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# Enhancing Islamic Education Learning Outcomes through an Integrated Literacy Approach in *Madrasah*

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#### Abstract

This research analyses how to improve learning outcomes through an integrated literacy approach in madrasah. This research uses a qualitative case study approach. The research subjects consisted of the principal, deputy head of student affairs, deputy head of curriculum, head of the library, teachers, and students. Data collection techniques use interview observation and documentation. Data analysis techniques include data reduction, data presentation, and conclusion. The results showed that the experimental group experienced a significant increase in learning outcomes compared to the control group. An integrated literacy approach has proven effective in increasing students' understanding of subject matter, critical thinking skills, and interest in reading. This approach also helps students link knowledge from various scientific disciplines to make learning more meaningful and contextual. This research suggests that madrasah consider implementing integrated literacy as a learning strategy to improve the quality of education and student learning outcomes.

Keywords: Learning Outcomes, Integrated Literacy, Madrasah

#### Abstrak

Penelitian ini menganalisis bagaimana meningkatkan hasil pembelajaran melalui pendekatan literasi terpadu di madrasah. Penelitian ini menggunakan pendekatan studi kasus kualitatif. Subjek penelitian terdiri dari kepala sekolah, wakil kepala bidang kesiswaan, wakil kepala bidang kurikulum, kepala perpustakaan, guru, dan siswa. Teknik pengumpulan data menggunakan observasi wawancara dan dokumentasi. Teknik analisis data meliputi reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa kelompok eksperimen mengalami peningkatan hasil belajar yang signifikan dibandingkan dengan kelompok kontrol. Pendekatan literasi terpadu terbukti efektif dalam meningkatkan pemahaman siswa terhadap materi pelajaran, keterampilan berpikir kritis, dan minat baca. Pendekatan ini juga membantu siswa menghubungkan pengetahuan dari berbagai disiplin ilmu sehingga pembelajaran menjadi lebih bermakna dan kontekstual. Penelitian ini menyarankan agar madrasah mempertimbangkan penerapan literasi terpadu sebagai strategi pembelajaran untuk meningkatkan kualitas pendidikan dan hasil belajar siswa.

Kata Kunci: Hasil Pembelajaran, Literasi Terpadu, Madrasah



#### **INTRODUCTION**

Implementing an integrated literacy approach in madrasah can significantly improve student learning outcomes. Firstly, this approach allows students to connect knowledge from different subjects, strengthening their understanding and skills in a broader context. Integrated literacy integrates language learning with mathematics, science, and social studies, which helps students see connections between concepts and apply them to everyday life. Integrated literacy also encourages students' active involvement in the learning process through activities such as group discussions, collaborative projects, and reflective writing, which can increase students' motivation and interest in learning. Integrated literacy shows that madrasahs that apply this approach experience significant improvements in student exam results compared to madrasahs that use conventional methods <sup>1</sup>. Students participating in integrated literacy approach effectively improves learning outcomes in madrasah by providing long-term benefits for student's academic and personal development.

Improving learning outcomes through an integrated literacy approach is essential for madrasah. This approach enhances students' academic abilities and develops critical thinking, creativity, and communication skills, which are crucial for facing the challenges of the 21st century <sup>3</sup>. Integrated literacy allows students to understand subject matter more deeply and comprehensively by connecting concepts from various scientific disciplines <sup>4</sup>. This approach helps students develop a comprehensive and practical understanding, equipping them to solve complex real-life problems more effectively. Furthermore, it promotes active and collaborative participation in the learning process, significantly boosting students' motivation and interest in their studies. <sup>5</sup>. For madrasah, which aim to develop students' character and intellect based on religious values, integrated literacy approach can produce madrasah graduates who are not only academically intelligent but also have strong character and the skills needed for future success <sup>6</sup>.

https://doi.org/10.1016/j.heliyon.2023.e23490.

<sup>&</sup>lt;sup>6</sup> Ai-Chu Elisha Ding et al., "Enhancing Teacher Al Literacy and Integration through Different Types of Cases in Teacher Professional Development," *Computers and Education Open* 6, no. March (2024): 100178, https://doi.org/10.1016/j.caeo.2024.100178.



<sup>&</sup>lt;sup>1</sup> Jing Wei Law, Chun Teck Lye, and Tuan Hock Ng, "Can Environmental Literacy and Integrated Behavioral Factors Encourage Green Practices at Home? Evidence from Malaysia," *Cleaner and Responsible Consumption* 10, no. August (2023): 100134, https://doi.org/10.1016/j.clrc.2023.100134.

<sup>&</sup>lt;sup>2</sup> Komarudin Komarudin and Suherman Suherman, "Heliyon The RMS Teaching Model with Brainstorming Technique and Student Digital Literacy as Predictors of Mathematical Literacy" 10, no. June 2023 (2024), https://doi.org/10.1016/j.heliyon.2024.e33877.

<sup>&</sup>lt;sup>3</sup> Alexander J. Carroll and Joshua Borycz, "Integrating Large Language Models and Generative Artificial Intelligence Tools into Information Literacy Instruction," *Journal of Academic Librarianship* 50, no. 4 (2024): 102899, https://doi.org/10.1016/j.acalib.2024.102899.

<sup>&</sup>lt;sup>4</sup> Marc Pinski and Alexander Benlian, "AI Literacy for Users – A Comprehensive Review and Future Research Directions of Learning Methods, Components, and Effects," *Computers in Human Behavior: Artificial Humans* 2, no. 1 (2024): 100062, https://doi.org/10.1016/j.chbah.2024.100062.

<sup>&</sup>lt;sup>5</sup> Yunxiang Zheng et al., "Effects of Digital Game-Based Learning on Students' Digital Etiquette Literacy, Learning Motivations, and Engagement," *Heliyon* 10, no. 1 (2024): e23490,

Several previous studies on this research theme can be categorized into four main approaches. First, <sup>7</sup> found that using Powtoon media significantly improved student learning outcomes because students found it more engaging than traditional reading materials. Second, Desi & Hani (2020) demonstrated that the Guided Inquiry learning model enhances student motivation and learning outcomes by fostering intellectual development, communication, and problem-solving skills. Third, Harefa (2020) showed that the Make-A-Match learning method increased student creativity, reduced boredom, and encouraged cooperation, making the learning process more dynamic and engaging. Finally, Pramesti et al. (2022) highlighted that using the Problem-Based Learning (PBL) model with fraction board media in mathematics improved student understanding of fraction concepts. While these studies explore various educational tools and models to enhance learning outcomes, my research differentiates itself by integrating literacy across multiple subjects within a madrasah context. Unlike previous studies that concentrate on specific media or models, this research will address the broader impact of a comprehensive literacy approach, filling the gap in the existing literature by investigating how integrated literacy can serve as a foundational strategy for improving overall educational quality in madrasahs. This focus on literacy integration as a core educational strategy is the primary novelty of this study, contributing to the broader discourse on effective teaching methods in religious education settings.

