The Effect of Globe Teaching Aids on Elementary Students' Social Science Literacy in Map Materials

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Abstract: This study investigates the effect of globe teaching aids on elementary students' Social Science literacy, particularly in understanding map materials. The need for this Research arises from Indonesia's low literacy performance in PISA 2022, which underscores the urgency of implementing more effective and engaging learning strategies. A quasi-experimental design was used, involving two groups and 30 students in total. The experimental group received instruction using globe teaching aids, while the control group was taught through conventional methods. The findings show a significant improvement in students' Social Science literacy among those who were taught using globes, as indicated by posttest differences between the two groups ($p < 0.05$). The normalized gain score further demonstrates the intervention's effectiveness, with the experimental group achieving a gain of 0.734 compared to 0.337 in the control group. These results indicate that using globes not only enhances students' comprehension of spatial relationships but also strengthens their overall map literacy. The study highlights the importance of integrating concrete and interactive learning tools in Social Science instruction. The findings provide practical implications for educators, suggesting that globe teaching aids can serve as an effective alternative to improve students' literacy and engagement in learning map concepts.

Abstrak: Penelitian ini menyelidiki pengaruh alat peraga globe terhadap literasi IPS siswa sekolah dasar, khususnya dalam memahami materi peta. Penelitian ini didorong oleh rendahnya kinerja literasi Indonesia dalam PISA 2022, yang menggarisbawahi urgensi penerapan strategi pembelajaran yang lebih efektif dan menarik. Desain kuasi-eksperimental digunakan, melibatkan dua kelompok dengan total 30 siswa. Kelompok eksperimen menerima instruksi menggunakan alat peraga globe, sementara kelompok kontrol diajar melalui metode konvensional. Temuan menunjukkan peningkatan yang signifikan dalam literasi Ilmu Sosial siswa di antara mereka yang diajar menggunakan globe, sebagaimana ditunjukkan oleh perbedaan pasca-tes antara kedua kelompok ($p < 0,05$). Skor peningkatan yang dinormalisasi semakin menunjukkan efektivitas intervensi, dengan kelompok eksperimen mencapai peningkatan sebesar 0,734 dibandingkan dengan 0,337 pada kelompok kontrol. Hasil ini menunjukkan bahwa penggunaan globe tidak hanya meningkatkan pemahaman siswa tentang hubungan spasial tetapi juga memperkuat literasi peta mereka secara keseluruhan. Studi ini menyoroti pentingnya mengintegrasikan alat bantu pembelajaran konkret dan interaktif dalam pembelajaran Ilmu Sosial. Temuan ini memberikan implikasi praktis bagi para pendidik, menunjukkan bahwa alat bantu pengajaran globe dapat menjadi alternatif yang efektif untuk meningkatkan literasi dan keterlibatan siswa dalam mempelajari konsep peta.

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A. Introduction

Social studies literacy plays a strategic role in primary education because it equips students with the ability to understand social, cultural, and geographical phenomena relevant to everyday life. The OECD (2023), through the results of the 2022 PISA survey, reported that Indonesian students' social literacy and spatial understanding scores are still below the OECD average. This indicates that the social studies learning process in elementary schools has not fully developed conceptual literacy and higher-order thinking skills. Similarly, the Kemendikbudristek (2022) emphasized that low social studies literacy is caused by the dominance of lecture methods, a lack of media variety, and the minimal use of concrete teaching aids. The situation on the ground shows that many schools have teaching aids such as globes, but these tools are rarely used optimally because teachers are not accustomed to integrating them into their lessons. Maps and globes, as traditional yet essential geographical learning tools, have long been recognized as powerful instruments for restructuring spatial knowledge and fostering geographic literacy among young learners (Solarz, 2015; Wiegand, 2018).

