

Character Building Through Sijello To Mampu Using A Deep Learning Approach At The Concrete Operational Stage

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Abstract: Character education in the era of Society 5.0 faces serious challenges, particularly in elementary schools, where students' values of discipline, responsibility, and respect have declined. The 2023 Bone Regency Education Report shows that only 62% of students consistently demonstrate moral behavior. To address this challenge, this study developed the Sijello To Mampu Puzzle, an interactive learning medium based on Bugis folklore, to strengthen character values in students at the concrete operational stage. The research method used the ADDIE development model with fourth-grade students in four schools: SDN 280 Palakka (limited trial), SDN 260 Masago (extensive trial), SD Inpres 3/77 Masago (experimental class), and SD Inpres 6/80 Latelang (control class). Data were collected through pre-tests, post-tests, observations, questionnaires, and interviews, and then analyzed using descriptive statistics and t-tests. The results showed that the medium achieved 87.5% validity (very valid), 85.2% practicality (very practical), and 82.7% effectiveness (effective). The experimental class recorded a 75% increase in scores, higher than the control class's 47%. This finding confirms that the Sijello To Mampu Puzzle is not only innovative in integrating local wisdom into interactive learning but also effective in improving comprehension while continuously strengthening students' character education.

Keywords: Character Education, Sijello to Mampu Puzzle, Bugis Folklore, Concrete Operational Stage.

Article History:

Received: 02-09-2025

Online : 04-10-2025



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A. INTRODUCTION

Character education is the primary foundation for developing a generation of noble character, instilling moral values such as discipline, responsibility, and mutual respect (Dwiputri and Anggraeni, 2021; Dewi et al., 2025; Asfar et al., 2025). These values not only determine academic success but also serve as essential social capital for children to interact healthily with their surroundings. However, the state of character education in Indonesian elementary schools, particularly in Bone Regency, shows a concerning trend. According to the Bone Regency Education Report (2023), only 62% of elementary school students demonstrate consistent moral behavior, encompassing aspects of discipline, responsibility, and respect. This research is supported by observations and interviews with teachers in Patimpeng District, which revealed indications of moral degradation in approximately 70% of students of concrete operational age (7–11 years old). Symptoms of this moral degradation are evident in increasing

indiscipline, a low sense of responsibility, and a lack of mutual respect among peers within the school environment.

This issue aligns with research by the International Center for Research on Women (ICRW, 2022), which states that the moral values crisis in primary education is a global issue, particularly in developing countries. Less than 65% of students possess adequate social-emotional competencies, and approximately 40% struggle with discipline, responsibility, and respect. Students' weak character is influenced by various factors, including a lack of parental supervision, an uncondusive school environment, and the forces of globalization and technology, which often shift traditional moral values (Iwuanyanwu et al., 2024; Ji, 2023). Furthermore, 21st-century education demands the integration of academic achievement and character development through a learning process that is enjoyable, meaningful, and appropriate to children's cognitive development. However, moral values learning in primary schools is still dominated by conventional methods based on lectures and memorization, thus under-representing students' affective dimensions. As a result, the internalization of moral values is not optimal. One local resource that can be utilized to address this issue is the Wiracarita Sijello to Mampu, a Bugis folktale rich with moral messages about discipline, responsibility, and respect (Rapi and Nurhusna, 2024). However, folklore learning in schools is often limited to monotonous reading texts without being integrated into interactive and contextual learning media.

To address this need, the Sijello to Mampu Puzzle is an interactive learning medium that integrates Bugis folklore into an educational puzzle. Each puzzle piece not only contains a story fragment but also a moral message that students must understand to complete the entire story. The puzzle-building process encourages students to collaborate, think critically, and reflect on the moral message at each stage of the game. This approach aligns with constructivist theory, which emphasizes students' active role in constructing knowledge through real-life experiences. This medium also supports the principles of joyful, mindful, and meaningful learning, ensuring a non-monotonous learning process and enabling students to deeply internalize moral values through visual, collaborative, and problem-solving experiences. The deep learning approach is considered relevant because it not only helps students understand moral values in depth but also encourages them to connect moral concepts to real-life experiences (Fahmi, Nursalim, dan Rahmasar, 2024). Through interactive, reflective, and applicable learning, students not only passively receive information but are actively involved in building a comprehensive understanding. This aligns with the principles of joyful learning, mindful learning, and meaningful learning, which emphasize the importance of a fun, mindful, and meaningful learning environment in shaping students' character.

