

Development of Natural and Social Science Teaching Materials (IPAS) Based on Local Wisdom for Fourth Grade Madrasah Ibtidaiyah Madani Alauddin Makassar

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ABSTRACT

This study aims to develop local wisdom-based teaching materials for Natural and Social Sciences (IPAS) for fourth-grade students at Madrasah Ibtidaiyah Madani Alauddin. The study was conducted to address the need for teaching materials that are aligned with the national curriculum while remaining relevant to students' cultural backgrounds and everyday lives. Focusing on the theme of social and cultural diversity in Indonesia, the study integrates curriculum content with local wisdom that is closely connected to students' surroundings, particularly the local wisdom of South Sulawesi. The development of the teaching materials employed the 4D model (Define, Design, Develop, and Disseminate). The *Define* stage involved a needs analysis through curriculum observation and teacher interviews, which indicated the need to strengthen IPAS learning materials that are contextual and closely related to local culture. The *Design* stage resulted in an initial prototype of the teaching materials that was designed to be engaging and interactive. During the *Development* stage, validation by subject-matter experts, media experts, and teachers indicated that the teaching materials were suitable for use, requiring only minor revisions. The prototype was subsequently tested through pre-tests and post-tests administered to students, demonstrating an improvement in their understanding of cultural diversity. Teachers also provided positive responses regarding the practicality and effectiveness of the teaching materials. At the *Disseminate* stage, the teaching materials were tested on a limited scale without conducting seminars or disseminating them to other schools due to strategic considerations and resource limitations. Nevertheless, the classroom trial involving fourth-grade students demonstrated significant improvements in learning outcomes, accompanied by positive feedback from teachers. The findings confirm that the developed teaching materials are valid, practical, and effective in improving students' understanding of social and cultural diversity in Indonesia.

Keywords: Teaching Materials; Natural and Social Sciences; Local Wisdom; Education; Islamic Elementary School.

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INTRODUCTION

Indonesia is known as the country with the highest cultural diversity in the world, covering various languages, customs, arts, and traditions in every province and island (Educational, 2021). This diversity becomes a wealth of learning resources that can enrich the curriculum, especially in Science and Social Studies (IPAS) subjects which inherently require cross-disciplinary understanding. Using local wisdom in

learning has been proven to boost student engagement and motivation (Sudarmin Sukmawati, 2024). However, IPAS teaching materials in many madrasahs are still quite general and lack local context, so students have a hard time connecting scientific concepts with their cultural environment (Salmia et al., 2024). In fact, cultural integration in learning not only strengthens identity, but also makes it easier to understand concepts through real experiences around students (Meilana & Aslam, 2022).

At Madani Alauddin Makassar Elementary School, science and social studies learning activities still rely heavily on central textbooks without adjusting to the Makassar context and Bugis-Makassar cultural heritage. Initial observations show low levels of student participation during cultural discussions and poor retention of material when it is not connected to local experiences. Teachers admit they don't yet have teaching materials specifically designed to systematically integrate local wisdom into the science and social studies curriculum (Fadilah, D., Rohini, 2020). This situation triggers the need to develop teaching materials based on tested models.

Science learning at MI Madani Alauddin Makassar can utilize the richness of local culture as a learning context, so that students not only understand scientific concepts, but also grow to love and care more about cultural heritage (Maulinda, 2022). Learning materials should include field exploration activities, be interactive and multimodal, and encourage students to observe local traditions and then connect them to science principles. The ideal learning system also supports teachers with clear guidance on how to facilitate discussions on local wisdom, adaptive student worksheets, and assessments that measure contextual understanding (Nirwan et al., 2021). In this way, knowledge transfer can happen effectively and enjoyably.

The reality on the ground shows a lack of teaching materials that specifically integrate Makassar local wisdom into Natural and Social Sciences, creating a gap between cultural potential and learning practices (Kardana, 2022). Besides that, even though local culture modules are already available for other subjects, there still isn't an IPAS module based on an integrated development model. The second gap is the lack of teacher involvement in designing teaching materials; so far, teachers have just been adapting general materials without going through the stages of needs analysis, design, and continuous development (Ferary, 2023). This results in teaching materials that are not optimal and less responsive to students' needs.