Based on these research findings, the novelty of this study lies not only in its focus on madrasah education but also in its exploration of an integrated literacy approach that goes beyond traditional reading and writing skills. This research also incorporates the integration of various digital and information literacy skills, providing a more comprehensive framework for modern educational practices in madrasahs. This research explores an integrated literacy approach that emphasizes developing reading and writing skills and integrates various digital and information literacy skills <sup>8</sup>. This is important considering the increasingly complex demands of the digital era. This research addresses the urgent need for modernization in the madrasah curriculum, which often needs to be revised and more responsive to the evolving educational landscape. Many madrasahs still rely on traditional teaching methods that may not fully equip students with the critical thinking, digital literacy, and problem-solving skills required in the 21st century. By focusing on implementing an integrated literacy approach, this study seeks to provide empirical evidence of how such an approach can enhance student learning outcomes in madrasahs, bridging the gap between traditional practices and modern educational demands. This research demonstrates that integrating literacy with digital and information skills can make madrasah education more relevant and effective in preparing students for future challenges. The findings from this research can contribute to developing learning strategies that are more innovative and relevant to the needs of current students and can be used as a reference for policymakers in developing a curriculum that is more responsive to future educational challenges.

This research analyzes how to improve learning outcomes through an integrated literacy approach at MTsN 4 Banyuwangi madrasah. The choice of this particular school is driven by the observed challenges in student achievement, partly due to the reliance on conventional teaching methods that only partially engage students in the learning process. Modern literacy techniques must be applied more, particularly in integrating reading, writing, speaking, and listening skills into the curriculum. By focusing on MTsN

<sup>&</sup>lt;sup>7</sup> Muthmainnah et al., (2021)

<sup>&</sup>lt;sup>8</sup> Ding et al., "Enhancing Teacher AI Literacy and Integration through Different Types of Cases in Teacher Professional Development."

4 Banyuwangi, this study seeks to address these gaps, providing insights into how an integrated literacy approach can enhance the educational experience and outcomes in a madrasah setting. This research is crucial for demonstrating the effectiveness of updated pedagogical strategies more aligned with the demands of the 21st century.. Evaluate the extent to which an integrated literacy approach can improve students' understanding and skills in various subjects, with a particular focus on reading, writing and critical thinking skills. Apart from that, factors that support or hinder the implementation of an integrated literacy approach in madrasah should be included, and strategic recommendations for educators and madrasah managers should be provided for optimizing learning outcomes through integrating literacy into the curriculum. Through this research, empirical evidence can be found to support that integrated literacy improves students' academic abilities and equips them with essential life skills.

This research hypothesizes that an integrated literacy approach has the potential to improve learning outcomes in madrasahs significantly. The study will explore how this approach, which combines various literacy skills such as reading, writing, speaking, and listening, can be effectively implemented to enhance student achievement. This research aims to provide empirical evidence to support this hypothesis, demonstrating the potential benefits of an integrated literacy framework in the madrasah educational setting.

By integrating reading, writing and critical thinking skills into the curriculum, this approach not only strengthens students' understanding of the subject matter but also develops students' abilities to analyze and respond to content in more depth. In addition, this approach also supports the development of students' communication skills, which is essential in actively preparing them to participate in intellectual discussions and wider social communication. Good communication skills strengthen students' academic skills and prepare them to face challenges in an increasingly connected global world <sup>9</sup>. Therefore, this research encourages adopting an integrated literacy approach as an effective strategy for improving the quality of education in madrasah, hoping that the results can provide a solid empirical basis for developing more holistic and inclusive education policies.

#### **RESEARCH METHODS**

This research uses a qualitative case study approach. The study focuses on MTsN 4 Banyuwangi to analyze the implementation of an integrated literacy approach to improve learning outcomes. Data will be gathered through interviews, observations, and document analysis, with the subjects being teachers and students at the madrasah. Data analysis will be conducted using thematic analysis to identify critical patterns and insights related to the research objectives.

MTs Negeri 4 Banyuwangi was selected as the research location due to its strong reputation for implementing a literacy-based curriculum emphasizing holistic student development. The school has committed to integrating reading, writing, and critical thinking skills into daily learning practices. This choice allows researchers to explore how an integrated literacy approach can be effectively applied in a well-resourced and supportive educational environment. Additionally, MTs Negeri 4 Banyuwangi represent

<sup>&</sup>lt;sup>9</sup> Debra L. Roter et al., "Online Communication Skill Training of Patients with Cancer: A Test of the Behavioral Intention Predictive Framework for Communication Skills," *PEC Innovation* 4, no. November 2023 (2024): 100291, https://doi.org/10.1016/j.pecinn.2024.100291.



the diverse context of madrasah education in Indonesia, making it a suitable case for understanding how such approaches can be adapted to madrasahs' specific religious and cultural characteristics. The findings from this study have the potential to serve as a model for other madrasahs across the country.

Participants were selected using a purposive technique; they were chosen with specific considerations and objectives. This technique is used because the researchers need specific information that can only be obtained from knowledgeable informants, ensuring the data is relevant and aligned with the research objectives. This research involved 8 participants: the Principal, Deputy Head of Student Affairs, Deputy Head of Curriculum, Head of Library, Teachers and Students. The selected participants met specific criteria: they were familiar with how to moderate religion and ensure diverse representation in various stakeholder groups, allowing for in-depth exploration of the dynamics of the ability to improve learning outcomes through an integrated literacy approach in madrasah.

The interview technique used in this research is a semi-structured interview technique, which means it has an interview guide, although there are interviews outside the guide. The researcher conducted semi-structured interviews with participants, focusing on how an integrated literacy approach impacts learning outcomes at MTsN 4 Banyuwangi. Interviews were recorded with participants' consent to ensure accuracy and provide a basis for analysis.

