
STRENGTHENING LITERACY AND NUMERACY SKILLS OF PRIMARY SCHOOL STUDENTS THROUGH EDUCATIONAL GAMES

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ABSTRACT

Strengthening literacy and numeracy skills in Primary school students is a fundamental aspect closely related to classroom learning. This study aims to describe various educational games that can enhance students' literacy and numeracy skills. The method used is a literature study, where data is obtained from books and scientific articles. The research results show that using educational games is efficacious in improving Primary school students' literacy and numeracy skills. Educational games also motivate students to understand literacy and numeracy in an enjoyable manner. Educational game-based learning media attract students' attention and encourage them to learn interactively and communicatively. Implementing games in learning helps students better understand literacy and numeracy concepts. One example of an educational game that can be used is the crossword puzzle, which is proven to be engaging and helps students remember vocabulary and general knowledge more efficiently. In the digital era, literacy and numeracy are essential skills that must be introduced early on. Educational game-based learning media is validated and deemed suitable for teaching, with an average validation rate of 74% and a positive student response rate of 80%. In conclusion, using educational games effectively enhances Primary school students' literacy and numeracy skills, and teachers must continue to innovate in the learning process to improve these skills.

Keywords: *literacy, numeracy, educational games*

ABSTRAK

Penguatan kemampuan literasi dan numerasi pada siswa sekolah dasar merupakan aspek fundamental yang berkaitan erat dengan pembelajaran di kelas. Penelitian ini bertujuan untuk mendeskripsikan berbagai game edukatif yang dapat digunakan untuk menguatkan kemampuan literasi dan numerasi siswa. Metode yang digunakan adalah studi pustaka, di mana data diperoleh dari buku dan artikel ilmiah,. Hasil penelitian menunjukkan bahwa penggunaan game edukatif efektif dalam meningkatkan kemampuan literasi dan numerasi siswa sekolah dasar. Selain itu, game edukatif juga mampu memotivasi siswa untuk memahami literasi dan numerasi dengan cara yang menyenangkan. Media pembelajaran berbasis game edukatif tidak hanya menarik perhatian siswa tetapi juga mendorong mereka untuk belajar dengan cara yang interaktif dan komunikatif. Implementasi game dalam pembelajaran membantu siswa memahami konsep literasi dan numerasi dengan lebih baik. Salah satu contoh game edukatif yang dapat digunakan adalah teka-teki silang, yang terbukti mengasyikkan dan membantu siswa mengingat kosa kata serta pengetahuan umum dengan lebih mudah. Dalam era digitalisasi, literasi dan numerasi adalah kemampuan penting yang harus dikenalkan

sejak dini. Penggunaan media pembelajaran berbasis game edukatif dinyatakan valid dan layak digunakan dalam pembelajaran, dengan validasi rata-rata 74% dan respon positif siswa mencapai 80%. Kesimpulannya, penggunaan game edukatif efektif dalam meningkatkan kemampuan literasi dan numerasi siswa sekolah dasar dan guru harus terus berinovasi dalam proses pembelajaran guna meningkatkan kemampuan tersebut.

Kata kunci: Literasi, Numerasi, *Game* Edukatif

INTRODUCTION

Early development of literacy and numeracy abilities is essential for success in primary school. Reading, writing, and comprehending texts are all parts of literacy, which is essential for assisting children in acquiring effective communication skills. At this point, the curriculum teaches pupils to recognise letters, words, and sentences in addition to helping them comprehend the meaning of short texts and stories. This skill is necessary for studying social studies and science in addition to language-related courses. In primary education, numeracy includes learning about and applying numbers as well as fundamental mathematical symbols. Pupils acquire fundamental mathematical knowledge, including addition, subtraction, multiplication, and division, which serves as the basis for later, more sophisticated mathematical operations. They also learn about basic facts, measurement, time, money, and other ideas that they will likely face in their daily lives. For instance, via hands-on activities, they learn how to measure the length and weight of things, read a clock, and compute change while making purchases¹.