This study is expected to produce IPAS teaching materials that are valid, practical, and effective, linking science and social concepts with the local wisdom of Makassar. In this way, students can understand the material deeply, improve their critical thinking skills, and develop an appreciative attitude toward culture. (Botes & Philip, 2025). Besides that, teachers are expected to get guidelines for developing and implementing teaching materials based on the 4-D model (Define, Design, Develop, Disseminate), so they can innovate in learning independently and continuously (Botes & Philip, 2025).

This research offers a first novelty, which is the application of Makassar local wisdom to explore scientific and social phenomena in IPAS teaching materials. This concept has never been formalized in the official MI Madani Alauddin Makassar modules. Second, the development of teaching materials uses the 4 D model with digital content adaptation (including multimedia and virtual field activities) in line with the demands of independent learning. This approach is expected to make the process of validation, trial, and module dissemination more efficient and sustainable.

METHOD

This study uses a 4-D development model that consists of four stages: Define, Design, Develop, and Disseminate. In the Define stage, the researchers conducted a needs analysis by observing and interviewing teachers and students at Madrasah Ibtidaiyah Madani Alauddin Makassar to identify gaps in the IPAS teaching materials related to local cultural diversity (Sukmawati & Salmia, 2023). Besides that, literature on local wisdom and Indonesian culture is studied in depth to formulate the learning objectives and the characteristics of the expected material (Smith, 2020).

In the Design stage, the researcher designs the framework of the teaching material content, including the module structure, concept map, and learning activities that incorporate cultural elements like traditional dances, local languages, and social-cultural practices (Chen, Miao, 2022). This design was also initially validated through a focus group discussion (FGD) with curriculum experts and local cultural figures in Makassar to make sure the content is relevant and accurate (Creswell, 2014). The validation results are used to refine the module draft before moving on to the development stage. The Develop stage includes creating teaching material prototypes in both print and digital forms, including illustrations, short videos, and student worksheets (Azizah, Fita Nurul, Suryanti -, 2019). The prototype was tested in a small group trial in one class to get feedback on instruction clarity, student engagement, and the suitability of font size and layout (Branch, 2009). Finally, in the Disseminate stage, the final teaching materials are shared through teacher training and published on the Madrasah website, with initial monitoring to ensure adoption and effective use (Candra, Hadi., 2023).

RESULTS AND DISCUSSION

A. RESULTS

Define Stage: Analysis of Student Needs and Characteristics

The researcher started by analyzing the Merdeka curriculum, observing students, and interviewing IPAS teachers at Madrasah Ibtidaiyah Madani Alauddin to figure out the learning needs of fourth-grade students. It was found that the IPAS material so far has been quite general and not very contextual to local wisdom, making it difficult for students to connect the concepts with their everyday experiences. In addition, students have very diverse learning characteristics, mostly visual and kinesthetic, with different cultural and economic backgrounds, requiring learning materials that are inclusive, engaging, and easily accessible to all students regardless of their home conditions.

Table 1 Prototype

No	Design Components	Prototype 1	Prototype 2
1	Module title	IPAS teaching module: social and cultural diversity in Indonesia based on local wisdom	IPAS teaching module: social and cultural diversity in Indonesia based on local wisdom
2	Class	4th Grade Elementary School	4th Grade Elementary School
3	Learning goals	1. Identifying various forms of social and cultural diversity in Indonesia	1. Identifying various forms of social and cultural diversity in

No	Design Components	Prototype 1	Prototype 2
		2. Explaining the local wisdom values from several regions in Indonesia 3. Appreciating social and cultural diversity as a national treasure 4. Showing tolerance and respect for differences in daily life	Indonesia 2. Explaining the local wisdom values from several regions in Indonesia 3. Appreciating social and cultural diversity as a national treasure 4. Showing tolerance and respect for differences in daily life
4	Module structure	1. Part 1: Introduction. Contains the module identity, learning objectives, the Pancasila student profile, and learning activities. 2. Part 2: Material discussion. Contains detailed explanations about: a. The diversity of ethnic groups in Indonesia b. The diversity of religions in Indonesia c. The diversity of cultures in Indonesia d. The social and cultural diversity based on local wisdom in Indonesia 3. Part 3: closing. Contains practice questions to deepen students' understanding	1. Part 1: Introduction. Contains the module identity, learning objectives, the Pancasila student profile, and learning activities. 2. Part 2: Material discussion. Contains detailed explanations about: a. The diversity of ethnic groups in Indonesia b. The diversity of religions in Indonesia c. The diversity of cultures in Indonesia d. Social and cultural diversity based on local wisdom in Indonesia e. Local wisdom in South Sulawesi 3. Part 3: closing. Contains practice questions to deepen students' understanding
5	Learning method	1. A contextual approach by relating the material to students' daily lives 2. Group-based and interactive learning 3. Use of visual and multimedia media such as images with brief information to explain social and cultural diversity	1. A contextual approach by relating the material to students' daily lives 2. Group-based and interactive learning 3. Use of visual and multimedia media such as images with brief information to explain social and cultural diversity
6	Learning media	Pictures of traditional clothing, traditional houses, and traditional dances from various tribes in Indonesia	Pictures of mosques, traditional clothing, traditional houses, musical instruments, and