Based on the interview transcripts, the researcher identified themes based on the research objectives. This process involved identifying themes in the interview data by reviewing the transcripts thoroughly until the researcher obtained a clear picture of improving learning outcomes through an integrated literacy approach at MTsN 4 Banyuwangi. Furthermore, after the interview, the researcher assured participants that the interview recording would be kept confidential. This protocol functions as a methodological framework, which ensures uniformity of data collection procedures during interviews and allows the investigation of main themes regarding improving learning outcomes through an integrated literacy approach at MTsN 4 Banyuwangi.

Technique Miles and Huberman's (1994) qualitative data analysis involved four steps, starting with formulating clear research objectives <sup>10</sup>. The initial data analysis stage includes collecting research data obtained through observation, interviews, and documentation as research notes. The second step in data reduction is summarizing, selecting key elements, and focusing on essential data that aligns with the research theme. This careful data reduction process aims to present a clear and concise picture of lecturers' literacy in madrasah. Next, the third step involves presenting the data through narrative text. The final step in the data analysis process includes drawing research conclusions based on data reduction. These conclusions were carefully crafted to synthesize the data collected. Data validity was ensured through data triangulation and review, which ensured consistency with research findings. To ensure the accuracy of the data collected, source triangulation was carried out by cross-referencing information from previous theories and studies related to literacy in madrasah.

#### **RESULTS AND DISCUSSION**

The research results show that improving learning outcomes through an integrated literacy approach in madrasah is as follows :

<sup>&</sup>lt;sup>10</sup> Tine Köhler, "Multilevel Qualitative Research: Insights from Practice," *European Management Journal*, no. March (2024), https://doi.org/10.1016/j.emj.2024.03.011.

#### Literacy Integration in the Curriculum

The integration of literacy into the curriculum is proposed to enhance learning outcomes in madrasah. However, further evidence and data are needed to substantiate this claim. Ahmad Mirza stated, "MTsN 4 Banyuwangi is a Tsanawiyah madrasah in Banyuwangi committed to continuously improving the quality of education. Recognizing that literacy is critical to this improvement, the school integrates literacy into its curriculum, not only focusing on reading and writing but also on fostering students' ability to understand, critique, and use information effectively. This commitment is reflected in the school's achievements, such as improved student performance, numerous academic awards, and a deeper understanding of both religious and general subjects." Alfin Zamzama added, "MTsN 4 Banyuwangi integrates literacy into the curriculum in various ways. First, we ensure that all subjects have a literacy component. For example, in mathematics lessons, students learn about numbers and read and understand word problems. In science lessons, they read scientific articles and do simple research. Second, we hold special programs such as the "School Literacy Movement", where students are encouraged to read books every day and discuss the books they read in groups. We also have a complete library with various types of books to support this program."

Moreover, Danisha Alwani as teacher explained that "MTsN 4 Banyuwangi provides special teacher training. We hold workshops and seminars on literacy teaching methods. Teachers are trained to integrate literacy in every subject and use various effective teaching strategies. Apart from that, we also hold regular meetings to share experiences and best strategies among teachers. Student response was very positive. They become more active in reading and discussing. We saw improvements in their reading ability and comprehension. Students are also more critical and creative in responding to lesson material. The results are increased academic grades and active participation in various literacy activities."

The informant's statement above shows that at MTsN 4 Banyuwangi, integrating literacy in the curriculum is a commitment and a deeply integrated strategy to improve the quality of education. By organizing various programs such as the "School Literacy Movement" and involving teachers in special training, this school has created a learning environment that promotes deep, critical and creative understanding of subject matter. The positive impact is reflected in improving students' academic scores, their active participation in literacy activities, and their ability to utilize information effectively.



Literacy Integration in the Curriculum

Figure 1. Integration of literacy in the curriculum

Figure 1 shows that the integration of literacy in the curriculum is built through the development of literacy skills, the use of literacy resources, Collaboration between subjects, and technology in literacy. Developing literacy skills is the main basis, involving improving the ability to read, write, think critically and communicate <sup>11</sup>. Literacy resources, such as books, articles, e-books and digital media, provide wider access for students to deepen their knowledge <sup>12</sup>. Collaboration between subjects also plays an important role in developing integrated projects and interdisciplinary approaches that combine literacy with content from different subject areas <sup>13</sup>. In addition, using technology in literacy is a key element, utilizing learning applications, digital platforms and interactive media to create more interesting and relevant learning experiences. Integrating literacy into the curriculum can help students develop the skills necessary for success in academic and professional environments.

Integrating literacy into the education curriculum is a strategic step to improve student learning outcomes. Literacy, which includes critical reading, writing and thinking, is an important foundation in teaching and learning <sup>14</sup>. By integrating literacy into the curriculum, students learn about the subject matter and develop essential skills for understanding, analyzing, and applying information For example, in science lessons, students can be taught how to read scientific articles and write research reports to understand science concepts and communicate their understanding effectively <sup>15</sup>. This approach also helps students to think critically and creatively, which is very much needed in facing the challenges of the modern world <sup>16</sup>. Additionally, integrating literacy into the curriculum can also increase student involvement in the learning process because they feel more challenged and motivated to learn <sup>17</sup>. Thus, integrating literacy into the curriculum is an important effort to improve the quality of education and overall student learning outcomes.

#### Development of Reading and writing abilities

Developing reading and writing skills aims to improve learning outcomes by strengthening fundamental skills in understanding and expressing information, as stated by Ello Gusti as teacher: " At MTsN 4 Banyuwangi, we recognize that reading and writing

<sup>&</sup>lt;sup>11</sup> S Lorena, "International Journal of Educational Development ' Learning to Read and Write Is to Defend Yourself ' : Exploring Indigenous Perspectives and Reimagining Literacies for Self-Determination in Mexico" 106, no. January (2024), https://doi.org/10.1016/j.ijedudev.2024.102992.

<sup>&</sup>lt;sup>12</sup> Sarah A Chauncey and H Patricia Mckenna, "Computers and Education : Artificial Intelligence A Framework and Exemplars for Ethical and Responsible Use of AI Chatbot Technology to Support Teaching and Learning," *Computers and Education: Artificial Intelligence* 5, no. November (2023): 100182, https://doi.org/10.1016/j.caeai.2023.100182.