Previous research has examined the role of folklore in student character formation and the development of interactive game-based media. However, most of these studies have not deeply integrated cultural character values into deep learning-based media (Dermawan et al., 2024) only examined the role of folklore in general character education (Azizatunissa Sekaringtyas dan Hasanah 2022) developed interactive game media without linking it to local culture, while (Hasanah and Pujiati, 2025) emphasized the effectiveness of deep learning from a cognitive perspective without integrating cultural values. To address this gap, it is important to note that based on previous research, several studies have examined the role of folk tales in the formation of students' character.

Based on the problems that have been described earlier, the hypothesis of this research is formulated as follows. The zero hypothesis (H_0) states that the interactive media Sijello to Mampu Puzzle based on Bugis folklore is not effective in strengthening students' character, which includes discipline, responsibility, and mutual respect, in Indonesian subjects. On the

other hand, the alternative hypothesis (H_1) states that the interactive media *Sijello to Mampu* Puzzle based on Bugis folklore is effective in strengthening students' character (discipline, responsibility, and mutual respect) in Indonesian subjects. The hypothesis that can be formulated is $H_0: \bar{x}_E - \bar{x}_K$ (which means that there is no significant difference between the average student character reinforcement score in the experimental class and the control class), whereas $H_1: \bar{x}_E - \bar{x}_K$ (which means that there is a significant difference between the average character reinforcement score of students in the experimental class and the control class).

The decision-making rules used in this study are based on a two-way t-test. H_0 is accepted when the value t_{hitung} count is between $-t_{tabel}$ and $+t_{tabel}$ t table or when the value of $p_{value} \leq \alpha$. Temporary H_1 is accepted when the value t_{hitung} count is out of range $-t_{tabel}$ and $+t_{tabel}$ or value $p_{value} \leq \alpha$. The results of the analysis show that H_1 can be accepted. The consideration of the use of a two-tailed test in this study is based on the fact that the direction of the influence of *Sijello to Mampu* Puzzle media on strengthening students' character has not been ascertained beforehand, whether it will have a positive or negative impact. In addition, based on theoretical studies and literature reviews, there has been no research that specifically tests the effectiveness of this media in the context of strengthening students' character. Therefore, a bidirectional test is seen as most appropriate to identify whether or not there is a significant difference between the experimental class and the control class.

B. METHOD

This research stage was carried out by referring to the development model (Research and Development), namely ADDIE includes Analysis, Design, Development, Implementation and Evaluation.