No	Design Components	Prototype 1	Prototype 2
			traditional dances from various tribes in Indonesia and South Sulawesi
7	Assessment and evaluation	1. Formative assessment: using practice questions and individual assignments in module 2. Summative assessment: conducting assessment through group discussion results and evaluating understanding of the material based on students' answers in the practice questions	1. Formative assessment: using practice questions and individual assignments in the module 2. Summative assessment: doing assessment through group discussion results and evaluating understanding of the material based on students' answers in practice questions

Module Prototype Design Phase

Based on the definition results, two prototypes of modules themed 'Social and Cultural Diversity in Indonesia Based on Local Wisdom' were developed. Prototype 1 includes a basic module structure (introduction, general material, exercises), simple visual media, and a contextual-interactive method. Prototype 2 improves the content by adding a special subsection on South Sulawesi local wisdom, images of mosques and local musical instruments, as well as culture-based project activities. Each module comes with worksheets in the form of picture questions and multiple-choice questions to support students' visual and kinesthetic learning styles.



The image shown is the front and back cover design of the IPAS Teaching Module for fourth grade with the theme 'Social and Cultural Diversity in Indonesia Based on Local Wisdom'.

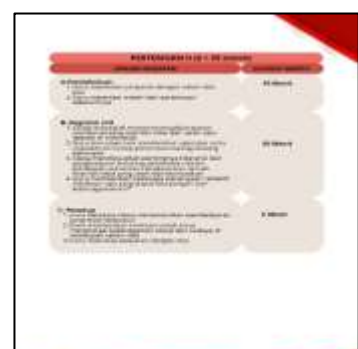


Figure 2 Module Identity Page

The learning objectives are listed on the module's identity page to give a clear direction about the competencies that students need to achieve.

**Figure 3 Educational Material Page**

Expert Validation Development Stage

The module was tested for feasibility through validation by content, media, and language experts in two stages. In the first stage of validation, the average scores from each validator ranged from 73–75% (valid category) with a recommendation to add local content. After revisions, the second stage of validation recorded scores of 90–91% (very valid category) for all aspects. The combined average validation reached 91%, confirming that the module meets the content, visual, and language standards for fourth-grade students.

Table 2 Results of Material Expert Validation

No	Aspect	Score	
		Stage I	Stage II
1	Relevance to the syllabus	6	8
2	Relevance to learning objectives	6	8
3	Presentation of material	6	7
4	Material selection	17	22
5	Clarity of the material	14	18
6	Material coherence	9	9

No	Aspect	Score	
		Stage I	Stage II
	Amount	58	72
	Maximum score	80	80
	Percentage	73	90

Based on Table 2, it shows that the results of material expert validation in stage I obtained a score of 58, or 73%, which falls into the 'valid' category. In stage II, it got a score of 72, or 90%, which is considered 'very valid'.

Table 3 Media Expert Validation Results

No	Aspect	Score	
		Stage I	Stage II
1	Learning module display	21	26
2	Language use	18	22
3	Layout and numbering style	12	14
4	Organization	9	11
	Amount	60	73
	Maximum score	80	80
	Percentage	75	91

Based on Table 3, it shows that the results of the media expert validation in stage I scored 60, which is 75%, and this assessment falls into the 'valid' category. In stage II, it scored 73, which is 91%, and this assessment falls into the 'very valid' category.

Table 4 Language Expert Validation Results

No	Aspect	Score
1	Clarity of language	19
2	Communicative	8
3	Compliance with language rules	15
4	The use of terms, punctuation, and symbols	13
5	Text appearance	18

Amount	73
Maximum score	80
Percentage	91

Based on table 4, it shows that the linguistic expert validation results obtained a score of 73 or 91%, which falls into the 'very valid' category. Next, the researcher will present the overall validation test results from the three validators, namely the material expert, media expert, and linguistic expert.