<sup>&</sup>lt;sup>13</sup> Susan Gardner et al., "The Journal of Academic Librarianship Ethical Dimensions of Algorithmic Literacy for College Students : Case Studies and Cross-Disciplinary Connections," *The Journal of Academic Librarianship* 50, no. 3 (2024): 102865, https://doi.org/10.1016/j.acalib.2024.102865.

<sup>&</sup>lt;sup>14</sup> Rizkiyah Hasanah, "Quality Improvement in Increasing Public Trust Using the Failure Mode and Effect Analysis (FMEA) Method," *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan* 9, no. 01 (2023): 59–68, https://doi.org/10.32678/tarbawi.v9i01.7982.

<sup>&</sup>lt;sup>15</sup> Candice Howarth, Laurie Parsons, and Harriet Thew, "Effectively Communicating Climate Science beyond Academia : Harnessing the Heterogeneity of Climate Knowledge," *One Earth* 2, no. 4 (2020): 320–24, https://doi.org/10.1016/j.oneear.2020.04.001.

<sup>&</sup>lt;sup>16</sup> Umiarso, Zamroni, and Nurul Hidayati, "Improving Children's Cognitive Intelligence Through Literacy Management," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* 6, no. 3 (2022): 1588–98, https://doi.org/10.31004/obsesi.v6i3.1817.

<sup>&</sup>lt;sup>17</sup> Narinthon Imjai, Somnuk Aujirapongpan, and Zulnaidi Yaacob, "International Journal of Educational Research Open Impact of Logical Thinking Skills and Digital Literacy on Thailand's Generation Z Accounting Students' Internship Effectiveness: Role of Self-Learning Capability," *International Journal of Educational Research Open* 6, no. November 2023 (2024): 100329, https://doi.org/10.1016/j.ijedro.2024.100329.

are fundamental skills essential for academic success and overall student development. This ability lays the foundation for understanding all subjects and helps develop critical and analytical thinking skills. MTsN 4 Banyuwangi develops reading and writing skills through several strategies. First, we integrate reading and writing activities into all subjects. Every teacher must engage students in reading and writing activities relevant to their subject. Second, we have a "Reading Day" program where students are encouraged to read a book of their choice for one hour each week. After that, they are asked to write a summary or reflection about what they read. This helps them develop the ability to understand and express their thoughts in writing." According to Dita Hidayatul, he explained that "Special activities or programs that support literacy development, apart from the "Reading Day" program, we also have regular essay and poetry writing competitions. We hold creative writing workshops led by local writers to provide inspiration and writing techniques to students. We also provide interesting books in the library and encourage students to make use of them." Danisha Alwani said, "Student responses to this literacy program were very positive. They show great interest in reading new books and participating in writing competitions. Many students who were initially less interested in reading are now starting to enjoy this activity. We also see improvements in their writing skills in terms of structure, grammar and creativity. And our teachers play a very important role in supporting this program. They not only assign reading and writing assignments but also guide students. Teachers provide constructive feedback and hold class discussions to discuss students' reading and writing. They also encourage students to read outside the curriculum and write creatively".

The informant's statement above shows that 4 Banyuwangi, developing reading and writing skills is the main focus in improving learning outcomes. They understand that these abilities are an important foundation for a student's academic and life success. By integrating reading and writing activities into all subjects and holding regular "Reading Day" programs and writing competitions, this school actively encourages students to develop the ability to understand and express ideas in writing. Creative writing workshops and support from local teachers are also important in enriching students' literacy experiences. The positive response from students to these programs indicates increased interest and skills in reading and writing among students.

Developing reading and writing skills at MTsN 4 Banyuwangi is a key strategy for improving student learning outcomes. This institution realizes that reading is about knowing words and understanding and analyzing texts critically <sup>18</sup>. Therefore, intensive and extensive reading programs are implemented, including classroom libraries equipped with diverse and interesting books <sup>19</sup>. Students are also invited to participate in essay writing activities, daily journals, and simple research reports to hone their writing skills <sup>20</sup>. Through ongoing teacher guidance and constructive feedback, students learn to

https://doi.org/10.1016/j.lindif.2024.102443.

<sup>&</sup>lt;sup>18</sup> Belinda Mendelowitz and Navan Govender, "Critical Literacies, Imagination and the Affective Turn: Postgraduate Students' Redesigns of Race and Gender in South African Higher Education," *Linguistics and Education* 80, no. February (2024): 101285, https://doi.org/10.1016/j.linged.2024.101285.

<sup>&</sup>lt;sup>19</sup> Amanda E. Clifford et al., "Tender Shoots: Effects of a Preschool Shared Reading and Reminiscing Initiative on Parent-Child Interactions and for Socio-Emotional and Self-Regulation Outcomes after School Entry," *Learning and Individual Differences* 112, no. March (2024): 102443, https://doi.org/10.1016/j.jijadif.2024.102443

<sup>&</sup>lt;sup>20</sup> Choo Mui Cheong, Yaping Liu, and Run Mu, "Characteristics of Students' Task Representation and Its Association with Argumentative Integrated Writing Performance," *Assessing Writing* 60, no. December 2023 (2024): 100845, https://doi.org/10.1016/j.asw.2024.100845.

organize ideas and arguments clearly and logically <sup>21</sup>. Literacy activities are also strengthened by poetry writing and reading competitions, which improve language skills and foster students' self-confidence and creativity <sup>22</sup>. With this approach, MTsN 4 Banyuwangi is committed to creating a learning environment that supports literacy development so that students can achieve higher academic achievements and be ready to face future challenges.