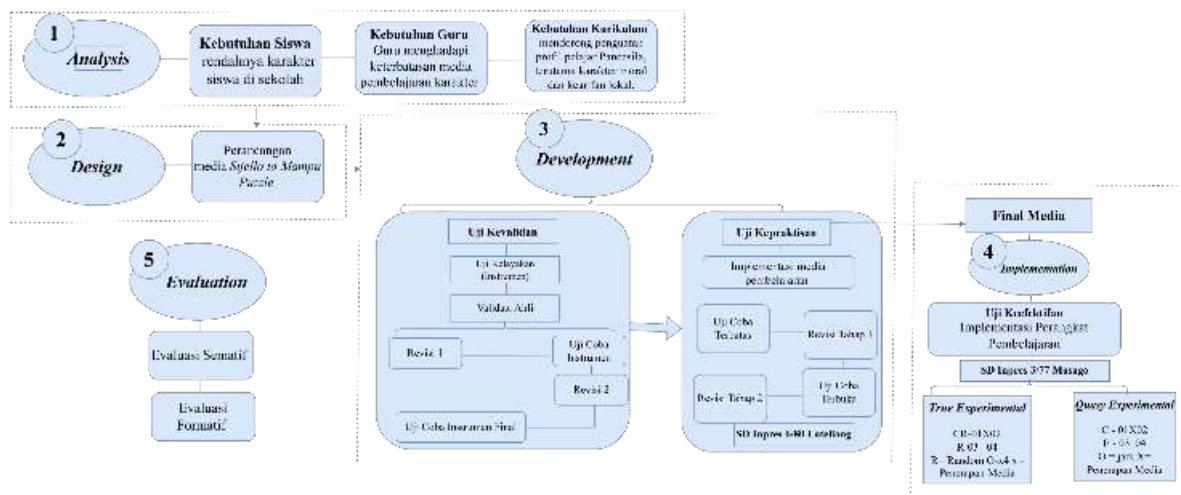


Figure 1. Research Stages

Analysis. In the analysis stage, researchers identified student needs to determine appropriate learning products. The analysis was conducted in two elementary schools: SD Inpres 6/80 Latellang and SD Inpres 3/77 Masago, specifically for fourth-grade students. The analysis focused on uncovering students' low levels of character development in the areas of discipline, responsibility, and mutual respect through observations and teacher interviews. **Design.** The design stage involved formulating learning objectives and developing materials based on the analysis results. The learning media utilized the folktale "Sijello to Mampu" (Wiracarita Sijello To Mampu) in Indonesian language learning. The result of this stage was

the initial design of the "Sijello to Mampu Puzzle" media, an interactive media that combines moral values and educational games to create fun and meaningful learning.

Development. In the development stage, researchers developed a media draft based on learning theory and the analysis results. The draft was validated through expert judgment and a limited trial in fourth-grade students at SD 280 Palakka. After the first stage of evaluation and revision, a large-scale trial was conducted in fourth-grade students at SD Negeri 260 Masago to determine a media model ready for implementation. **Implementation.** The implementation phase tested the effectiveness of the Sijello to Mampu Puzzle using a quasi-experimental Non-Equivalent Control Group Design. Grade IV of SD Inpres 6/80 Latellang served as the experimental class using the media, while Grade IV of SD Inpres 3/77 Masago served as the control class using conventional learning. Data were collected from learning outcome tests and observations of student behavior.

Evaluation. The evaluation stage assesses the practicality and effectiveness of the media through indicators of conceptual understanding, knowledge, cognitive skills, learning management, activeness, and media effectiveness, in order to determine the extent to which the media improves students' character development (discipline, responsibility, mutual respect). The focus of the research is to test the effectiveness of the interactive media Sijello to Mampu Puzzle based on Bugis folklore in strengthening the character of elementary school students in Indonesian language subjects. The media is designed to integrate moral values (discipline, responsibility, mutual respect) through collaborative and fun learning. The aspects measured include conceptual understanding, knowledge, cognitive skills, and changes in students' moral behavior. Data were obtained from pretest, posttest, and behavioral observation scores to compare the results between the experimental class using the media and the control class using conventional methods.

This research assesses three main aspects, namely the validity, practicality, and effectiveness of the Sijello to Mampu Puzzle media. Validity is determined through expert judgment on the suitability of content, design clarity, and media integration with Indonesian learning objectives. Practicality is seen from the responses of teachers and students regarding the ease of use and implementation of learning in the classroom. Effectiveness is measured through improved students' conceptual understanding, knowledge, and cognitive skills based on pretest and posttest results after using media. This research was carried out at SD Inpres 6/80 Latellang and SD Inpres 3/77 Masago, Patimpeng District, Bone Regency, South Sulawesi Province. The study lasted for four months, from July to October 2025. The population in this study is all grade IV students and Indonesian subject teachers in the two school locations. Sample selection was carried out using purposive sampling techniques based on consideration of the suitability of class characteristics with the purpose of the study. From this population, one class was designated as an experimental class using the interactive media Sijello to Mampu Puzzle, and one class as a control class using conventional learning methods.