Table 5 Validation Results

No	Validator	Percentage	Category
1	Subject matter expert	90	Very valid
2	Media expert	91	Very valid
3	Linguist	91	Very valid
Validation average		91	Very valid

Based on table 5, the results of the teaching material validation show that the content expert gave a validation score of 90%, which falls into the very valid category. This assessment indicates that in terms of content, concept integration, and relevance of the material to students, the teaching materials already meet good standards. In addition, the media and language experts each gave a validation score of 91%, which is also considered very valid.

Practicality Test Dissemination Stage

A practitioner trial was carried out with IPAS teachers who found the module very easy to use, relevant to the curriculum, and effective in boosting student engagement. Out of the four assessment aspects (ease of use, suitability for needs, student engagement, learning sustainability), the module scored 95% (very practical category). The teachers stated that no further revisions were needed, and that the module's structure and illustrations made it easier to deliver the material in class.

Table 6 Practitioner Evaluation Results

No	Aspect	Score
1	Ease of using the module	8
2	Suitability for learning needs	14
3	Increasing student engagement	12
4	Sustainability of learning	4
Amount		38
Maximum score		40

<i>Percentage</i>	95
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Based on table 6, it shows that the teaching material received a total score of 38 out of a maximum score of 40, with a practicality percentage of 95%, which falls into the 'very practical' category.

Effectiveness of Pre-Test and Post-Test Results

In one study group (27 students), the average pre-test score was 52 and the average post-test score was 83, with an average increase of 31 points. The N-Gain calculation resulted in 0.64 (considered fairly effective), showing that the module was able to significantly improve students' understanding, even though there is still room for improvement. These results indicate that the local wisdom-based IPAS teaching materials have been effective in supporting the learning process, although the researcher recommends further development to achieve a higher level of effectiveness.

Table 7 Students' Pre-Test and Post-Test Scores

No	Student Name	Student Grades		Difference
		<i>Pre-Test</i>	<i>Post-Test</i>	
1	A Muh Virzha Pratafi Islam	50	80	30
2	Abidzar Al-Ghifari Rusman	40	80	40
3	Nada Aufa Kalila	20	80	60
4	Ainun Mahya	90	90	0
5	Alfi Andra Aditya	60	80	20
6	Janeta Kayyis	40	90	50
7	Alsyazani Alfarezqi Hidayat	80	90	10
8	Andi Rifadli Alfath Basri	20	70	50
9	Ayatullah Ali Ishad	50	89	39
10	Barie Elfattah Mahawira	30	90	60
11	Darmawan Setiadi	60	100	40
12	Faruq Al Mubarak	30	80	50
13	Filzah Fariha	70	90	20
14	Ghaitsa Grytha Hasyim	80	80	0
15	Ghina Salsabila Maulidya	90	90	0
16	Halifa Adawia Hairah	50	70	20
17	Mohammad Dzaki Al Fath	60	90	30

No	Student Name	Student Grades		Difference
		<i>Pre-Test</i>	<i>Post-Test</i>	
18	Muh Akhdan Fakhrie Zhafran	30	80	50
19	Muh Fauzan Adi Putra	40	80	40
20	Muhammad Aditya El Romansyah	60	70	10
21	Muhammad Haidar Almairy Tsaqib	40	80	40
22	Muhammad Rafa	30	60	30
23	Miftah Afiyah Rifhan	40	100	60
24	Nadin Syafira	90	90	0
25	Siti Raysa Mukhtazza	60	80	20
26	Syafiqah S	50	80	30
27	Xaquillio Fausta Tasrival	50	80	30
Average		52	83	31

Based on table 7, the next step is to calculate effectiveness using the N-Gain formula as follows:

$$\begin{aligned}
 \text{N-Gain} &= \frac{\text{Scores Posttest} - \text{Scores Pretest}}{\text{Scores maximum} - \text{Scores pretest}} \\
 &= \frac{83 - 52}{100 - 52} \\
 &= \frac{31}{48} = 0,64 \text{ or } 64\%
 \end{aligned}$$

Based on the N-Gain score calculation, the average improvement in the understanding of fourth-grade students at Madrasah Ibtidaiyah Madani Alauddin after using the teaching materials was 0.64 or 64%, which falls into the “quite effective” category.