#### Application of Contextual Literacy

The application of contextual literacy aims to improve learning outcomes by linking students' reading, writing and critical thinking skills with relevant real-life contexts. As stated by Alfin Zamzama, "Contextual literacy is the ability to understand and use information relevant to the context of everyday life. This includes the ability to read, write, and think critically in real situations students face. At MTsN 4 Banyuwangi, contextual literacy is very important because it helps students connect lessons with their daily lives to understand better and apply what they learn. We apply contextual literacy in several ways. First, we use learning materials that are relevant to students' lives. For example, in science lessons, we use examples from the environment around Banyuwangi. In Indonesian lessons, students are invited to write about their own experiences. Second, we encourage students to undertake projects based on problems they face in their environment. For example, they could research plastic waste around schools and report their findings. This helps them develop critical thinking and problem-solving skills." According to Ahmad Mirza, he explained that "MTsN 4 Banyuwangi has several special programs. One is the "Learning from the Environment" program, where students can study outside the classroom and directly observe natural or social phenomena around them. We also have "Contextual Literacy Projects", where students work in groups to complete projects that are relevant to their everyday lives. Student response was very positive. They feel more interested and motivated because the material studied relates to their lives. Students also more actively participate in discussions and projects, and they show improvements in critical and analytical thinking skills". Dita Hidayatul stated, "Our teachers support the application of contextual literacy. They are given special training on how to integrate contextual literacy into lessons. Teachers are also given the freedom to develop teaching methods that are creative and relevant to the student's context. Additionally, we hold regular meetings to share experiences and best strategies. We hope that contextual literacy can continue to be improved and have a greater positive impact on student learning outcomes. We want to see all our students become individuals who are critical, creative, and able to apply their knowledge in everyday life".

The informant's statement above shows that in MTsN 4 Banyuwangi, implementing contextual literacy is the main focus in improving student learning outcomes. They integrate students' reading, writing, and critical thinking skills with relevant everyday life contexts. This is done using learning materials appropriate to the local environment, such as examples from around Banyuwangi in science lessons and students' personal experiences in Indonesian language lessons. In addition, students are also encouraged to carry out problem-based projects that solve environmental problems,

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<sup>&</sup>lt;sup>21</sup> Godswill U. Chigbu et al., "Enhancing ESL Students' Academic Achievement in Expository Essay Writing Using Digital Graphic Organisers: A Mixed-Methods Research," *Heliyon* 9, no. 5 (2023): e15589, https://doi.org/10.1016/j.heliyon.2023.e15589.

<sup>&</sup>lt;sup>22</sup> N. G. Davy Tsz Kit et al., "Using Digital Story Writing as a Pedagogy to Develop AI Literacy among Primary Students," *Computers and Education: Artificial Intelligence* 3, no. October 2021 (2022): 100054, https://doi.org/10.1016/j.caeai.2022.100054.

such as research on plastic waste around the school. This approach increases student engagement and develops their ability to think critically and apply knowledge in everyday life.

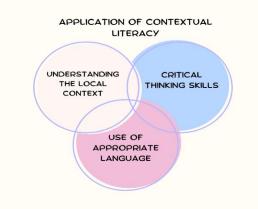


Figure 2. Application of Contextual Literacy

Figure 2 shows that contextual literacy is built through understanding the local context, developing critical thinking skills, and using appropriate language. Understanding the local context involves recognizing and utilizing unique aspects of the environment around students, such as culture, traditions and regional issues, to make the learning material more relevant and meaningful for them <sup>23</sup>. Critical thinking skills are developed through analysis and evaluation of information received, enabling students to memorize facts and understand and apply knowledge in real situations <sup>24</sup>. Using appropriate language is important to ensure that communication between teachers and students is effective, as well as helping students express their ideas clearly and precisely <sup>25</sup>. Combining these three elements makes contextual literacy a holistic and effective approach to improving learning outcomes because students can learn in a more interactive, relevant and meaningful way.

Applying contextual literacy has shown promise in improving learning outcomes at MTsN 4 Banyuwangi, as evidenced by enhanced student engagement, better comprehension of complex subjects, and higher academic performance, including improved test scores and participation in academic competitions.. Contextual literacy integrates learning material with real situations and experiences relevant to students' lives so that they can more easily understand and apply the knowledge they have gained <sup>26</sup>. Through this method, teachers can use various local resources, such as culture,

<sup>&</sup>lt;sup>23</sup> Syahria Anggita Sakti, Suwardi Endraswara, and Arif Rohman, "Revitalizing Local Wisdom within Character Education through Ethnopedagogy Apporach: A Case Study on a Preschool in Yogyakarta," *Heliyon* 10, no. 10 (2024): e31370, https://doi.org/10.1016/j.heliyon.2024.e31370.

<sup>&</sup>lt;sup>24</sup> Yueh Ren Ho et al., "The Distance between the Humanities and Medicine: Building a Critical Thinking Mindset by Interdisciplinary Dialogue through Mind Mapping," *Thinking Skills and Creativity* 50, no. November (2023): 101420, https://doi.org/10.1016/j.tsc.2023.101420.

<sup>&</sup>lt;sup>25</sup> Jill Zarestky et al., "Reflective Writing Supports Metacognition and Self-Regulation in Graduate Computational Science and Engineering," *Computers and Education Open* 3, no. February (2022): 100085, https://doi.org/10.1016/j.caeo.2022.100085.

<sup>&</sup>lt;sup>26</sup> Karin Stolpe and Jonas Hallström, "Artificial Intelligence Literacy for Technology Education," *Computers and Education Open* 6, no. November 2023 (2024): 100159, https://doi.org/10.1016/j.caeo.2024.100159.

environment and daily activities of the surrounding community, as teaching materials <sup>27</sup>. For example, lessons about the environment can be linked to local issues such as forest conservation or waste management in Banyuwangi. In this way, students learn theoretical concepts and see their application and impact in real contexts. This approach makes learning more interesting and meaningful and increases students' motivation to learn. As a result, their understanding of the subject matter becomes deeper, and their critical thinking skills become more honed, ultimately improving learning outcomes at MTsN 4 Banyuwangi.

### Teacher Training in Literacy

Teacher Training in Literacy aims to improve students' teaching abilities and comprehension of reading, writing, and comprehending texts. As stated by Ello Gusti, "Literacy training for teachers is very important because teachers are the spearhead in the learning process. They must have good literacy skills to teach it effectively to students. This training helps teachers understand various literacy teaching strategies and methods that can improve students' reading and writing abilities, as well as critical thinking abilities. At MTsN 4 Banyuwangi, we provide literacy training in several ways. First, we hold workshops and seminars guided by literacy experts and education practitioners. Topics discussed include strategies for teaching reading and writing, using technology in literacy, and integrating literacy into all subjects. Second, we also have a mentoring program where teachers who are more experienced in literacy guide their colleagues. Apart from that, we hold regular group discussions where teachers can share experiences and provide input to each other." Danisha Alwani explained, "One of the special programs or initiatives implemented to support literacy training for teachers is the "Literate Teacher" Program, where every teacher must take literacy training at least twice a year. We also collaborate with universities and educational institutions to organize training and seminars. In addition, we implemented a "Literacy Mentor Program" where trained teachers become mentors to other teachers, helping them apply literacy techniques in the classroom. The teachers found this training useful and gave them new skills they could immediately apply in the classroom. Teachers report that students become more interested and motivated in learning and show improvements in reading and writing skills. Apart from that, teachers also feel more confident in teaching literacy." Alfin Zamzama stated, "The impact of literacy training on learning outcomes at MTsN 4 Banyuwangi is very positive. We saw significant improvements in students' literacy skills, both in reading and writing. Students become more critical and analytical in processing information. Apart from that, their academic scores also improved. Teachers report that students are more actively participating in class discussions and more confident expressing their ideas."