Several recent studies have shown that the use of learning media significantly improves the understanding of abstract concepts, including geography and maps. The use of 3D Story Map-based learning media has been shown to strengthen students' spatial thinking skills by presenting more concrete and interactive spatial representations, as reported in the Research of Sari et al (2023). Harefa et al (2023) also found that interactive media-based learning significantly increases student motivation and engagement. Meanwhile, Research by Hartawan et al (2024) shows that three-dimensional media can strengthen students' understanding of spatial relationships in geography. Furthermore, Research by Erfan et al (2021) confirms that physical teaching aids such as globes can help students visualize latitude, longitude, and geographical distribution more comprehensively. These findings confirm that learning media, especially concrete and 3D media, can significantly improve geographic literacy. Further supporting this notion, Tarman (2021) demonstrated that structured training programs focusing on map and globe reading skills can significantly enhance young children's spatial perception and geographic literacy. The integration of geospatial technologies, such as GIS, into geography education has also been shown to improve students' comprehension, spatial thinking abilities, and engagement with geographic content (Demirci & Karaburun, 2016). Miller & Miller (2019) further emphasized that technology-enhanced spatial thinking activities foster deeper learning and help students develop critical geographic reasoning skills essential for the 21st century.

However, previous Research has focused more on digital, interactive, and technology-based 3D media. In contrast, concrete physical media, such as globes, have not been widely empirically explored, especially in the context of social studies literacy in elementary schools. This Research gap is clear and explicit:

"Although various studies highlight the effectiveness of digital and 3D media in social studies learning, research that specifically tests the effectiveness of globe teaching aids

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on social studies literacy, especially on map material in elementary schools, is still very limited."

Based on this gap, the novelty of this Research lies in the empirical exploration of the use of globe teaching aids through a quasi-experimental design to comprehensively measure improvements in social studies literacy. This Research is among the first to integrate physical globe media into map learning and to use structured quantitative measurements, thereby providing new scientific evidence on the effectiveness of concrete media in social literacy.

The use of globes as a learning medium has been shown to improve learning outcomes, engagement, and student motivation in understanding spatial concepts (Firdaus et al., 2023). Furthermore, Kurniawan & Budi (2024) found that teachers preferred digital media over globes due to a lack of training and because the effectiveness of globe use in learning has not been systematically tested. Research has also shown that tactile and concrete spatial learning tools, including globes and physical maps, enable learners to build accurate cognitive representations of spatial relationships through multisensory engagement, which is particularly important for developing foundational geographic understanding (Espinosa & Ochaita, 2018). Multi-sensory cartographic tools, such as tactile maps and three-dimensional models, have been found to support spatial cognition development and enhance geographic literacy by allowing learners to explore spatial concepts through touch and manipulation (Brulé et al., 2016). Thus, there is an empirical gap in a comprehensive evaluation of the Influence of globes as a teaching aid on students' social literacy.

The novelty of this study lies in its empirical examination of globe teaching aids as concrete, three-dimensional learning media to enhance elementary students' social studies literacy, particularly in map-related content. While previous studies have predominantly focused on digital, interactive, and technology-based spatial learning tools, this study provides new evidence by systematically investigating the instructional effectiveness of physical globe media within a primary school context. By employing a quasi-experimental design and structured quantitative measurements, this research offers a distinctive contribution to social studies education by demonstrating how traditional yet underutilized teaching aids can meaningfully improve students' spatial understanding and learning engagement. This novelty positions the globe not merely as a supplementary visual aid, but as a pedagogically significant medium capable of strengthening foundational map literacy in elementary education.

Based on the research gap identified above, this study is guided by the central research question of whether the use of globe teaching aids can significantly improve elementary school students' understanding of map concepts and spatial relationships, as well as whether it leads to higher learning engagement compared to conventional instructional methods. Accordingly, this study aims to analyze the extent to which globe-based instruction enhances students' map literacy and spatial understanding and to compare students' learning engagement between globe-assisted learning and conventional

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learning approaches. Theoretically, this study contributes to the development of social studies literacy research by providing empirical evidence on the pedagogical value of concrete teaching aids in elementary education. Practically, the findings are expected to offer meaningful implementation insights for teachers and schools in optimizing the use of globe media as an instructional innovation to strengthen social studies literacy.

B. Method

This study employed a quasi-experimental, pretest–posttest control-group design to examine the effectiveness of globe-based instructional media in enhancing Social Science literacy, particularly map literacy, among elementary school students. The Research was conducted with fourth-grade students at SDN 01 Jaya Mulya, involving a purposive sample of 30 students. The sample consisted of 15 students from Class IV A, assigned to the experimental group, and 15 students from Class IV B, assigned to the control group. The study followed a systematic sequence of procedures, beginning with planning, instrument development, validity and reliability testing, pretesting, treatment implementation, posttesting, and concluding with final data analysis. To clarify the overall Research workflow, a horizontal flow diagram illustrates the sequential phases from the planning stage to the conclusion stage.