¹ Anissa Suci Rachmania and Fachrur Rozie, "Urgensi Minat Baca Peserta Didik Terhadap Kemampuan Literasi Dan Numerasi Di UPT SD Negeri 3 Gresik," *Indo-MathEdu Intellectuals Journal* (Lembaga Intelektual Muda Maluku, 2024), <https://doi.org/10.54373/imej.v5i2.1071>; Agus Budinan and Holy Ichda Wahyuni, "Video Animasi Sparkol Sebagai Media Pembelajaran Literasi Dan Numerasi Sekolah Dasar Muhammadiyah 24 Surabaya," *Anterior Jurnal* (Universitas Muhammadiyah Palangkaraya, 2024), <https://doi.org/10.33084/antterior.v23i2.6713>; Yosefa Veniranda Tai, Maria Carmelita Tali Wangge, and Wilibaldus Bhoke, "Analisis Kemampuan Numerasi Pada Materi Penjumlahan Dan Perkalian Pada Siswa Kelas III UPTD SDI Tarawaja," *MATH-EDU: Jurnal Ilmu Pendidikan Matematika* (Universitas Timor, 2024), <https://doi.org/10.32938/jipm.9.1.2024.435-443>; Angga Suryadi et al., "Strategi Efektif Dalam Pengembangan Literasi Dan Numerasi Siswa SD Kelas V," *PrimEarly : Jurnal Kajian Pendidikan Dasar Dan Anak Usia Dini* (Institut Agama Islam Sultan Muhammad Syafiuddin Sambas, 2024), <https://doi.org/10.37567/primearly.v7i1.2865>; Fajar Dwi Mukti, "The Implementation of Cooperative Learning Model in Indonesian Language Learning in Grade IV of Madrasah Ibtidaiyah Jayapura City," *EDUCASIA: Jurnal Pendidikan, Pengajaran, Dan Pembelajaran* 8, no. 3 (July 20, 2023): 207–15, <https://doi.org/10.21462/EDUCASIA.V8I3.158>; Tety Nur Cholifah, "Profil Literasi Membaca Dan Literasi Budaya Siswa Dalam Mendukung Penerapan Kurikulum Merdeka Di Sekolah Dasar," *Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah* (Sekolah Tinggi Ilmu Qur an Amuntai, 2024), <https://doi.org/10.35931/am.v8i1.2941>; Tifani Kautsar, Ida Hamidah, and Sun Suntini, "Memasyarakatkan Literasi Dan Numerasi Menuju Generasi Berkarya Dan Mandiri Desa Sukasari Kabupaten Majalengka Jawa Barat," *RENATA: Jurnal Pengabdian Masyarakat Kita Semua* (PT Berkah Tematik Mandiri, 2024), <https://doi.org/10.61124/1.renata.24>; Afifa Ulin Nukha and Astri Widyaruli A, "Meningkatkan Kemampuan Peserta Didik Dalam Literasi Dan Numerasi Serta Adaptasi Teknologi Di SDN Menampu 02 Melalui Program Kampus Mengajar Angkatan 6," *Jurnal Pengabdian Masyarakat Indonesia Sejahtera*

Establishing a link between reading and numeracy and daily living is crucial in basic education. Learning can be more meaningful and interesting when it is contextualised, allowing students to practise these abilities in real-world settings. For instance, kids might improve their literacy skills by completing assignments like reading aloud from storybooks and writing summaries. Educational games like arithmetic puzzles and classroom object counting can increase students' understanding of mathematical concepts while also having fun. Instilling these literacy and numeracy abilities is a critical responsibility of primary school teachers. They need to be able to apply innovative and engaging teaching strategies, establish a safe and encouraging learning environment, and supply materials that are in line with the students' developmental stage. In this method, children not only learn these fundamental abilities but also develop self-assurance and a love of learning that they may bring into their future studies and daily life. All things considered, improving reading and numeracy in elementary schools is a significant investment in the education of young people. These abilities help children succeed academically in the future and equip them to be capable people who can benefit society².