The data sources in this research consist of primary data and secondary data. Primary data includes quantitative data obtained through pre-test and post-test to measure students' understanding of concepts, knowledge, and cognitive skills, and qualitative data collected through observation, in-depth interviews with teachers and grade IV students at SD Negeri 6/80 Latellang and SD Inpres 3/77 Masago, Focus Group Discussion (FGD), and document analysis in the form of student assignments. Meanwhile, secondary data was obtained from education report cards, school reports, and library searches using Google Trends, Open Knowledge Maps, Publish or Perish, and analyzed bibliometrically using VOSviewer.

The data collection technique in this research is carried out through five main stages, namely Analysis, Design, Development, Implementation, and Evaluation. Data was collected

through pre-test, post-test, observation, questionnaire, and interview to obtain quantitative and qualitative information. The research subjects included Indonesian teachers and grade IV students who were selected using purposive sampling. The trial process was carried out in stages, starting from a limited trial at SD Inpres 6/80 Latellang, a large-scale trial at SD Negeri 260 Masago, an experimental test at SD Inpres 3/77 Masago, to a control class at SD Inpres 6/80 Latellang.

The data analysis in this research uses quantitative and qualitative approaches. Quantitative data from the pre-test and post-test were analyzed using descriptive statistics to describe the distribution of scores and a two-sample t-test (t-test) to test the significant differences between the experimental and control classes in terms of students' conceptual understanding, knowledge, and cognitive skills. Meanwhile, qualitative data from observations, interviews, and FGDs were analyzed with thematic analysis, which grouped the data into key themes such as student response, involvement in learning, and teachers' perceptions of the practicality and effectiveness of the Sijello to Mampu Puzzle media.

C. RESULTS AND DISCUSSION

1. Development of Interactive Teaching Media

The development of Sijello to Mampu Puzzle interactive media with the integration of Sijello to Mampu Wiracarita was carried out to support the formation of students' characters. Before conducting a trial, the media is first validated by expert judgement to determine validity based on material experts, design experts, and media experts.

a. Test Validity of Media

Table 1. Results of Media Validity Testing

	Assessment aspects	Expert Score		Average score	Category
		1	2		
Very Practical	Material	3,90	3,85	3,87	Very Practical
	Language	4,00	3,20	3,60	Very Practical
	Learning	3,85	3,70	3,77	Very Practical
	Total Average			3,74	Very Practical
Design Expert	Display Design	3,55	3,70	3,62	Very Practical
	Picture	3,90	3,70	3,80	Very Practical
	Total Average			3,71	Very Practical
Media Member	Display Quality	3,00	3,65	3,32	Very Practical
	Media Engineering	3,95	3,40	3,67	Very Practical
	Implementation	3,90	3,70	3,80	Very Practical
	Total Average			3,59	Very Practical

Based on the validation results, the average total number of material experts of 3.74 showed that the media category is very valid, so that in terms of learning, material, and media grammar, Sijello to Mampu Puzzle has met the validity standards. From the two aspects of display and image design, a total average of 3.71 was obtained in the very valid category, while media experts from the aspects of display quality, media engineering and implementation showed a total average of 3.59 (very valid).

b. Test the validity of learning tools

Table 2. Test the validity of learning tools

Assessment aspects	Expert Score		Average score	Category
	1	2		
Learning Objectives	4,00	4,00	4,00	Very Practical
Teaching Module	3,90	3,70	3,80	Very Practical
Assessment Sheet	3,75	3,80	3,77	Very Practical
Question Grid	4,00	3,80	3,90	Very Practical
Test of concept understanding, knowledge, and cognitive skills	3,80	3,65	3,72	Very Practical
Student Worksheets	4,00	4,00	4,00	Very Practical
Total Average			3,19	Very Practical

The results of the validation of the learning tools from two experts showed a total average of 3.19 with a very valid category. Therefore, it can be concluded that the learning tools developed are valid for use in learning Indonesian language in the fourth grade short story material at SD Inpres 6/80 Latellang and SD Inpres 3/77 Masago.

c. Practicality Test

The practicality of the teaching media developed is measured based on the results of the responses of teachers and students as users with four indicators, namely management, activeness, knowledge, and effectiveness.