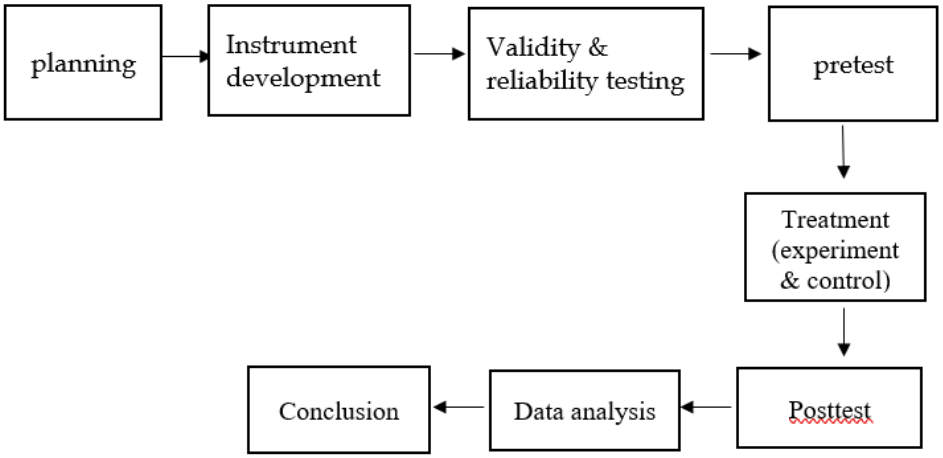

Figure 1. Research workflow

The map literacy test instrument was developed based on five key indicators: the ability to read map symbols, interpret scale, determine location using cardinal directions, understand spatial relationships, and interpret geographic information. Sample test items included identifying map symbols, calculating distances at a 1:200,000 scale, determining object positions using cardinal directions, analyzing relationships between regional characteristics and social phenomena, and interpreting disaster risk from a rainfall distribution map. Instrument validity was assessed using Pearson correlation, which confirmed that all items were valid. Instrument reliability was measured using Cronbach's Alpha, yielding a coefficient of 0.83, indicating high reliability.

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Data were collected through tests, observations, questionnaires, and documentation. Tests were used to measure map literacy before and after the intervention; observations recorded student engagement during globe-based learning; questionnaires captured students' perceptions of globe-supported instruction; and documentation—including photos, videos, and field notes, served as supporting evidence. Research ethics were upheld by obtaining formal approval from the school administration, securing consent from classroom teachers and parents, and ensuring confidentiality of all student data for academic purposes only. Data analysis employed descriptive and inferential statistics, including normality and homogeneity testing, independent t-tests for between-group comparisons, and normalized gain analysis to more accurately measure improvement. This comprehensive procedure provides firm empirical grounding for evaluating the effectiveness of globe-based instructional media in improving elementary students' map literacy.

C. Result

Validity testing of the Research instrument showed that 9 of the 10 items were deemed valid, as the calculated r values exceeded the table r values. One invalid item was removed to prevent it from affecting the measurement quality. Reliability testing using Cronbach's Alpha yielded a value of 0.812, indicating strong internal consistency and suitability for assessing students' map literacy skills. Before testing the hypotheses, normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The results of the normality test are presented in Table 1; all data showed p-values> 0.05, indicating a normal distribution of the pretest and posttest data. However, Levene's Test indicated that the variances between groups were not homogeneous ($p = 0.018$), so the analysis was conducted using a t-test with unequal variances.

The results of the independent-samples t-test showed that there was no significant difference between the two groups on the pretest ($p = 0.120$), indicating that the initial abilities of students in both groups were equal. However, the posttest results showed a highly significant difference ($p < 0.0001$), indicating that the use of globe media has a much greater Influence on improving students' map literacy than conventional methods.