Strengthening literacy and numeracy in primary school students is fundamental because it is closely related to learning in the classroom. Strengthening literacy and numeracy in primary school students can be done by combining learning activities and educational *games*. A game in learning is one way to attract students' attention so that learning in the classroom feels fun. In line with this, research with the title "Implementation of *Games Based learning* to Improve Literacy and Numeracy Skills of Elementary School Students", the results of this study indicate that the implementation of *Game-based learning* is able to improve the literacy and numeracy skills of students at SD Islam Nurul Muttaqin Malang city. Thus it can be said that a game in the learning process will help students understand the concepts of literacy and numeracy. Furthermore, games are very important for students and teachers in language learning, not only because games provide fun and relaxation, but also because games encourage

(Sekolah Tinggi Agama Islam Yayasan Pendidikan Islam Kaimuddin Baubau, 2024), <https://doi.org/10.59059/jpmis.v3i1.1119>.

² Wendy Dian Patriana, Utama Sutarna, and Murfiah Dewi Wulandari, "Pembudayaan Literasi Numerasi Untuk Asesmen Kompetensi Minimum Dalam Kegiatan Kurikuler Pada Sekolah Dasar Muhammadiyah," *Jurnal Basicedu* 5, no. 5 (August 20, 2021): 3413–30, <https://doi.org/10.31004/basicedu.v5i5.1302>.

students to use their language in creative and communicative ways³. One of the games that can be done in classroom learning activities is *crossword puzzle games*. Crossword puzzle is a game by filling in empty spaces in the form of boxes using letters so that a word is formed that matches the clue⁴. Filling in crossword puzzles is an exciting activity and can help students remember vocabulary and general knowledge in a relaxed manner. Thus, students will more easily acquire new vocabulary that is closely related to literacy and numeracy. This study aims to describe the efforts to strengthen literacy and numeracy skills of elementary school students through educational *games*.

RESEARCH METHODS

The research method used is literature study. This article is a type of literature research that has an emic perspective, which means collecting data not from researchers, but through theoretical facts or conceptual facts⁵. The data obtained in this article are from literature studies, including books, scientific papers, articles or other literature related to strengthening literacy and numeracy of Primary school students.

RESEARCH RESULTS AND DISCUSSION

Technology has brought about a significant transformation in the way education is delivered and accessed. For example, the use of digital devices such as computers, tablets and smartphones has become common in the teaching and learning process. E-learning platforms and educational apps allow students to learn from anywhere and anytime, no longer limited to traditional classrooms⁶. In addition, technologies such as augmented reality (AR) and virtual reality (VR) provide immersive learning

³ Yolageldili, Gulin, and A Arikan, "Effectiveness of Using Games in Teaching Grammar to Young Learners," *Elementary Education Online* 10, no. 1 (2011): 219–29.

⁴ Khalilullah, "Permainan Teka-Teeeki Silang Sebagai Media Dalam Pembelajaran Bahasa Arab (Mufradat)," *Jurnal Pemikiran Islam* 37, no. 1 (2012): 15–26.

⁵ Sahrawi, "Implementasi Pemikiran Harun Nasution Dalam Dunia Pendidikan Islam," *Al-Ishlah: Jurnal Pendidikan Islam* 20, no. 1 (2022): 57–77, <https://doi.org/10.35905/alishlah.v20i1.2719>.