Tabel 3. Percentage of Practicality Assessment Results (Teachers)

Practicality Test Indicators	Teacher 1	Teacher 2	Teacher 3
Management	32	32	32
Activity	24	24	24
Knowledge	28	28	28
Effectiveness	16	16	16
Total Score Percentage (%)	100	100	100
Criteria	Very Practical	Very Practical	Very Practical

The analysis of teacher responses showed that overall, the implementation of the Sijello to Mampu Puzzle educational learning media met the criteria for being very practical. This was further supported by the positive responses from students in the trial class.

Table 4. Results of Student Practicum

Average Practicality Test Score					Total Score	Information
Management	Activity	Knowledge	Effectiveness	s		
Limited trial	27.10	11.78	24.63	13.50	77.01	Praktis
Percentage (%)	96.78	98.16	94.29	84.37		
Criterion	Very Practical	Very Practical	Very Practical	Very Practical		
Extensive trial	26.80	10.58	23.15	16.23	76,76	Praktis

Percentage (%)	95.71	88.16	82.67	90.16		
Criterion	Very Practical	Very Practical	Very Practical	Very Practical		
Express Water	28.20	12.80	24.60	17.23	62.83	Praktis
Percentage (%)	97.24	85.33	91.11	95.72		
Criterion	Sangat Praktis	Sangat Praktis	Sangat Praktis	Sangat Praktis		

Based on table 4 above, it can be concluded that the *Sijello to Mampu* teaching media developed is practically applied in supporting the formation of students' character in the Indonesian subject of short story material.

d. Effectiveness Test

The effectiveness of *Wiracarita Sijello to Mampu's* integrated educational teaching media with the help of *Sijello to Mampu Puzzle* media can be seen in the increase in pre-test and post-test results which can be seen in the graph in the following image.

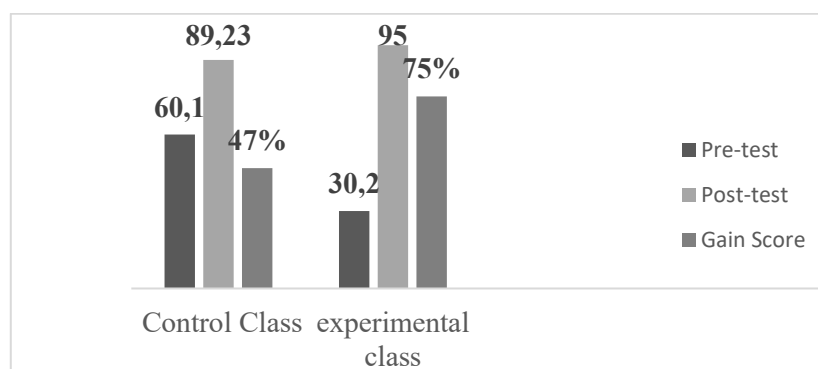


Figure 2. Comparison of N-Gain Score, Control class and experimental class

The image above shows a comparison of pre-test, post-test, and gain score results between the control class and the experimental class. In the control class, the average student score increased from 60.1 on the pre-test to 89.23 on the post-test, with a percentage increase of 47%. This increase is relatively low and categorized as less effective. In contrast, in the experimental class the average score of students increased more significantly, from 30.2 on the pre-test to 95 on the post-test. The percentage increase reached 75%, which is in the effective category. This shows that the use of *Sijello to Mampu Puzzle* interactive media integrated with the *Sijello To Mampu Wiracarita* folklore is more effective in improving students' understanding of concepts, knowledge, and cognitive skills compared to the conventional learning model used in the control class.



