarium is characterized as a place to store plant samples, both dry and wet. Apart from that, the herbarium is used for the study of plants<sup>18</sup>. The name herbarium refers to a room or building where herbarium sheets are placed, marked and then stored properly. It is a gallery but it is known as a herbarium because it only holds examples of certain plants. Herbariums are stored plants that are handled in a way that suits the strategy<sup>19</sup>. So a herbarium is a collection of plant specimens that are processed by drying and then classified so that it is easy to find out the identity of the plant. The first way to make a herbarium is through collection. Plant specimens to be dried are collected according to what is needed, such as plants that can be used as medicine in everyday life. The plants are then cleaned using 70% alcohol. Second, the plants that have been cleaned are then placed on newspaper or paper as a wrapper for the plants, then placed between several pages of a thick book, if you don't have a thick book, you can press them together using several books; this aims to press the plants. Third, plants that have been dried a little

<sup>17</sup> Nelly Widyawati and Yasinta Lisa, *Pembelajaran IPA Di Sekolah Dasar* (Yogyakarta: CV Budi Utama, 2019).

<sup>18</sup> Efi, "SEBAGAI MEDIA PEMBELAJARAN BIOLOGI PADA SUB MATERI PTERIDOPHYTA KELAS X SMAN 13 LUWU TIMUR EFI," 2020.

<sup>19</sup> Erda Muhartati and Azza Nuzullah Putri, "Pengembangan Media Album Herbarium Tumbuhan Spermatophyta Di Wilayah Kota Tanjungpinang," *Jurnal Pedagogi Hayati* 4, no. 2 (2020): 71–78.

or a lot can be attacked by fungi; therefore store your herbarium plant collection in a place that is not damp and dry it in the sun occasionally.



**Figure 1.** Dry Herbarium Media

### Science Learning Outcomes

According to experts, Bloom, learning achievements are classified into three domains that must be considered in every learning process, namely, the cognitive domain, the psychomotor domain, and the affective domain (Afandi, Chamalah, and Wardani 2013). Susanto emphasised that the achievement of learning outcomes is the occurrence of controlled changes in the child's, mental aspect and feelings.

Dry Herbarium in science learning on the concept of plant parts is better than conventional learning aided by picture media. This research has two variables, the independent variable, namely the use of Dry Herbarium media, and the dependent variable is student learning outcomes. This research used two classes, namely class IV A with 22 students as the experimental class and class IV B with 22 students as the control class. This research wants to prove whether there is an influence of learning using Dry Herbarium media and Image media on student learning outcomes. In the control class, the 1st meeting begins with a pretest to determine the student's initial abilities, then conventional learning is carried out using image media and the third meeting gives a posttest at the end of the learning. The pretest was carried out at the beginning before giving the treatment, and the posttest was carried out at the end of the meeting after the treatment was carried out find out whether there were differences in student learning outcomes before and after.

Learning using image media in the control class was said to be inadequate because student learning outcomes before using herbarium media were still below the KKM. In the control class, which was treated using image media, the student learning outcomes score was an average of 49.36 out of a maximum score of 76. If interpreted in the cognitive learning outcomes qualification guidelines, the student report card scores show that student learning outcomes are in the "poor" category because they are still below the KKM of 75. Students' enthusiasm is also lacking because they only use picture media, and students' focus is still lacking because this affects their ability to capture the material

presented. Researchers collected hypothesis-testing data by teaching plant parts and their functions in daily life in the experimental class with three meetings. The first meeting in the experimental class began with a pretest, then the second meeting continued with the learning process using dry herbarium media, and the third meeting carried out a posttest to determine students' final abilities in the material on plant parts and their functions.

**Tabel 2.** Experimental Class Differences Using Herbarium Media

	Pretest	Posttest	Difference
<b>Total</b>	952	1,652	792
<b>Mean</b>	43,27	75,09	35,09

**Tabel 3.** Experimental Class Differences Using Herbarium Media

	Pretest	Posttest	Difference
<b>Total</b>	892	1,086	274
<b>Mean</b>	40,55	49,36	12.45

Based on the results of research and data analysis, for experimental class students who were given the Dry Herbarium Learning Media treatment, the student learning outcomes score was obtained, namely, the average posttest score for students was 75.09 out of a maximum score of 100. If interpreted in the guidelines regarding the qualification of cognitive results, the student report card value shows that the results of student learning are classified as "good" and the completion score of all students is above the KKM, namely 75. Based on the qualifications of students' cognitive learning outcomes using dry herbarium media and image media in science lesson Theme 3 Subtheme 1, it can be seen that learning using herbarium media shows learning outcomes that tend to be higher than using image media. This can be seen from the average posttest scores of students, where the learning outcomes in the experimental class are in a good category.

The results of statistical calculations using the SPSS normality test in the experimental class show that  $0.000 < 0.05$ , so the distribution of science learning outcomes in the experimental class is not normally distributed. Then the control class normality test results show that  $0.009 < 0.05$ , so the distribution of control class student learning outcomes is also not normally distributed. Furthermore, based on the homogeneity test, it was found that  $0.027 > 0.05$ . This shows that the posttest results for both classes are homogeneous. Then, if the data obtained is not normally distributed, the Wilcoxon test is used. Based on the calculations obtained (Asymp. Sig.  $0.000 < 0.05$ ),  $H_0$  is accepted. Then, if the data is not normally distributed, the next test uses the U-test. Based on the results of calculations using SPSS, if the sig value is  $0.000 < 0.05$ , then  $H_0$  is accepted. So it can be concluded that there is a significant difference between the posttest of experimental class students using dry herbarium media and the control class using image media.



In the experimental class, students are enthusiastic and active in learning using dry herbarium media because they can directly observe the parts of plants. The results of research conducted when conducting learning using dry herbarium media were found to have a positive impact on students' science learning outcomes because, with the help of dry herbarium media, the delivery of material accompanied by media can increase students' understanding of learning. This is reinforced by the results of previous research by Emmi Risma stating that the use of herbarium media in the learning process in science subjects influences science learning outcomes for class IV students (Risma 2022). This is also supported by the theory put forward by Garlech and Ely, which states that, broadly speaking, media are people, materials, or events that create conditions that enable students to acquire knowledge, skills, and attitudes. In this case, everything used by the teacher in the learning process is media, in the form of books, pictures, hard objects, animal replicas, plant replicas, and the school environment. These are all media to help students respond to the material received from the teacher, who conveys messages containing the material. lesson.

An alternative to protecting the existence of plants is by preserving them; their existence will continue to be visible. This is in line with the opinion of Syamsiah et al. in their research. (Syamsiah, Nurhayati, and Hiola 2020). Students can be more active in learning if the learning process is carried out by making a herbarium dry to become a collection in class that can be seen every day. Something memorable for students will always be stored in their memories. In line with Jarvis' opinion that children aged 7–12 years in Piaget's theory enter the concrete operational stage, (Anditiasari and Dewi, 2021) This means that at this stage, children can use logic, but only for objects that are real or can be seen directly by the child. The presence of dry herbarium media in the learning process will make it easy for students to grasp the material that has been explained by the teacher; this will influence student learning outcomes, whether students understand it or vice versa.

## CONCLUSION

The results of this research can be used as a choice for teachers to carry out interesting learning that is not only focused on books. But it also requires the help of dry herbarium media, which can help teachers carry out learning on science material on plant parts and their functions in everyday life. This medium can also create a class atmosphere that is not boring but will be fun and attract students' attention because they can see it directly. This makes it easier for students to understand the material being studied and makes them more active in learning, which will improve student learning outcomes.

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