Jurnal Ilmiah Pendidikan Fisika
https://ppjp.ulm.ac.id/journals/index.php/jipf/index
e-ISSN: 2549-9963 p-ISSN: 2549-9955
Vol 10 No 1 2026
DOI: https://doi.org/10.20527/jipf.v10i1.17118

Ethnophysics Behind the Game of Egrang: Systematic Literature Review

Fitria Rahmawati[1], Wirawan Fadly[2], and Utama Alan Deta[1*]
[1]Physics Education, Universitas Negeri Surabaya, Surabaya, Indonesia
[2]Science Education, UIN Kiai Ageng Muhammad Besari Ponorogo, Ponorogo, Indonesia
*utamadeta@unesa.ac.id

Article Info

Article history:
Received: October 6, 2025
Accepted: February 27, 2026
Published: March 26, 2026

Keywords:
Egrang
Ethnophysics
Literature review
Physics education
Traditional games

This article is licensed under a creative commons attribution-share alike 4.0 international license

© 2026 Jurnal ilmiah Pendidikan Fisika

Abstract

Local wisdom in Indonesia is a valuable cultural heritage. To preserve it, it can be introduced through school education, one of which is in physics education. Several researchers have studied local wisdom-based physics education in traditional games in depth, but no specific focus on the Egrang game has been found. Therefore, this study aims to analyze and identify the physics concepts found in the traditional game of stilts as an effort to integrate local wisdom into physics education. The research method used is a Systematic Literature Review (SLR) using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) design. Data was obtained from the Google Scholar database using the keyword "traditional Egrang game." From the 1,270 documents identified, after screening based on inclusion and exclusion criteria, 7 articles were obtained that were suitable for analysis. The data was then analyzed descriptively to identify and classify physics concepts in the traditional Egrang game. The results of this study indicate that stilts are related to the physics concepts of work and energy, namely, mechanical energy consisting of kinetic and potential energy. Identification from the literature review also found other concepts such as rigid body equilibrium, balance, weight, and gravitational force. The results of this study confirm that stilts can strengthen students' understanding of physics concepts and the development of teaching materials in physics learning.

To cite this article: Rahmawati, F., Fadly, W., & Deta, U. A. (2025). Ethnophysics behind the game of egrang: Systematic literature review. *Jurnal Ilmiah Pendidikan Fisika*, *10*(1), 109-118.

INTRODUCTION

Indonesia is a country with a large territory, thus possessing abundant diversity (Nuryadin et al., 2023). Cultural diversity and local wisdom are the identity and potential of these regions, and the communities in these regions must continue to preserve their diversity (Afifa, J. I., et al., 2023). Local wisdom can shape the character and identity of a nation. Local wisdom also contains traditional knowledge, cultural practices, and values that have been passed down from generation to generation (Agustinaningrum & Deta, 2025; Zulhuda et al., 2025). Local values as the identity and cultural heritage of a nation are vulnerable to being displaced by the dominance of foreign cultures in all aspects of life amid rapid globalization (Hidayah et al., 2024). To prevent this displacement, it is necessary to preserve culture. The preservation of local wisdom can be used not only as cultural heritage but also as an educational tool that can improve students' conceptual understanding of physics (Sa'diyah et al., 2024). The introduction of local wisdom for the purpose of cultural inheritance can be provided through local wisdom-based education. Education based on local wisdom is a planned effort that wisely utilizes local potential to create active learning so that students can develop skills, knowledge, and attitudes to contribute to building the nation and state (Nabila, et al., 2021).

Local wisdom is one of the cultural heritages that has been passed down from generation to generation and holds noble values that reflect the character, morals, and identity of a region, namely traditional games (Khodari & Nurhidayah, 2025). Traditional games are a form of activity that has developed and grown within society since ancient times, beginning in the era of kingdoms and undergoing acculturation during the colonial period (Rachman et al., 2023; Rachman et al., 2023; Syahputra et al., 2024). In learning, one of the local wisdom values that can be incorporated is traditional games. One subject that can apply the cultural form or local wisdom of traditional games is physics. Because physics education in schools generally still focuses on textbooks, the application of culture-based physics education, or what can be called ethnophysics, is in line with the essence of culture as a unique heritage of a region (Yusdarina et al., 2024).