The normality test determines whether the data are normally distributed using the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Table 1. Normality Test

Group	Kolmogorov-Smirnov (p-value)	Shapiro-Wilk (p-value)	Conclusion
Pretest Globe	0.315	0.533	Normal
Posttest Globe	0.533	0.722	Normal
Pretest Non-Globe	0.192	0.321	Normal
Posttest Non-Globe	0.533	0.715	Normal

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Table 2. Hypothesis Testing (Independent Sample t-Test)

Variabel	Mean Difference	t-value	p-value (Sig. 2-tailed)	Conclusion
Pretest	1.14	1.63	0.120	Not Significant
Posttest	20.00	16.25	< 0.0001	Very Significant

Next, a normalized gain analysis was used to assess proportional learning improvement. The results showed that the Globe group achieved greater improvement, while the Non-Globe group achieved moderate improvement. This indicates that the use of globes not only improves final scores but also provides optimal learning effectiveness.

Table 3. Normalized Gain Analysis

Group	Mean Gain	Category
Globe	0.734	Tall
Non-Globe	0.337	Currently

The following graph clarifies the difference in average improvement between the two groups, showing that the group using the globe achieved almost twice the improvement as the group without the globe.

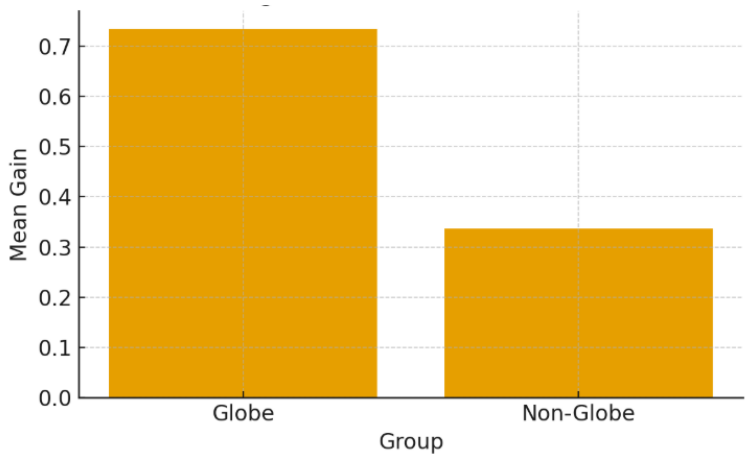

Figure 2. Graph of the Difference in Average Improvement between the Two Groups

D. Discussion

The study's findings indicate that the use of globe media significantly improves students' map literacy. The paired-samples t-test in the experimental group shows a

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statistically significant increase in posttest scores compared to pretest scores. In contrast, the control group experienced only a relatively small increase. Furthermore, the independent-samples t-test results reveal a significant difference between the two groups, confirming that learning with Globe Media is more effective than conventional instruction.

The normalized gain analysis reinforces these results. The experimental group achieved a high-gain category, while the control group fell into the medium-gain category. This indicates that global media not only enhances students' ability to recall geographic information but also strengthens their capacity to understand and interpret spatial information more comprehensively. This effectiveness aligns with constructivist theory, which emphasizes the importance of concrete and visual learning experiences in developing students' knowledge structures.

The findings are consistent with those of Vargas-Hernández et al (2024), who state that visual aids play a crucial role in improving student engagement and understanding of spatial concepts. Similarly, Nithya et al (2024) assert that concrete media can support the construction of knowledge through multisensory activities. These results align with the map literacy learning model developed by Segara (2016), which emphasizes the integration of Vygotsky's socio-constructivist theory into map-based instruction to progressively build students' spatial reasoning and interpretation skills. The critical role of map literacy in geographic education has been well-documented, with studies confirming that systematic instruction using concrete mapping tools enhances students' ability to read, interpret, and analyze spatial information (Durmuş, 2016). Comparable results were also reported by Bednarz et al (2013), who found that the use of globes enhances spatial analytical skills, including understanding geographic coordinates, topography, and regional climate variation. Clagett (2009) also notes that Globe Media is effective in strengthening navigation and mapping skills, which are essential foundations of modern geospatial literacy.

The effectiveness of Globe Media in this study is also influenced by increased student activity and engagement during the learning process. Students had the opportunity to engage in direct exploration through observation, manipulation, and visual comparison of different regions. These activities benefited various learning styles, including visual, auditory, and kinesthetic. The effectiveness of manipulative and concrete learning media has been widely supported in educational research. Tjandra et al (2020) found that manipulatives provide real visual representations of abstract concepts, encourage active learning, and support diverse learning styles, particularly benefiting visual and kinesthetic learners. More recently, Ferdiansyah et al (2024) confirmed that concrete media not only improve cognitive learning outcomes but also significantly increase student learning activities and participation, with students demonstrating higher engagement, motivation, and conceptual understanding when learning through hands-on, manipulable materials. This result aligns with Kerski (2008) findings, which argue that visual-based teaching aids can significantly improve student participation and comprehension.