B. DISCUSSION

This study develops teaching materials for Natural and Social Sciences (IPAS) based on local wisdom for fourth-grade students at Madani Alauddin Madrasah Ibtidaiyah using the 4-D model framework (Define, Design, Development, Disseminate). This model was chosen because it provides a systematic process, starting from defining learning needs, designing modules according to student characteristics, developing interactive materials based on expert input, to distributing and testing the effectiveness of the teaching materials before wide implementation (Fadilah, D., Rohini, 2020). In the Define stage, curriculum analysis, observations, and teacher interviews are carried out to identify students' difficulties, especially in understanding complex scientific terms, as well as their dominant visual and kinesthetic learning

styles. Referring to Vygotsky's ZPD theory and Piaget's constructivism, teaching materials are designed to integrate local wisdom contexts and simple language so that the content feels more familiar, contextual, and supports deeper understanding based on students' direct experiences. (Tamrin et al., 2011).

The Design stage includes designing modules that consist of an illustrative cover, teaching material identity containing learning objectives and the Pancasila Student Profile, main content about the diversity of ethnicities, religions, cultures, general local wisdom, and specific to South Sulawesi, as well as Student Activity Sheets (LKPD)(Sunarti, 2021). Illustrations, images, and exploration activities are designed to support a multimodal learning style, in line with Fleming & Mills' multimodal theory, so students can grasp abstract concepts in a concrete way. During the Development stage, the teaching materials were repeatedly validated by experts in content, media, and language in early and mid-February 2025. The first feedback emphasized expanding the local wisdom content of South Sulawesi and adding visual elements; later revisions were considered complete and on target.

Mayer's multimedia theory and Paivio's dual coding theory underlie the addition of illustrations to boost cognitive processing through both text and images (Clark, R. C., & Mayer, 2009). The Disseminate stage included testing the module on one group of fourth-grade students (27 students) using a pre-test and post-test method on February 12, 2025, along with filling out a teacher response sheet. Teachers rated the module as suitable without revisions it has a systematic structure, communicative language, attractive illustrations, and the student worksheet effectively measures understanding. The practical evaluation results align with Skinner's behaviorism theory, where visual reinforcement and interactive activities trigger student engagement and learning motivation. Overall, the teaching material's validity is very high (average 91%), the module's practicality is excellent (95%), and learning effectiveness shows an N-Gain Score of 0.64 ("quite effective"). Although the teaching materials have improved students' understanding and engagement, the study recommends further development by integrating multimedia elements, discussion methods, and project-based approaches to boost effectiveness to the "high" category and support critical and creative thinking skills.

CONCLUSION

Based on the results of research and discussion on the development of IPAS teaching materials, the development of local wisdom-based IPAS teaching materials for Grade IV students at Madrasah Ibtidaiyah Madani Alauddin can be concluded that the development stages (define, design, development, disseminate) successfully produced teaching materials that match the students' characteristics. In the define stage, visual and kinesthetic approaches were combined with illustrations of South Sulawesi local wisdom, making the material easier to understand. The teaching material design, which includes five main topics and student worksheets, facilitates active student engagement.

Expert validation showed high feasibility after refining the materials, media, and language, and field trials confirmed the module's effectiveness through significant post-test score improvements compared to pre-test, making it suitable for contextual IPAS learning. In terms of validity, the teaching materials scored an average of 91% ('very valid'), with the language aspect meeting the criteria from the start without revisions. Although initial improvements were needed for materials and

media, the revision process successfully increased the validation scores to meet academic and pedagogical standards without further revisions.

The practicality of the teaching materials is also very high, with a score of 95%; teachers reported the module is easy to use, aligns with the curriculum, effectively increases student engagement, and supports ongoing learning, making it possible to implement it optimally. Regarding learning effectiveness, the teaching materials showed an N-Gain Score of 0.64 (category 'quite effective'), meaning it can significantly enhance students' understanding, although it has not yet reached the 'very effective' category. To optimize it further, interactive elements should be added and the material should be connected to students' real-life experiences, so the module's relevance and appeal will increase, which is expected to boost effectiveness to a higher level.