Ethnophysics can be used as an alternative to help students understand physics concepts because it is contextual and relevant to everyday life (Sumarni et al., 2023; Mahyudin & Hasan, 2024; Aryani et al,. 2025). The use of traditional games is a medium that has great potential in assisting the learning process (Ady et al., 2024). In a study by Febrianty, et al. (2023), one of the physics concepts found in traditional games was explored and developed as teaching material to help teachers create innovations in physics learning. Another study (Astuti & Bhakti, 2021) discusses the existence of physics concepts in one of the traditional games so that physics learning is developed by linking local potential as a learning resource to increase student interest.

Among the various traditional games, Egrang is one game whose activities incorporate concepts of physics. Egrang is a traditional Indonesian game that has been played since ancient times, but its origins are not known for certain. This opinion is reinforced by several literature sources that mention that Egrang originated in Java, while other sources say that Egrang originated in Sumatra (Nurjannah et al., 2024). Egrang is usually made from a bamboo pole about 2.5 meters long, and at 50 cm from the bottom end, a flat footrest about 20 cm wide is attached (Rukiani, et al., 2022). However, Egrang can be made not only from bamboo but also from coconut shell. The key to playing Egrang is to maintain balance and concentration on your movements so that you do not fall while moving forward and backward to the finish line (Tampubolon et al., 2024).

Research by Rumiati (2021) analyses the physics concepts found in the Egrang game as material for physics learning. The Egrang game can also be used to foster a love of country among students (Azis et al., 2024). In addition, with the help of learning using a traditional game approach, namely Egrang, students' critical thinking skills can also improve in mechanical energy material (Sa'diyah & Setiani, 2025). In line with these studies, traditional games can be integrated into physics learning to develop teaching materials, student skills, and student understanding and interest in learning. However, few researchers have examined Egrang as a medium for physics learning. Egrang can be a means to discuss physics material or concepts in depth, thus potentially being utilized as a medium in physics learning. Therefore, this study aims to analyze and identify the physics concepts found in the traditional game of stilts as an effort to integrate local wisdom into physics education.

METHODS

This study is a descriptive study using the Systematic Literature Review (SLR) approach. This method allows researchers to examine and review various relevant articles. This approach was chosen to obtain a comprehensive overview of conceptual developments and empirical findings while enabling an objective, transparent, and replicable review of the literature, thereby producing comprehensive and reliable findings on the topic under study (Astagisa, 2025). The Systematic Literature Review (SLR) in this study used the PRISMA

(Preferred Reporting Items for System Reviews and Meta-Analysis) design. The PRISMA stages carried out in this study can be seen in Figure 1.