The informant's statement above shows that at MTsN 4 Banyuwangi, literacy training for teachers aims to improve students' teaching abilities and understanding of reading, writing and comprehending texts. This training is supported by various activities such as workshops, seminars by literacy experts, and mentoring programs between teachers. The "Literacy Teacher" program requires each teacher to undergo training at least twice a year, while the "Literacy Mentor Program" utilizes trained teachers as mentors. As a result, there was a significant increase in students' literacy skills and their active participation in the learning process.

<sup>&</sup>lt;sup>27</sup> Milla Kruskopf et al., "Future Teachers' Self-Efficacy in Teaching Practical and Algorithmic ICT Competencies – Does Background Matter?," *Teaching and Teacher Education* 144, no. October 2023 (2024): 104574, https://doi.org/10.1016/j.tate.2024.104574.

Teacher training in literacy has an important role in improving learning outcomes at MTsN 4 Banyuwangi. Through this training, teachers can develop their skills and knowledge about effective teaching strategies in developing students' literacy skills <sup>28</sup>. Literacy includes the ability to read and write and critical understanding and analysis of information <sup>29</sup>. With the right training, teachers can design and implement more interesting and interactive learning methods to motivate students to learn and develop their literacy skills. In addition, literacy training helps teachers understand various types of texts and media that can be used to enrich students' learning experiences <sup>30</sup>. As a result, students become more proficient in understanding subject matter and better prepared to face challenges outside the school environment. Increasing literacy competency through teacher training will significantly improve learning outcomes at MTsN 4 Banyuwangi.

#### Collaboration with the Community

Collaboration with the community can be a very effective strategy for improving learning outcomes. Ahmad Mirza said, "Collaboration with the community is very important because the community is an integral part of student life. Involving the community in the educational process can provide a richer and more relevant learning experience. Communities can provide resources, expertise, and different perspectives that support learning in schools. At MTsN 4 Banyuwangi, we collaborate with the community in several ways. First, we invite community members to participate in school activities such as seminars, workshops and panel discussions. For example, we often invite practitioners and professionals from various fields to provide insight and inspiration to students." Second, we partner with local organizations and NGOs to provide educational programs. For example, we work with local libraries to provide access to books and additional learning resources.

We also collaborate with the environmental community to carry out projects related to nature conservation. Danisha Alwani added, "Special programs involving the community to support learning at MTsN 4 Banyuwangi, one of which is the "Literacy Friends" Program where community members, including students' parents, are involved in reading together at school. We also have a "Learn from the Experts" Program where professionals from various fields give guest lectures and share their experiences. In addition, we conduct a "Community Project" Program where students work with the community to complete useful social projects." Therefore, Dita Hidayatul said, "The impact of Collaboration with the community on learning outcomes at MTsN 4 Banyuwangi is very positive. We saw an increase in student engagement and motivation. They become more active in learning and show improvements in academic results. Students also develop better social skills and critical thinking skills. Collaboration with the community helps them understand the relevance and practical application of what

<sup>&</sup>lt;sup>28</sup> Maria Luisa Schmitz et al., "Why Do Some Teachers Teach Media Literacy While Others Do Not? Exploring Predictors along the 'Will, Skill, Tool, Pedagogy' Model," *Computers in Human Behavior* 151, no. November 2023 (2024): 108004, https://doi.org/10.1016/j.chb.2023.108004.

<sup>&</sup>lt;sup>29</sup> Siu Cheung Kong, Man Yin William Cheung, and Olson Tsang, "Developing an Artificial Intelligence Literacy Framework: Evaluation of a Literacy Course for Senior Secondary Students Using a Project-Based Learning Approach," *Computers and Education: Artificial Intelligence* 6, no. November 2023 (2024): 100214, https://doi.org/10.1016/j.caeai.2024.100214.

<sup>&</sup>lt;sup>30</sup> Anastasia Olga (Olnancy) Tzirides et al., "Combining Human and Artificial Intelligence for Enhanced Al Literacy in Higher Education," *Computers and Education Open* 6, no. February (2024): 100184, https://doi.org/10.1016/j.caeo.2024.100184.

they learn at school. We hope Collaboration with the community can continue to improve and become an integral part of our educational program."

The informant's statement above shows that MTsN 4 Banyuwangi, Collaboration with the community is the main strategy for improving learning outcomes. The importance of involving communities in education to provide richer and more relevant learning experiences. They invite community members to activities such as seminars and workshops, collaborate with local organizations for educational programs, and run joint social projects. Programs such as "Literacy Friends" and "Learning from Experts" actively involve communities in supporting school learning. As a result, this Collaboration increases student engagement and motivation and develops social and critical thinking skills.

Collaboration with the community is a strategic step that can improve learning outcomes at MTsN 4 Banyuwangi. Schools can create a more comprehensive and supportive learning environment by involving various parties such as parents, community leaders and local organizations <sup>31</sup>. Parents, for example, can play an active role in supervising and assisting their children's learning process at home, while community leaders and regional organizations can organize mentoring programs or workshops that are relevant to the curriculum <sup>32</sup>. Additionally, the community can provide support through resources or facilities the school may not have. Through this Collaboration, students get wider and more varied learning opportunities and are motivated to achieve higher achievements <sup>33</sup>. Close relationships between schools and communities can also create a sense of shared responsibility for educational success to achieve the goal of improving learning outcomes more effectively.