Nevertheless, several potential challenges were identified, including limited facilities and teachers' suboptimal pedagogical competence in utilizing global media

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effectively (Ng'eno, 2015). These challenges require attention in efforts to enhance the effectiveness of concrete learning media in schools. Addressing these challenges requires a shift in pedagogical frameworks toward models that embrace both traditional concrete tools and modern digital technologies. Goldie (2016) argues that connectivism, a learning theory suited to the digital age, underscores the importance of integrating networked learning and digital resources alongside hands-on materials to support diverse and interconnected learning experiences.

Overall, this study's findings provide empirical evidence that globe media is an effective instructional strategy for improving students' map literacy in Social Studies. Further Research is recommended to explore integrating physical globes with digital technologies such as GIS or virtual globes to create a more comprehensive and relevant geospatial learning experience in the digital era (Bodzin, 2011).

E. Implication

The findings of this study offer important implications for strengthening social studies literacy among elementary school students. Theoretically, the results reinforce Vygotsky's constructivist framework, which highlights the role of concrete learning media in supporting students' understanding of abstract concepts, particularly in map and geographic content. The use of globe teaching aids was shown to enhance students' spatial understanding, map-reading skills, and overall engagement in social studies learning. These findings also contribute to the broader body of knowledge on spatial literacy theory by demonstrating how physical, three-dimensional media can facilitate the development of spatial reasoning and geographic comprehension in young learners.

From a practical perspective, the results provide clear recommendations for teachers. Educators are encouraged to integrate Globe Media consistently into social studies instruction—especially in grades 4–6, where topics related to maps, the earth, and spatial concepts are central. The globe not only improves conceptual understanding but also supports student motivation and engagement through visualization, exploration, and multisensory interaction. Thus, teachers should consider the globe as an essential instructional tool rather than supplementary material.

At the policy level, the study underscores the importance of ensuring that each classroom has at least one globe to support the development of social studies literacy. Schools are encouraged to include globe-based instruction as part of their standard teaching strategies. At the same time, education authorities should incorporate training on the effective use of teaching aids into teacher professional development programs. Enhancing teachers' pedagogical competence in using concrete media will help maximize the benefits of globe-assisted learning.

This study also creates opportunities for further Research, particularly in examining the effectiveness of globe use in other social studies topics, its potential contribution to 21st-century skills such as critical thinking and spatial reasoning, and its integration with digital technologies such as GIS and virtual globes. Such Research will help establish more

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comprehensive and sustainable approaches to enhancing geographic and social studies literacy in the digital era.

F. Limitation and Suggestion for Future Research

This study possesses several methodological and contextual limitations that warrant consideration when interpreting the findings. First, the Research was conducted on a single cohort of fourth-grade students at SD Negeri 01 Jaya Mulya with a limited sample size. Such conditions restrict the generalizability of the results to broader elementary school populations or to institutions with differing socio-academic characteristics. Second, the scope of the study was confined to examining the use of globe teaching aids to enhance social studies literacy, specifically within map and geography content. It did not extend to other relevant variables, including critical thinking, collaboration, or problem-solving skills, which are integral components of contemporary social studies learning. Furthermore, the study adopted a short-term experimental approach without follow-up assessments, thereby limiting conclusions regarding the sustainability or long-term retention of learning outcomes.

In light of these limitations, several directions for future Research are proposed. Subsequent studies should consider using a larger, more diverse sample that spans multiple schools and grade levels to enhance the external validity of the findings. Cross-institutional or cross-provincial experimental designs are also recommended to assess the consistency of the effectiveness of globe-based learning rigorously. Future Research may further integrate physical globes with digital media, such as virtual globes, GIS applications, or augmented reality platforms to evaluate the impact of hybrid or TPACK-oriented instructional strategies on students' social studies literacy. Additionally, extended investigations are needed to explore the Influence of globe utilization on the development of 21st-century competencies and student motivation, thereby offering more comprehensive contributions to pedagogical innovation in elementary social studies education.