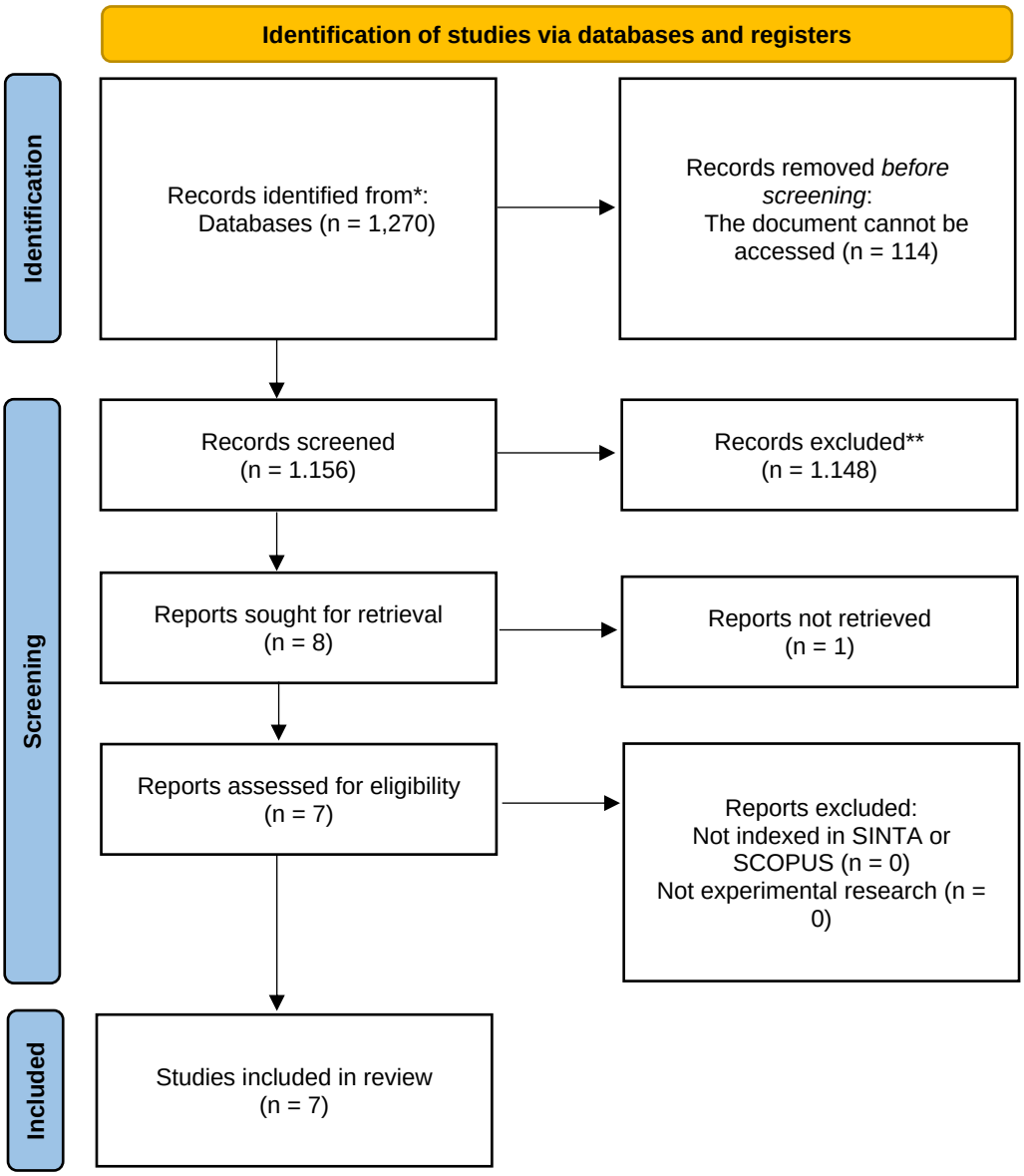

Figure 1 PRISMA Flow for Article Selection

Figure 1 shows the PRISMA flow in the article document selection process. Data collection in this study, or the identification stage, was conducted by searching for scientific articles from the Google Scholar database. In the identification stage, 1,270 documents were obtained using the keyword “traditional Egrang games”. After the identification stage, 1,156 documents entered the screening stage, which were then selected based on inclusion and exclusion criteria. Based on the established inclusion and exclusion criteria, seven articles were deemed eligible and included in the review for further analysis. The established inclusion and exclusion criteria are listed in Table 1.

Tabel 1 Inclusion and exclusion criteria

Inclusion	Exclusion
Accessible	Inaccessible
Publication year 2021–2025	Year of publication before 2021
Contains the keyword traditional Egrang game	Contains keywords outside of traditional Egrang games
Explaining physics concepts in the Egrang game	Only touching on the traditional game of Egrang in general, without any connection to the concept of physics
Relevant to the integration of local wisdom in physics education	Irrelevant to the study of physics or ethnophysics
Articles indexed in Scopus or Sinta	Not indexed in Scopus or Sinta
Indonesian or English	Other languages

Table 1 shows the inclusion and exclusion criteria used as a reference in searching for relevant documents. The criteria provided include document access, publication time range, research subject, and relevance of the research results. Articles that meet the inclusion criteria can be considered eligible and can be reviewed and analyzed in more depth. The inclusion and exclusion criteria make it easier to determine the consistency of the research.

RESULTS AND DISCUSSION

Traditional games are a legacy of our ancestors, which contain noble values that we certainly want to pass on to future generations (Samsurrijal 2022; Cahyani et al., 2023). The integration of traditional games into learning is one effort to introduce and preserve local wisdom for each generation. This study was conducted using the Systematic Literature Review (SLR) method with the PRISMA model, the flow of which is shown in Figure 1. Several documents on Google Scholar were identified and selected based on inclusion and exclusion criteria. From the selection, seven articles were selected that met the specified criteria, as shown in Table 2.