#### CONCLUSION

Improving learning outcomes through an integrated literacy approach in madrasah highlights the importance of literacy integration in Islamic education. This research suggests integrating literacy into religious and general studies can enhance students' comprehension, critical thinking, and learning outcomes. By incorporating reading, writing, speaking, and listening skills into the curriculum, madrasahs can create a more holistic and comprehensive learning environment, helping students to understand religious teachings better while broadening their insights into general science. This approach also fosters interdisciplinary collaboration, encouraging students to see connections between different fields of study and enriching their perspective on spiritual values in everyday life. However, the study acknowledges its limitations, particularly the need for more extensive data collection to demonstrate the statistical significance of the observed improvements. Future research should focus on gathering more comprehensive data to substantiate these findings and explore additional variables that may influence the effectiveness of an integrated literacy approach. By addressing these limitations, subsequent studies can provide more substantial evidence to support

https://doi.org/10.1016/j.heliyon.2024.e30769.

<sup>&</sup>lt;sup>33</sup> Paramita Sinha et al., "Assessing Community Vulnerability to Extreme Events in the Presence of Contaminated Sites and Waste Management Facilities: An Indicator Approach," *Urban Climate* 53, no. December 2023 (2024): 101800, https://doi.org/10.1016/j.uclim.2023.101800.



<sup>&</sup>lt;sup>31</sup> Jacqueline Maloney et al., "Title: Supporting Adolescent Well-Being at School: Integrating Transformative Social and Emotional Learning and Trauma-Informed Education," *Social and Emotional Learning: Research, Practice, and Policy* 4, no. May (2024): 100044, https://doi.org/10.1016/j.sel.2024.100044.

<sup>&</sup>lt;sup>32</sup> Mohammod Moninoor Roshid and Md Zulfeqar Haider, "Teaching 21st-Century Skills in Rural Secondary Schools: From Theory to Practice," *Heliyon* 10, no. 9 (2024): e30769,

adopting such educational strategies in madrasahs, ultimately contributing to the development of well-rounded graduates prepared to face global challenges in various scientific fields.

# REFERENCES

- Carroll, Alexander J., and Joshua Borycz. "Integrating Large Language Models and Generative Artificial Intelligence Tools into Information Literacy Instruction." *Journal of Academic Librarianship* 50, no. 4 (2024): 102899. https://doi.org/10.1016/j.acalib.2024.102899.
- Chauncey, Sarah A, and H Patricia Mckenna. "Computers and Education : Artificial Intelligence A Framework and Exemplars for Ethical and Responsible Use of AI Chatbot Technology to Support Teaching and Learning." *Computers and Education: Artificial Intelligence* 5, no. November (2023): 100182. https://doi.org/10.1016/j.caeai.2023.100182.
- Cheong, Choo Mui, Yaping Liu, and Run Mu. "Characteristics of Students' Task Representation and Its Association with Argumentative Integrated Writing Performance." *Assessing Writing* 60, no. December 2023 (2024): 100845. https://doi.org/10.1016/j.asw.2024.100845.
- Chigbu, Godswill U., Ngozi U. Emelogu, Cajetan I. Egbe, Ngozi G. Okoyeukwu, Kingsley O. Eze, Chidinma K. Nwafor, Chioma P. Patrick, Okon E. Okon, Philomina A. Agbo, and Frederick A. Okwo. "Enhancing ESL Students' Academic Achievement in Expository Essay Writing Using Digital Graphic Organisers: A Mixed-Methods Research." *Heliyon* 9, no. 5 (2023): e15589. https://doi.org/10.1016/j.heliyon.2023.e15589.
- Clifford, Amanda E., Elizabeth Schaughency, Shika Das, Jessica Riordan, Jane L.D. Carroll, and Elaine Reese. "Tender Shoots: Effects of a Preschool Shared Reading and Reminiscing Initiative on Parent-Child Interactions and for Socio-Emotional and Self-Regulation Outcomes after School Entry." *Learning and Individual Differences* 112, no. March (2024): 102443. https://doi.org/10.1016/j.lindif.2024.102443.
- Davy Tsz Kit, N. G., Wanying Luo, Helen Man Yi Chan, and Samuel Kai Wah Chu. "Using Digital Story Writing as a Pedagogy to Develop AI Literacy among Primary Students." *Computers and Education: Artificial Intelligence* 3, no. October 2021 (2022): 100054. https://doi.org/10.1016/j.caeai.2022.100054.
- Ding, Ai-Chu Elisha, Lehong Shi, Haotian Yang, and Ikseon Choi. "Enhancing Teacher AI Literacy and Integration through Different Types of Cases in Teacher Professional Development." *Computers and Education Open* 6, no. March (2024): 100178. https://doi.org/10.1016/j.caeo.2024.100178.
- Gardner, Susan, Shalini Ramachandran, Elisa Acosta, and Sheree Fu. "The Journal of Academic Librarianship Ethical Dimensions of Algorithmic Literacy for College Students : Case Studies and Cross-Disciplinary Connections." *The Journal of Academic Librarianship* 50, no. 3 (2024): 102865. https://doi.org/10.1016/j.acalib.2024.102865.
- Hasanah, Rizkiyah. "Quality Improvement in Increasing Public Trust Using the Failure Mode and Effect Analysis (FMEA) Method." *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan* 9, no. 01 (2023): 59–68. https://doi.org/10.32678/tarbawi.v9i01.7982.
- Ho, Yueh Ren, Bao Yu Chen, Chien Ming Li, and Edward Gao Yi Chai. "The Distance between the Humanities and Medicine: Building a Critical Thinking Mindset by Interdisciplinary Dialogue through Mind Mapping." *Thinking Skills and Creativity* 50, no. November (2023): 101420. https://doi.org/10.1016/j.tsc.2023.101420.