Figure 3. Interactive teaching media display (*Sijello To Mampu*)

2. Perancangan dan implementasi media Melalui Pendekatan deep learning

The implementation of the Sijello to Mampu Puzzle Media by integrating Sijello to Mampu Entrepreneurs in the learning process includes character values such as discipline, responsibility, and appreciation. The implementation is carried out through 4 (four) steps of adapting Bugis cultural values according to the stages of the Sijello to Mampu folktale: (1) narrative exploration stage, the teacher introduces Sijello to Mampu through a simple narrative and shows puzzle pieces that represent characters, events, and character values; (2) value connection stage, the teacher connects puzzle pieces with moral messages in the story and students' real lives; (3) puzzle solving stage, students collaboratively assemble puzzles containing reflective questions related to character values; (4) reflection stage, students present the meaning of the images or symbols that have been arranged. The Sijello to Mampu Puzzle Exploration produces an instructional effect in the form of increased student understanding of the story, as well as a nurturant effect in the form of positive attitudes in learning, such as discipline in solving puzzles, responsibility for group assignments, and mutual respect in discussions. This impact aligns with Piaget's theory, which emphasizes the development of children's character at the concrete operational stage (Safitri & Dewantoro, 2025). This effect is also seen in increased student motivation and active participation, making learning feel engaging, enjoyable, and meaningful. Evaluation of the effectiveness of Sijello to Mampu Puzzle media

The effectiveness of Sijello to Mampu Puzzle teaching media on the formation of students' character values can be seen from the results of a comprehensive evaluation. This media was developed by adapting Wiracarita Sijello to Mampu, which is rich in moral values such as discipline, responsibility, and respect. The application of this media in learning is carried out through four stages, namely the Narrative Exploration Stage, the Value Connection Stage, the Puzzle Solving Stage, and the Reflection Stage. Through the application of Sijello to Mampu Puzzle media, it provides a new and meaningful learning experience for students, which has a positive impact on students' motivation and interest in reading. This can be seen from the positive responses of students and teachers, where most of the responses were at a percentage of 81.25% to 100%. This increase in motivation and interest in learning also has a significant impact on improving students' character values.



Figure 4. the application of the media of SD Inpres 6/80 Latellang and SD Inpres 3/77 Masago

In addition, this media helps students hone their skills in planning (planning puzzle solving strategies), monitoring (monitoring the steps taken), and evaluation (assessing the results of solving puzzles). These abilities are formed when teachers provide a variety of puzzle scenarios. Based on a series of learning stages given, it can be concluded that the application of *Sijello* to Mampu Puzzle teaching media has a significant positive influence on improving students' character values. The problem system in this application is designed in stages, where new problems can only be done after students have successfully solved the puzzle. This mechanism not only trains critical and logical thinking skills, but also instills the value of discipline, responsibility, and appreciation, as students must complete one stage before moving on to the next. Each number contains 5 filling questions as a form of quiz that students can choose to do. Through the provision of various questions, students gain ease in understanding a series of questions, especially because this research uses short story material.

D. CONCLUSIONS AND SUGGESTIONS

The development of *Sijello* to Mampu Puzzle interactive learning media has proven to be valid, practical, and effective as a means of strengthening character education based on local Bugis wisdom. The validity of the media has been validated by material, design, and media experts with a very valid average score, demonstrating high quality in terms of content, display, and technical integration. Supporting tools such as teaching modules, teaching materials, assessment sheets, question grids, and worksheets also obtain a very valid category, indicating optimal feasibility for use in the classroom. In terms of practicality, this media received a positive response from students (3.85) and teachers (3.78), which is classified as very practical. The effectiveness test through pre-test and post-test showed an increase in gain scores of 47% in the control class (less effective) and 75% in the experimental class (effective), proving that the media is superior in instilling discipline, responsibility, and appreciation compared to conventional learning. This media also produces instructional effects in the form of increasing understanding of folklore concepts, as well as parenting effects in the form of motivation, involvement, and internalization of character values based on Bugis culture. This study recommends that elementary school teachers utilize interactive media based on local wisdom as an alternative strategy for character learning. For advanced research, the media can be tested at another level or integrated with application technology to widen its reach. In addition, local governments can make folklore-based media such as *Sijello* to Mampu Puzzle as part of cultural literacy programs and strengthening character education.