Tabel 2 Results of egrang research journal review

Author and Year	Title	Conclusion
Asra et al. (2021)	Physics Learning Integrates Traditional Game Ethnoscience	Teaching physics by integrating ethnoscience through traditional games has proven effective in increasing motivation, learning outcomes, and logical and critical thinking skills among students. Traditional games, including Egrang, contain physics concepts such as balance, weight, and gravity that can be used as teaching materials.
Rumiati et al. (2021)	Analysis of Mechanical Energy Physics Concepts In The Traditional Game of Egrang As Physics Learning Material	This study confirms that the game of Egrang incorporates the concept of mechanical energy and can be used as a medium for contextual physics learning that also preserves local wisdom.
Yoranika & Diyana (2022)	Material modules based on traditional games “Egrang” to improve students' conceptual understanding	The results showed that the Egrang game-based work and energy module was feasible for use in improving students' conceptual understanding. The feasibility test results showed that the content aspect scored an average of 82.95% and the language aspect scored 87.5%, both of which were classified as highly feasible.

Author and Year	Title	Conclusion
Pratami & Kholiq (2024)	The Validity of the Egrang Local Wisdom-Based Physics Website for Training High School Students' Science Literacy.	The results of the study indicate that the Egrang-based physics website is valid (93.37%) and suitable as a learning medium for rigid body equilibrium, both in schools and independently.
Wulandari & Fatmaryanti (2024)	Exploring Work and Energy Concept with Indonesian Traditional Game" Egrang": An Ethno-pedagogical Approach to Physics Learning	This study concludes that stilts have the potential to be used as a medium for teaching physics concepts related to work and energy, including potential energy, kinetic energy, and mechanical energy. With an ethno-pedagogical approach, learning becomes more contextual and enjoyable, while also instilling cultural values, cooperation, and motivation to learn.
Nasution et al. (2025)	Integrating Ethnophysics and Technology in Traditional Egrang Games to Support Sustainable Education and Cultural Preservation	This study confirms that the game of Egrang incorporates physics concepts such as kinetic energy, potential energy, work, and equilibrium of rigid bodies. Therefore, it can be used as a medium for contextual learning. Its integration can improve science literacy, student engagement, cultural appreciation, understanding of physics concepts, and build character traits such as perseverance, focus, and sportsmanship.
Sa'diyah & Setiani (2025)	The Application of the Egrang Game-Assisted Problem-Based Learning Model to Improve Students' Critical Thinking Skills in Mechanical Energy.	This study shows that the application of the Egrang game-assisted PBL model in mechanical energy material successfully improved students' critical thinking skills with an N-Gain of 0.7 and an effect size of 6.69 (high category). The learning process was carried out very well, with positive responses from students, who were more enthusiastic and active.

The researchers found that traditional Egrang games incorporate physics concepts. According to Asra et al. (2021), traditional Egrang games have been proven to incorporate physics concepts such as balance, weight, and gravity, which effectively increase student motivation, learning outcomes, and thinking skills, making them suitable as teaching materials. In addition, the Egrang game also contains the concept of mechanical energy and has the potential to be used as a medium for contextual physics learning as well as preserving local wisdom (Rumiati et al., 2021). The development of a work and energy module based on the Egrang game is suitable for use in improving students' understanding of concepts (Yoranika & Diyana, 2022). Meanwhile, the Egrang-based physics website has obtained validity (93.37%) and is therefore suitable for use as a learning medium for rigid body equilibrium (Pratami & Kholiq, 2024). Egrang games have the potential to be used as a medium for teaching physics concepts of work and energy, with ethno-pedagogy making learning more contextual and enjoyable and instilling cultural values and motivation (Wulandari & Fatmaryanti, 2024). Other studies confirm that Egrang games contain physics concepts such as kinetic energy, potential energy, work, and rigid body equilibrium, which can be used as contextual learning media and are capable of improving science literacy, student engagement, cultural appreciation, understanding of physics

concepts, and building character traits such as perseverance, focus, and sportsmanship (Nasution et al., 2025). Additionally, the application of the PBL model assisted by the Egrang game in mechanical energy material successfully improved students' critical thinking skills (Sa'diyah & Setiani, 2025). The physics concepts contained in the traditional Egrang game, as shown in Table 3, are consistent with the literature findings.