⁶ Djusmalinar Djusmalinar and Fajar Dwi Mukti, "The Urgency of Technology-Based Education for Primary School in Indonesia," *Waniambey: Journal of Islamic Education* 3, no. 1 (2022): 12–23, <https://doi.org/10.53837/waniambey.v3i1.434>; Sri Yunita, *Media Pembelajaran Matematika Berbasis TIK* (Malang: Ahlimedia Pres, 2020); Fita Mustafida, "Kajian Media Pembelajaran Berdasarkan Kecenderungan Gaya Belajar Peserta Didik Sd/Mi," *Madrasah* 6, no. 1 (2016): 20, <https://doi.org/10.18860/jt.v6i1.3291>; I Kadek Wisnu Nata and D B Kt. Ngr. Semara Putra, "Media Pembelajaran Multimedia Interaktif Pada Muatan IPA Kelas V Sekolah Dasar," *Jurnal Ilmiah Pendidikan Dan Pembelajaran* 5, no. 2 (2021): 227, <https://doi.org/10.23887/jipp.v5i2.32726>; Fahrur Rozi and Ayunda Kristari, "Pengembangan Media Pembelajaran Game Edukasi Berbasis Android Pada Mata Pelajaran Fisika Untuk Siswa Kelas Xi Di Sman 1 Tulungagung," *JUPI (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)* 5, no. 1 (2020): 35, <https://doi.org/10.29100/jipi.v5i1.1561>; Dian Wulandari, "Pengembangan Media Pembelajaran Permainan Roda Keberuntungan Untuk Meningkatkan Pemahaman Siswa Pada Pembelajaran Tematik Kelas IV Madrasah Ibtidaiyah Negeri 4 Muaro Jambi," 2019, 1–124, <http://repository.uinjambi.ac.id/1253/>.

experiences, allowing students to explore difficult-to-understand concepts through realistic simulations. For example, students can study human anatomy by visualizing the internal organs of the body through AR technology. The use of big data and data analysis in education also enables personalization of learning. Through data analysis, teachers can understand students' individual learning needs and design curricula that better suit each student's learning style and abilities. This helps improve learning effectiveness and ensures that each student gets appropriate attention. Technology also facilitates collaboration between students and teachers in different geographical locations. Online communication and collaboration platforms enable group discussions, distance learning and a wider exchange of ideas. For example, students from different parts of the world can work together on the same project, enriching their learning experience with diverse perspectives. Overall, technological developments in education not only change the way we teach and learn, but also open up new opportunities for innovation and improvement in the quality of education. By continuing to utilize evolving technologies, we can create a more dynamic, inclusive and effective learning environment⁷.

The use of learning media is also growing with various innovations to improve students' literacy and numeracy skills. Learning media is very crucial in the learning process in the classroom. Learning media helps teachers in the learning process. According to Arsyad⁸ media is used to convey messages or information in the teaching and learning process so that it can stimulate students' attention and interest in learning.

In today's digitalization era, literacy and numeracy are abilities that must be possessed by someone well. Literacy and numeracy are best introduced early on through various daily activities. In Primary school students, literacy and numeracy is a must-have ability because every activity at school is closely related to literacy and numeracy. In line with this, according to ashri⁹ who states that numeracy literacy needs to be

⁷ I Wayan Andis Indrawan, Komang Oka Saputra, and Linawati Linawati, "Augmented Reality Sebagai Media Pendidikan Interaktif Dalam Pandemi Covid-19," *Majalah Ilmiah Teknologi Elektro* 20, no. 1 (2021): 61, <https://doi.org/10.24843/mite.2021.v20i01.p07>; Aisyah Herlina Arrum and Syifaful Fuada, "Penguatan Pembelajaran Daring Di SDN Jakasampurna V Kota Bekasi, Jawa Barat Menggunakan Media Pembelajaran Interaktif Berbasis Augmented Reality (AR)," *ABDIMAS: Jurnal Pengabdian Masyarakat* 4, no. 1 (2021): 502–10, <https://doi.org/10.35568/abdimas.v4i1.1181>; Fajar Dwi Mukti, "Pengembangan Media Pembelajaran Augmented Reality (AR) Di Kelas V MI Wahid Hasyim," *ELEMENTARY: Islamic Teacher Journal* 7, no. 2 (2019): 299, <https://doi.org/10.21043/elementary.v7i2.6351>.

⁸ A Arsyad, *Media Pembelajaran* (Jakarta: Raja Grafindo Persada, 2013).