G. Conclusion

The findings of this study demonstrate that the use of globe teaching aids has a significant and meaningful effect on improving elementary students' map literacy. Students who learned through globe-assisted instruction showed substantially higher gains in understanding map concepts and spatial relationships than those who received conventional instruction. These results confirm that concrete and three-dimensional learning media, such as globes, are pedagogically effective in facilitating spatial understanding and enhancing learning engagement in social studies, particularly in map-related content.

Despite these positive findings, this study is not without limitations. The relatively small sample size and the focus on a single school context limit the generalizability of the results. Therefore, future research is encouraged to involve larger and more diverse samples across different educational settings to validate and extend these findings. Further studies

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may also explore the integration of globe-based instruction with digital technologies and investigate its impact on broader learning outcomes, including critical thinking and spatial reasoning skills.

Overall, this study contributes empirical evidence to social studies education research by reaffirming the instructional value of globe teaching aids as concrete learning media. The findings highlight the potential of globes to support interactive, meaningful, and engaging learning experiences, thereby strengthening foundational map literacy and enriching instructional practices in elementary social studies education.

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References

Bednarz, S. W., Heffron, S., & Huynh, N. T. (2013). *A Road Map for 21st Century Geography Education: Geography Education Research (A Report from the Geography Education Research Committee of the Road Map for 21st Century Geography Education Project).* Washington, DC: Association of American Geographers.

Bodzin, A. M. (2011). The Implementation of a Geospatial Information Technology (GIT)-Supported Land Use Change Curriculum with Urban Middle School Learners to Promote Spatial Thinking. *Journal of Science Education and Technology, 20*(4), 450–462. https://doi.org/10.1007/s10956-011-9310-8

Brulé, E., Bailly, G., Brock, A., Valentin, F., Denis, G., & Jouffrais, C. (2016). MapSense: Multi-Sensory Interactive Maps for Children Living with Visual Impairments. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 445–457. https://doi.org/10.1145/2858036.2858375

Clagett, K. (2009). Spatial Literacy: An Essential Skill for Students and Prospective Employees. In T. Jekel, A. Koller, K. Donert, & R. Vogler (Eds.), *Learning with GI V (pp. 81–89).* Wichmann Verlag.

Demirci, A., & Karaburun, A. (2016). Using GIS to Improve Student Achievement in Geography Education. *International Research in Geographical and Environmental Education*, *25*(3), 199–212. https://doi.org/10.1080/10382046.2016.1155323

Durmuş, E. (2016). The Importance of Map Literacy in Geographic Education. *Review of International Geographical Education Online (RIGEO)*, *6*(3), 213–222.

Erfan, M., Maulyda, M. A., Affandi, L. H., Rosyidah, A. N. K., Oktaviyanti, I., & Hamdani, I. (2021). Identifikasi Wawasan Literasi Dasar Guru Dalam Pembelajaran Berbasis

https://doi.org/10.51276/edu.v7i1.1464

Level Kemampuan Siswa. *Jurnal DIDIKA: Wahana Ilmiah Pendidikan Dasar*, *7*(1), 1–18. https://doi.org/10.29408/didika.v7i1.3520

Espinosa, M. A., & Ochaita, E. (2018). Using Tactile Maps to Improve the Practical Spatial Knowledge of Adults Who Are Blind. *Journal of Visual Impairment & Blindness*, *112*(5), 507–517. https://doi.org/10.1177/0145482X1811200504

Ferdiansyah, F., Ahyani, N., & Astuti, I. (2024). Concrete Media to Increase Activities and Cognitive Learning Outcomes in Elementary Schools. *Universitas Ekasakti Journal of Teaching and Learning*, *5*(2), 189–198. https://doi.org/10.31933/uejt.v5i2.xxx

Firdaus, A. R., Sianturi, Y. R. U., & Rustini, T. (2023). Pengaruh Pemanfaatan Globe sebagai Media dalam Pembelajaran IPS Sekolah Dasar. *Journal on Education*, *5*(2), 3052–3058. https://doi.org/10.31004/joe.v5i2.961

Goldie, J. G. S. (2016). Connectivism: A Knowledge Learning Theory for the Digital Age? *Medical Teacher*, *38*(10), 1064–1069. https://doi.org/10.3109/0142159X.2016.1173661