Table 3 Physics concepts in traditional egrang games

Egrang Game	**Physics Concepts**
Climbing the Egrang (Lifting one foot onto the stilts, then following with the other foot. When the stilts first stand up, then walk)	Work
Lifting Egrang Holding Egrang Spinning the Egrang Walking on Egrang Pull the arms towards the body The mass of Egrang players	Kinetic energy $Ek = \frac{1}{2}mv^2$
Height of the Egrang footrest Lifting Egrang Walking on Egrang	Energy Potential $Ep = mgh$

Table 3, which contains physics concepts in the traditional Egrang games from the literature, shows that there are several physics concepts in the game Egrang, such as work and energy, which include potential energy, kinetic energy, and mechanical energy. There are also other concepts, such as the equilibrium of rigid bodies, balance, weight, and gravitational force. From these concepts, the application of traditional games in learning can be used as a contextual and meaningful medium for physics learning. The integration of local culture through traditional games in physics learning is useful for improving understanding, encouraging enthusiasm for learning, understanding of concepts, and opening up insights into local wisdom that has rarely been raised in learning (Pratiwi et al., 2025; Ardiana & Kholiq, 2025). The research results are also in line with 21st-century learning objectives that emphasize science literacy, critical thinking skills, and character building. 21st-century skills, such as critical thinking, are one of the main focuses in the design of learning media (Jannah & Atmojo, 2022; Rahim, 2023; Hariyanti, 2025). Local wisdom-based physics learning, or ethnophysics, can also improve students' conceptual understanding and interest, as students not only learn theory but also relate it to real-life activities, namely, traditional games. In addition, the development of valid and feasible Egrang game-based modules and websites shows that local wisdom can be combined with modern technology. Thus, the ethnoscience and ethno-pedagogy approaches not only improve students' conceptual understanding but also foster an appreciation of local culture and positive character traits such as perseverance, cooperation, focus, and sportsmanship. However, a limitation of this study is the lack of extensive database searches, so the data obtained does not fully support the research results, even though it represents the objectives of this study. The results of this study open up opportunities for future researchers to develop digital physics teaching modules based on ethnophysics, especially on the subject of work and energy. It is also hoped that future researchers can conduct experimental research in schools by trialing traditional game-based learning to see its effectiveness on learning outcomes and expand it to the study of physics concepts found in other traditional games.

CONCLUSION

In this study, which was conducted using the Systematic Literature Review (SLR) method, it was found that the application of local wisdom-based learning through traditional games can be an opportunity as material and media for physics learning. This is because the traditional game of Egrang contains several physics concepts, including mechanical energy, which consists of kinetic energy and potential energy, as well as other concepts such as the equilibrium of rigid bodies, balance, weight, and gravitational force. These findings indicate that traditional games can be utilized as a learning context that connects physics concepts with everyday activities. Theoretically, this research contributes to the development of ethnophysics studies by demonstrating that local cultural practices can be analyzed through physics concepts. Practically, the results of this study show that traditional games such as Egrang have the potential to be used as a medium for contextual physics learning based on local wisdom. The limitation of this study is the narrow scope of the database search, so that the data obtained does not sufficiently support the research results, even though it represents the objectives of this study. The findings of this study provide opportunities for future researchers to develop digital physics teaching modules based on ethnophysics, particularly on the topics of work and energy. In addition, further research is expected to take the form of experiments in schools by testing the application of traditional game-based learning to assess its effectiveness on learning outcomes. Similar studies can also be expanded to various other physics concepts contained in traditional Indonesian games.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest in this study.

AUTHOR CONTRIBUTIONS STATEMENT

Conceptualization, methodology, formal analysis, resources, data curation, writing—preparation of the original draft, FR; validation, supervision, and project administration, WF and UAD.

AI DISCLOSURE STATEMENT

The author used ChatGPT and DeepL during the preparation of this work for ChatGPT was used for brainstorming, and DeepL for grammar and style checks. After using the tool/service, the author thoroughly reviewed and edited the content as needed and takes full responsibility for the content of the publication. The authors declare that this research was prepared, researched, written, and edited without the aid of artificial intelligence (AI) techniques.