REFERENCES

- Amini, & Ginting, N. (2024). *Metode Penelitian: Kualitatif, Kuantitatif, PTK Dan R&D*. UMSU Press.
- Azizah, Fita Nurul, Suryanti -, and W. B. (2019). Development of Local Wisdom Based Science Teaching Materials in Ngingas Village to Improve the Critical Thinking Skills of Fifth Grade Students of Elementary School. *International Journal of Scientific and Research Publications (IJSRP)*, 9(8).
- Botes, W., & Philip, A. (2025). *Research in Social Sciences and Technology Enhancing Pedagogical Development of Natural Science Teachers Through a Key Concepts in Science Project : A Social Constructivist Perspective*. 191–208.
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. Springer US.
- Candra, Hadi., dan P. H. P. (2023). *Konsep Dan Teori Pendidikan Karakter: Pendekatan Filosofis, Normatif, Teoritis Dan Aplikatif*. CV Adanu Abimata.
- Chen, Miao, and X. X. (2022). The Effect of Social Media on the Development of Students' Affective Variables. *Frontiers in Psychology*, 13.
- Clark, R. C., & Mayer, R. E. (2009). *Multimedia Learning*. Cambridge University Press.
- Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed methods approaches – 4th ed*. SAGE Publications, Inc.
- Educational, U. N. (2021). Scientific and Cultural Organization (UNESCO) UNESCO Snapshots: 20th Anniversary of the Declaration on Cultural Diversity. *UNESCO Publishing*.
- Fadilah, D., Rohini, & S. (2020). Pengembangan Bahan Ajar Tematik Sekolah Dasar Berbasis Kearifan Lokal Samawa Berbentuk Multimedia Interaktif. *Jurnal Elementary*, 3(2)(<https://doi.org/10.31764/elementary.v3i2.2430>), 5.
- Ferary, D. (2023). A Philosophical Perspective on the Purpose of Education in Indonesia. In *Comparative and Decolonial Studies in Philosophy of Education* (pp. 51–71). https://doi.org/10.1007/978-981-99-0139-5_4
- Kardana, I. N. (2022). Revitalizing Local Wisdom in Balinese Simile: An Effort to Enhance Balinese Youth Character. *Journal of Language Teaching and Research*, 13(1), 138–144. <https://doi.org/10.17507/JLTR.1301.16>
- Lickona, T. (1992). *Educating for Character: How Our Schools can Teach Respect and Responsibility*. Bantam.
- Maulinda, U. (2022). Pengembangan Modul Ajar Berbasis Kurikulum Merdeka. *Tarbawi*, 5(2), 130–138.
- Meilana, S. F., & Aslam, A. (2022). Pengembangan Bahan Ajar Tematik Berbasis Kearifan Lokal di Sekolah Dasar. *Jurnal Basicedu*, 6(4), 5605–5613.

- <https://doi.org/https://doi.org/10.31004/basicedu.v6i4.2815>
- Nirwan, Yunus, R., & Raf, N. (2021). Transformasi Pola Pengasuhan Anak Pada Keluarga Etnis Bugis di Perkotaan (Studi Kasus Kelurahan Tamalanrea Indah Kota Makassar). *Hasanuddin Journal of Sociology (HJS)*, 3(2), 1–14.
- Salmia, Nursalam, & Bancong, H. (2024). Effectiveness of Local Wisdom-Based Independent Curriculum Teaching Modules in Improving Learning Outcomes Indonesia. *Journal of Ecohumanism*, 3(6), 1719–1726. <https://doi.org/10.62754/joe.v3i6.4131>
- Smith, J. (2020). Language, culture and identity in the global age. *Global Linguistic Journal*, 15(3), 201–218.
- Sudarmin Sukmawati, M. (2024). Development of a Pancasila Education Teaching Module with Integration of Mattabe' Culture for Strengthening Student Character Values. *Journal of Ecohumanism*.
- Sukmawati 1, Salmia 2, S. 3 *. (2023). *Population, Sample (Quantitative) and Selection of Participants/Key Informants (Qualitative)*. 7(1), 131–140.
- Sunarti, dkk. (2021). Pengembangan Media Scrapbook Pada Pembelajaran Tematik Untuk Meningkatkan Minat Belajar Siswa Kelas I Sekolah Dasar. *Jurnal PGSD Indonesia*, 7(1), 23–32.
- Tamrin, M., S. Sirate, S. F., & Yusuf, M. (2011). Teori Belajar Vygotsky dalam Pembelajaran Matematika. *Sigma (Suara Intelektual Gaya Matematika)*, 3(1), 40–47.