ACKNOWLEDGMENTS

Thank you to the Directorate General of Higher Education, Science, and Technology for funding the Student Creativity Program (PKM), the University of Muhammadiyah Bone as a research university, and SD Inpres 6/80 Latellang and SD Inpres 3/77 Masago for supporting the implementation of the research until it is completed.

REFERENCES

- Asfar, A. M. I. T., Trisnowali, A., Dahlan, J. A., Prabawanto, S., Asfar, A. M. I. A., and Nurannisa, A. (2025, June). Hybrid learning: Analysis of Indonesian junior high school students' metacognition. In *AIP Conference Proceedings* (Vol. 3293, No. 1, p. 050009). AIP Publishing LLC. <https://doi.org/10.1063/5.0269209>
- Azizatunnisa, F., Sekaringtyas, T. and Hasanah, U. (2022). Development of interactive learning media of educational games in science learning grade IV elementary school. *Optics: Journal of Physics Education*. 6 (1), 14-23. <https://doi.org/10.37478/optika.v6i1.1071>

- Dermawan, R.N., Nusarini, N., Hartati, U., Sudirman, A., Adiatma, R., Larasati, M. P. and Vito, V. (2024). Strengthening children's character education based on cultural values through folklore and Javanese songs. *Jurnal Surya Abdimas*. 8 (1), 123-133. <https://doi.org/10.37729/abdimas.v8i1.3473>
- Dewi, S. S., Asfar, A. M. I. T., Asfar, A. M. I. A., Nurannisa, A., Damayanti, W., and Wahyuni, N. (2024). Enhancing Students' Logical Thinking through Ethnomathematics-based Augmented Reality of Bola Soba Character Facades. *Journal of Innovation in Educational and Cultural Research*, 5(3), 520-528. <https://doi.org/10.46843/jiecr.v5i3.1033>
- Education Report Card. (2023). Bone Regency Education Report Card. Ministry of Education and Culture of Indonesia. Retrieved September 6, 2025, from <https://data.dikdasmen.go.id/publikasi/pendidikan/asesmen-nasional-and-rapor-pendidikan>
- Hasanah, N., and Pujiati, P. (2025). Application of the Deep Learning Approach to Learning in Elementary Schools in Bekasi City. *El Banar: Journal of Education and Teaching*, 8(1), 72-79. <https://doi.org/10.54125/elbanar.v8i1.539>
- International Center for Research on Women. (2025, September 6). Based on the KPAI release, 84% of children in Indonesia experience violence at school. URL: <https://www.kpai.go.id/publikasi/berdasarkan-rilis-kpai-84-persen-anak-di-indonesia-mengalami-kekerasan-di-sekolah>
- Iwuanyanwu, O., Gil-Ozoudeh, I., Okwandu, A.C. and Ike, C.S. (2024). Cultural and social dimensions of green architecture: designing for sustainability and community well-being. *International Journal of Applied Research in Social Sciences*. 6 (8):1951-1968. 10.51594/ijarss.v6i8.1477
- Ji, X. (2023). Membangun “Komunitas Asia-Pasifik dengan Masa Depan Bersama”: Regionalisme Transformasional Berkarakteristik Tiongkok? *Jurnal Urusan Tiongkok Terkini*, 53 (2), 254-276. <https://doi.org/10.1177/18681026231199177>
- Rapi, M. and Nurhusna, N. (2024). The role of nature in Bugis folklore of Makassar. *Nuances of Indonesian Language*. 5(2), 179-186. <https://doi.org/10.51817/nila.v5i2.1080>