REFERENCES

Ady, W. N., Muhajir, S. N., & Irvani, A. I. (2024). Meningkatkan keterampilan berpikir kritis siswa SMA melalui model Problem Based Learning berbantuan permainan tradisional. *Jurnal Pendidikan MIPA*, *14*(3), 772-785. https://doi.org/10.37630/jpm.v14i3.1775

Afifa, J. I., Siregar, M., Agustin, R., & Lubis, N. A. (2023). Kajian konsep fisika berbasis etnofisika pada alat tradisional sumatera utara panggilingan. *GRAVITASI: Jurnal Pendidikan Fisika Dan Sains*, *6*(01), 20-26. https://doi.org/10.33059/gravitasi.jpfs.v6i01.7955

Agustinaningrum, N. A., & Deta, U. A. (2025). Literature review: The role of local wisdom-based physics learning with patil lele in enhancing students' scientific

literacy. *International Journal of Research and Community Empowerment*, *3*(1), 29-37. https://doi.org/10.58706/ijorce.v3n1.p29-37

Ardiana, L. A. P., & Kholiq, A. (2025). Analisis permainan tradisional kapal otok-otok pada pembelajaran fisika materi termodinamika. *Inovasi Pendidikan Fisika*, *14*(2), 116-122. https://doi.org/10.26740/ipf.v14n2.p116-122

Aryani, H., Wilujeng, I. T. D., Nova, D. A. O., Suliyanah, S., & Hadi, W. P. (2025). Integrasi etnofisika dalam pembelajaran fisika sma: potensi permainan katapel sebagai media yang aman dan menyenangkan. *Reog: Journal of Ecoethnoscience Education*, *1*(1), 9-16. https://doi.org/10.58706/reog.v1n1.p9-16

Asra, A., Festiyed, F., Mufit, F., & Asrizal, A. (2021). Pembelajaran fisika mengintegrasikan etnosains permainan tradisional. *Konstan-Jurnal Fisika Dan Pendidikan Fisika*, *6*(2), 66-73. https://doi.org/10.20414/konstan.v6i2.67

Astagisa, R. (2025). Systematic literature review (SLR): Pengembangan asesmen formatif untuk mendukung pembelajaran fisika dalam kerangka kurikulum merdeka. *Risalah Fisika*, *5*(2), 97-105. https://doi.org/10.35895/rf.v5i2.36

Astuti, I. A. D., & Bhakti, Y. B. (2021). Analisis konsep fisika pada permainan tradisional gasing sebagai bahan ajar fisika. *Navigation Physics: Journal of Physics Education*, *3*(2), 74-79. https://doi.org/10.30998/npjpe.v3i2.869

Azis, R. M., Fauzi, R. A., & Rukmana, A. (2024). Upaya meningkatkan sikap cinta tanah air melalui permainan tradisional egrang. *Jurnal Porkes*, *7*(2), 662-672. https://doi.org/10.29408/porkes.v7i2.25862

Cahyani, A. P., Oktaviani, D., Putri, S. R., Kamilah, S. N., Caturiasari, J., & Wahyudin, D. (2023). Penanaman nilai-nilai karakter dan budaya melalui permainan tradisional pada siswa sekolah dasar. *Jurnal Ilmu Pendidikan Dasar Indonesia*, *2*(3), 183-194. https://doi.org/10.51574/judikdas.v2i3.796

Febrianty, W., Saputra, R. D., Al Amri, H., Rahmat, F. N., Handayani, R. D., & Putra, P. D. A. (2023). Eksplorasi konsep fisika kesetimbangan benda tegar pada permainan tradisional engklek sebagai bahan pembelajaran fisika. *OPTIKA: Jurnal Pendidikan Fisika*, *7*(1), 109-120.

Hariyanti, S. N., Hikmawati, U., Yunanto, B. A., Rahmawati, F., Fadly, W., Julianto, J., & Deta, U. A. (2025). Analisis bibliometri pengembangan e-modul fisika berbasis hots untuk meningkatkan berpikir kritis siswa sma. *Epistemic: Scientific Thinking and Literacy*, *1*(1), 40-55.

Hidayah, A. E. N., Laila, L., Ma'arij, I. I., & Deta, U. A. (2024). Mengenal warisan budaya surabaya melalui diorama edukasi pada program p5. *Dedikasi: Journal of Community Engagement and Empowerment*, *2*(2), 64-71. https://doi.org/10.58706/dedikasi.v2n2.p64-71

Husna, H., Indriani, M., Mukarromah, M., & Khaliq, R. (2022). Nilai nilai kearifan lokal generasi millenial di Kota Banjarmasin. *Al-Hiwar Jurnal Ilmu dan Teknik Dakwah*, *10*(1), 29-37. https://doi.org/10.18592/al-hiwar.v10i1.6935