⁹ DN Ashri and H Pujiastuti, "Literasi Numerasi Pada Pembelajaran Tematik Terpadu Di Kelas Rendah Sekolah Dasar," *Jurnal Karya Pendidikan Matematika* 8, no. 2 (2021): 1–7.

improved in learning at the basic education level, especially the lower grades, because training numeracy literacy from childhood will be very useful for students in the future. But in fact, there are still many Primary school students who have low literacy and numeracy skills and this becomes a problem in the learning process in the classroom. Strengthening literacy and numeracy at school cannot be separated from the role of the teacher in it. A teacher must be able to innovate and make good practices in strengthening literacy and numeracy at school. One of them is by implementing literacy and numeracy activities in the classroom with a game that can attract students' attention in the learning process in the classroom. Like the research conducted by Ramadan ¹⁰ with the title "Implementation and Development of Calistung *Game* Learning Media to Improve Literacy and Numeracy at SD Negeri 04 Kemuning", the results showed that teachers in learning the Calistung program used a variety of methods, besides that the media and learning places used also varied. The implementation of literacy uses mobile library books, picture books, illustrated letter numbers and also electronic media such as gadgets that contain educational *games in the* form of literacy and numeracy. Furthermore, research conducted by priyani ¹¹ "Development of Literacy and Numeracy Assisted by Ethnomathematics *Puzzle Game* Applications in Mathematics Learning in Border Schools", the results showed that the ethnomathematics *puzzle game* application can help understanding and improve student numeracy literacy in mathematics subjects. Furthermore, development research conducted by mulyani ¹² with the title "Development of Educational *Game-Based* Interactive Learning Media to Improve Literacy and Numeracy in Students", the results showed that educational *game-based* learning media was valid and could be used by obtaining an average percentage of validation of 74%, the results of student practicality of educational game-based interactive learning media obtained a percentage of 80% and the results of student responses to educational *game-based* interactive learning media obtained a percentage of 80%. The development of educational *game-based* learning media is declared valid

¹⁰ D.N Ramadhan, H.D Hermawan, and N.D Septiyanti, "Implementation and Development of Calistung Game Learning Media to Improve Literacy and Numeracy at SD Negeri 04 Kemuning," *Scientific Journal of Teaching Campus* 3, no. 1 (2023): 13-25.

¹¹ N.E Priyani, "Pengembangan Literasi Dan Numerasi Berbantuan Aplikasi Etnomatematik Puzzle Game Pada Peembeajaran Matematika Di Sekolah Perbatasan," *Jurnal Didaktika Pendidikan Dasar* 6, no. 1 (2022): 267–80.

¹² S Mulyani, "Pengembangan Media Pembelajaran Interaktif Berbasis Game Eedukasi Untuk Meningkatkan Literasi Dan Numerasi Pada Siswa," *Jurnal Pendidikan Dan Media Pembelajaran* 2, no. 3 (2022): 5–10.

and feasible for use in learning. From this description it can be concluded that the use of media and *game* applications can help Primary school students in improving literacy and numeracy skills, for that a teacher must continue to innovate in the learning process in the classroom to improve the literacy and numeracy skills of his students.

CONCLUSION

The use of educational games has been shown to be effective in improving literacy and numeracy skills of primary school students. The results show that educational games make the learning process more fun and interactive, which in turn motivates students to be more active in learning. For example, crossword puzzles help students remember vocabulary and general knowledge more easily, suggesting that this method can improve students' understanding of the material being taught. In addition, the validation of educational game-based learning media shows positive results with an average validation level of 74% and positive student responses reaching 80%. This confirms that this learning media is valid and feasible to use in the learning process in the classroom. Thus, the use of educational games is not only an effective strategy, but also innovative in improving students' literacy and numeracy skills. The role of teachers is also very important in the implementation of educational games in learning. Teachers must continue to innovate to make learning more interesting and effective. This innovation in teaching methods not only helps students understand literacy and numeracy concepts better but also makes the learning process more fun and interesting. Overall, this study shows that the use of educational games is a valid and effective method in improving literacy and numeracy skills of primary school students. With the support of innovative teachers and the application of engaging learning media, students' literacy and numeracy skills can be significantly improved, which will ultimately support the overall development of education.

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