Harefa, A. S., Intan Stephanie, & Eriska Anindia. (2023). Alat Peraga Game Jam dan Sudut (GaJamDut) sebagai Media Pembelajaran Matematika pada Materi Sudut di Sekolah Dasar. *Polinomial: Jurnal Pendidikan Matematika*, *2*(2), 40–45. https://doi.org/10.56916/jp.v2i2.607

Hartawan, I. N. B., Dirgayusari, A. M., Ni Wayan Suardiati Putri, & Lopez, F. T. M. Da. (2024). Implementasi Teknologi QR-Code Untuk Meningkatkan Kemampuan Literasi Siswa Sekolah Dasar. *ASPIRASI: Publikasi Hasil Pengabdian dan Kegiatan Masyarakat*, *2*(1), 262–271. https://doi.org/10.61132/aspirasi.v2i1.352

Kemendikbudristek. (2022). *Kebijakan Penguatan Karakter dan Budaya Literasi dalam Sistem Pendidikan Indonesia*. Jakarta: Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.

Kerski, J. J. (2008). The Role of GIS in Digital Earth Education. *International Journal of Digital Earth, 1*(4), 326–346. https://doi.org/10.1080/17538940802420879

Kurniawan, K., & Budi, A. S. (2024). *Rancang Bangun Alat Peraga Katup Tesla pada Materi Fluida*. Seminar Nasional Fisika 2016 UNJ. https://doi.org/10.21009/03.1201.PF20

Miller, S., & Miller, K. (2019). Spatial Thinking and Technology Integration in Geography Education: Fostering Deeper Learning. *Journal of Geography in Higher Education*, *43*(2), 209–226. https://doi.org/10.1080/03098265.2019.1574954

Ng'eno, K. J. (2015). *Influence of Teachers' Pedagogical Practices on Students' Summative Achievement in Public Secondary Schools in Kenya*. Unpublished Doctoral Dissertation, University of Nairobi.

Nithya, D. S. V., Jayaraj, D. P., Khachariya, D. H. D., & Rajesh, D. B. S. (2024). *An Evaluation of the Function of Information and Communication Technologies in the Spread of Technical*

https://doi.org/10.51276/edu.v7i1.1464

Knowledge. An Employee Centered Analysis. http://10.9.150.37:8080/dspace//handle/atmiyauni/1735

OECD. (2023). PISA 2022 Results (Volume I): The State of Learning and Equity in Education. PISA, OECD Publishing, Paris. https://doi.org/10.1787/53f23881-en

Sari, R. M., Urfan, F., Ridhwan, R., Herliza, M., Dani, F. R., & Br Sembiring, T. (2023). 3D Street Story Map Learning Media for High School Student's Spatial Thinking Ability. *Journal for Lesson and Learning Studies*, *6*(3), 379–389. https://doi.org/10.23887/jlls.v6i3.58812

Segara, N. B. (2016). Investigated the Implementation of Map Literacy Learning Model in Middle School Classes. *Indonesian Journal of Geography Education*, *4*(2), 1–12. https://doi.org/10.23887/ijge.v4i2.xxx

Solarz, M. W. (2015). The Language of Global Development: A Misleading Geography. *Routledge Studies in Development and Society*. New York: Routledge.

Tarman, I. (2021). A Study on the Development of Map and Globe Reading and Interpretation Skills of Five-Year-Olds. *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, *9*(4), 655–673. https://doi.org/10.46328/ijemst.1452

Tjandra, C., Setiawan, W., & Firmansyah, D. (2020). The Effectiveness of Using Manipulatives in Teaching Mathematics in Inclusive Education Programs in Elementary Schools. *Journal of Educational Technology*, *4*(3), 165–178. https://doi.org/10.23887/jet.v4i3.xxx

Vargas-Hernández, A., Robledo, S., & Quiceno, G. R. (2024). Virtual Teaching for Online Learning from the Perspective of Higher Education: A Bibliometric Analysis. *Journal of Scientometric Research*, *13*(2), 406–418. https://doi.org/10.5530/jscires.13.2.32

Wiegand, P. (2018). The Importance of Using Teaching Aids for Educating Geography Teacher Students. *International Journal of Geography Education*, *12*(1), 78–92. https://doi.org/10.1080/igje.2018.xxx

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