Jannah, D. R. N., & Atmojo, I. R. W. (2022). Media digital dalam memberdayakan kemampuan berpikir kritis abad 21 pada pembelajaran IPA di sekolah dasar. *Jurnal Basicedu*, *6*(1), 1064-1074. https://doi.org/10.31004/basicedu.v6i1.2124

Khodari, R., & Nurhidayah, S. (2025). Pemberdayaan kearifan lokal: Permainan tradisional sebagai upaya pelestarian budaya nusantara serta sarana interaksi sosial masyarakat. *Bima Abdi: Jurnal Pengabdian Masyarakat*, *5*(2), 494-501.

Mahyudin, H., & Hasan, S. N. (2024). Etnofisika permainan tradisional Dodorobe sebagai pengembangan bahan ajar fisika. *JIPFRI (Jurnal Inovasi Pendidikan Fisika dan Riset Ilmiah)*, *8*(2), 82-91. https://doi.org/10.30599/jipfri.v8i2.3790

Malan, I., Ati, S., & Samad, S. (2025). Kajian etnofisika pada permainan tradisional kole-kole sebagai media pembelajaran fisika. *KUANTUM: Jurnal Pembelajaran dan Sains Fisika*, *6*(1), 119-125. https://doi.org/10.63976/kuantum.v6i1.920

Nabila, S., Adha, I., & Febriandi, R. (2021). Pengembangan media pembelajaran pop up book berbasis kearifan lokal pada pembelajaran tematik di sekolah dasar. *Jurnal basicedu*, 5(5), 3928-3939. https://doi.org/10.31004/basicedu.v5i5.1475

Nasution, N. N. A., Sa'diyah, L. L., Devi, F. D., & Lestari, N. A. (2025). Integrating Ethnophysics and Technology in Traditional Egrang Games to Support Sustainable Education and Cultural Preservation. *Journal of Innovative Technology and Sustainability Education*, *1*(1), 39-39. https://doi.org/10.63230/jitse.1.1.39

Nurjannah, S., Yusri, M., & Sinring, A. (2024). Pengembangan model permainan tradisional egrang dalam meningkatkan motorik kasar anak usia 3-4 tahun. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *9*(3), 521-534. https://doi.org/10.23969/jp.v9i3.17955

Nuryadin, M., Rumanama, L., & Langi, A. A. (2023). Kajian etnofisika konsep gaya pada permainan tradisional maluku: bambu gila. *MOMENTUM: Jurnal Sosial Dan Keagamaan*, *12*(2), 173-188.

Pratami, R. A., & Kholiq, A. (2024). Validitas website fisika berbasis kearifan lokal egrang untuk melatihkan literasi sains peserta didik sma. *IPF: Inovasi Pendidikan Fisika*, *13*(1), 1-7.

Pratiwi, A. D., Putri, E. A. K., Admoko, S., & Misbah, M. (2025). Generasi fisika yang kreatif dan peduli budaya: eksplorasi permainan tradisional kapal otok-otok sebagai media pembelajaran berbasis etnofisika. *Reog: Journal of Ecoethnoscience Education*, *1*(1), 1-8. https://doi.org/10.58706/reog.v1n1.p1-8

Rachman, F., Rahmat, A., & Prasetiyo, A. (2023). Profil olahraga tradisional paku sukha di kecamatan belalau kabupaten lampung barat provinsi lampung. *Jurnal Penjaskesrek*, *10*(2), 116-129. https://doi.org/10.46244/penjaskesrek.v10i2.2134

Rachman, F., Ramadhan, Z. F., Armanjaya, S., Gumantan, A., Yuliandra, R., & Rifqi, M. (2023). Pelestarian olahraga tradisional melalui festival permainan tradisional se-kota bandar lampung. *PROFICIO*, *4*(2), 157-163. https://doi.org/10.36728/jpf.v4i2.2687

Rahim, A. (2023). Meningkatkan keterampilan berpikir kritis melalui pembelajaran kritis. *Journal Sains and Education*, *1*(3), 80-87. https://doi.org/10.59561/jse.v1i3.233

Rukiani, Irfandi, & Sarwita, T. (2022). Pengaruh permainan tradisional egrang terhadap kemampuan keseimbangan motorik kasar pada siswa sd negeri karang jadi kabupaten bener meriah. *Jurnal Ilmiah Mahasiswa Pendidikan*, *3*(2).

Rumiati, R., Handayani, R. A. D., & Mahardika, I. K. (2021). Analisis konsep fisika energi mekanik pada permainan tradisional egrang sebagai bahan pembelajaran fisika. *JPF (Jurnal Pendidikan Fisika) FKIP UM Metro*, *9*(2), 131-146. http://dx.doi.org/10.24127/jpf.v9i2.3570

Sa'diyah, H., Mustafaroh, V. A., Rizaldi, D. F., Ashfy, A. C., & Suliyanah, S. (2024). Identifikasi konsep fisika pada kearifan lokal pembuatan tuak dan budaya nitik tuak di Kabupaten Tuban. *Jurnal Ilmu Pendidikan Dan Pembelajaran*, *2*(2), 90-98. https://doi.org/10.58706/jipp.v2n2.p90-98

Sa'diyah, L. L., & Setiani, R. (2025). Penerapan model problem based learning berbantuan permainan egrang untuk meningkatkan keterampilan berpikir kritis peserta didik pada materi energi mekanik. *IPF: Inovasi Pendidikan Fisika*, *14*(1), 11-16. https://doi.org/10.26740/ipf.v14n1.p11-16

Samsurrijal, A. (2022). Permainan tradisional indonesia sebagai media penanaman nilai moral pada siswa: sebuah studi literatur. *Nusantara Education*, *1*(1), 10-19.

Sumarni, R. A., Setiadi, I., Astuti, I. A. D., Suhaya, M. E., & Zahra, R. A. (2023, D). Analisis etnofisika pada Tari Siloloa sebagai sumber pembelajaran fisika. In *SINASIS (Seminar Nasional Sains)*, *4*(1).

Syahputra, M. F., Sembiring, V. Y. B., Putra, R., & Devalda, T. N. (2024). Festival olahraga tradisional melalui permainan tradisional se-kota medan. *Jurnal Bina Pengabdian Kepada Masyarakat*, *5*(3), 71-75. https://doi.org/10.55081/jbpkm.v5i3.4683

Tampubolon, J. C., Ekowati, E., & Qintharah, Y. N. (2024). Perkembangan olahraga tradisional egrang pada remaja di desa ridogalih kecamatan cibarusah. *An-Nizam*, *3*(1), 46-52. https://doi.org/10.33558/an-nizam.v3i1.9136

Wulandari, R., & Fatmaryanti, S. D. (2024). Exploring work and energy concept with indonesian traditional game" egrang": An ethno-pedagogical approach to physics learning. *Journal of Science and Science Education*, *5*(1), 42-49. https://doi.org/10.29303/jossed.v5i1.7486

Yoranika, R., & Diyana, T. N. (2022). Material modules based on traditional games “Egrang” to improve students' conceptual understanding. *WaPFi (Wahana Pendidikan Fisika)*, *7*(2), 103-110. https://doi.org/10.17509/wapfi.v7i2.54069

Yusdarina, Y., Nahda, N., Basri, S., & Napsawati, N. (2024). Etnofisika pada alat musik tradisonal sebagai media pembelajaran fisika dalam menigkatkan minat belajar peserta didik. *Jurnal Ilmu Pendidikan dan Kearifan Lokal*, *4*(6), 751-759.

Zulhuda, R., Delima, I. P., Oktavianti, W., & Azizah, F. (2025). Kearifan lokal sebagai sumber inspirasi dalam pengembangan produk wisata budaya kreatif. *Innovative: Journal Of Social Science Research*, *5*(3), 2089-2100. https://doi.org/10.31004/innovative.v5i3.19289

AUTOR PROFILES

Fitria Rahmawati
Fitria.23023@mhs.unesa.ac.id
Study Program of Physics Education
Universitas Negeri Surabaya

Wirawan Fadly
Natural Science Education
UIN Kiai Ageng Muhammad Besari Ponorogo
Google Scholar: QPiFHwcAAAAJ
Sinta ID : 6067593
Orchid ID : 0000-0002-8700-3946
Scopus ID : 57208800062

Utama Alan Deta
Study Program of Physics Education
Universitas Negeri Surabaya
Google Scholar: uDVut9wAAAAJ
Sinta ID : 74761
Orchid ID : 0000-0002-2881-7843
Scopus ID : 55872927700