- Howarth, Candice, Laurie Parsons, and Harriet Thew. "Effectively Communicating Climate Science beyond Academia: Harnessing the Heterogeneity of Climate Knowledge." One Earth 2, no. 4 (2020): 320–24. https://doi.org/10.1016/j.oneear.2020.04.001.
- Imjai, Narinthon, Somnuk Aujirapongpan, and Zulnaidi Yaacob. "International Journal of Educational Research Open Impact of Logical Thinking Skills and Digital Literacy on Thailand 's Generation Z Accounting Students 'Internship Effectiveness: Role of Self-Learning Capability." *International Journal of Educational Research Open* 6, no. November 2023 (2024): 100329. https://doi.org/10.1016/j.ijedro.2024.100329.
- Köhler, Tine. "Multilevel Qualitative Research: Insights from Practice." European<br/>Management Journal, no. March (2024).<br/>https://doi.org/10.1016/j.emj.2024.03.011.
- Komarudin, Komarudin, and Suherman Suherman. "Heliyon The RMS Teaching Model with Brainstorming Technique and Student Digital Literacy as Predictors of Mathematical Literacy" 10, no. June 2023 (2024). https://doi.org/10.1016/j.heliyon.2024.e33877.
- Kong, Siu Cheung, Man Yin William Cheung, and Olson Tsang. "Developing an Artificial Intelligence Literacy Framework: Evaluation of a Literacy Course for Senior Secondary Students Using a Project-Based Learning Approach." *Computers and Education: Artificial Intelligence* 6, no. November 2023 (2024): 100214. https://doi.org/10.1016/j.caeai.2024.100214.
- Kruskopf, Milla, Rekar Abdulhamed, Mette Ranta, Heidi Lammassaari, and Kirsti Lonka. "Future Teachers' Self-Efficacy in Teaching Practical and Algorithmic ICT Competencies – Does Background Matter?" *Teaching and Teacher Education* 144, no. October 2023 (2024): 104574. https://doi.org/10.1016/j.tate.2024.104574.
- Law, Jing Wei, Chun Teck Lye, and Tuan Hock Ng. "Can Environmental Literacy and Integrated Behavioral Factors Encourage Green Practices at Home? Evidence from Malaysia." *Cleaner and Responsible Consumption* 10, no. August (2023): 100134. https://doi.org/10.1016/j.clrc.2023.100134.
- Lorena, S. "International Journal of Educational Development ' Learning to Read and Write Is to Defend Yourself ': Exploring Indigenous Perspectives and Reimagining Literacies for Self-Determination in Mexico" 106, no. January (2024). https://doi.org/10.1016/j.ijedudev.2024.102992.
- Maloney, Jacqueline, Jenna Whitehead, David Long, Julia Kaufmann, Eva Oberle, Kimberly A. Schonert-Reichl, Michelle Cianfrone, Alexander Gist, and Hasina Samji. "Title: Supporting Adolescent Well-Being at School: Integrating Transformative Social and Emotional Learning and Trauma-Informed Education." *Social and Emotional Learning: Research, Practice, and Policy* 4, no. May (2024): 100044. https://doi.org/10.1016/j.sel.2024.100044.
- Mendelowitz, Belinda, and Navan Govender. "Critical Literacies, Imagination and the Affective Turn: Postgraduate Students' Redesigns of Race and Gender in South African Higher Education." *Linguistics and Education* 80, no. February (2024): 101285. https://doi.org/10.1016/j.linged.2024.101285.
- Muthmainnah, Anti, Nurul Nisa, Riswati Ashifa, Dinie Anggraeni Dewi, and Yayang Furi Furnamasari. "Meningkatkan Hasil Pembelajaran Pendidikan Kewarganegaraan Menggunakan Media Powtoon Selama Pembelajaran Jarak Jauh Di Sekolah Dasar." *Jurnal Basicedu* 5, no. 6 (2021): 5159–68. https://doi.org/10.31004/basicedu.v5i6.1595.

Pinski, Marc, and Alexander Benlian. "AI Literacy for Users - A Comprehensive Review



and Future Research Directions of Learning Methods, Components, and Effects." *Computers in Human Behavior: Artificial Humans* 2, no. 1 (2024): 100062. https://doi.org/10.1016/j.chbah.2024.100062.

- Roshid, Mohammod Moninoor, and Md Zulfeqar Haider. "Teaching 21st-Century Skills in Rural Secondary Schools: From Theory to Practice." *Heliyon* 10, no. 9 (2024): e30769. https://doi.org/10.1016/j.heliyon.2024.e30769.
- Roter, Debra L., Marielle Bugayong, Chenery Lowe, Robert L. Joyner, Anna Maria Howard, Jennifer Wenzel, and Adrian S. Dobs. "Online Communication Skill Training of Patients with Cancer: A Test of the Behavioral Intention Predictive Framework for Communication Skills." *PEC Innovation* 4, no. November 2023 (2024): 100291. https://doi.org/10.1016/j.pecinn.2024.100291.
- Sakti, Syahria Anggita, Suwardi Endraswara, and Arif Rohman. "Revitalizing Local Wisdom within Character Education through Ethnopedagogy Apporach: A Case Study on a Preschool in Yogyakarta." *Heliyon* 10, no. 10 (2024): e31370. https://doi.org/10.1016/j.heliyon.2024.e31370.
- Schmitz, Maria Luisa, Tessa Consoli, Chiara Antonietti, Alberto Cattaneo, Philipp Gonon, and Dominik Petko. "Why Do Some Teachers Teach Media Literacy While Others Do Not? Exploring Predictors along the 'Will, Skill, Tool, Pedagogy' Model." *Computers in Human Behavior* 151, no. November 2023 (2024): 108004. https://doi.org/10.1016/j.chb.2023.108004.
- Sinha, Paramita, Susan Julius, Meridith Fry, Robert Truesdale, James Cajka, Michele Eddy, Prakash Doraiswamy, and Donna Womack. "Assessing Community Vulnerability to Extreme Events in the Presence of Contaminated Sites and Waste Management Facilities: An Indicator Approach." Urban Climate 53, no. December 2023 (2024): 101800. https://doi.org/10.1016/j.uclim.2023.101800.
- Stolpe, Karin, and Jonas Hallström. "Artificial Intelligence Literacy for Technology Education." *Computers and Education Open* 6, no. November 2023 (2024): 100159. https://doi.org/10.1016/j.caeo.2024.100159.
- Tzirides, Anastasia Olga (Olnancy), Gabriela Zapata, Nikoleta Polyxeni Kastania, Akash K. Saini, Vania Castro, Sakinah A. Ismael, Yu-ling You, et al. "Combining Human and Artificial Intelligence for Enhanced AI Literacy in Higher Education." *Computers and Education Open* 6, no. February (2024): 100184. https://doi.org/10.1016/j.caeo.2024.100184.
- Umiarso, Zamroni, and Nurul Hidayati. "Improving Children ' s Cognitive Intelligence Through Literacy Management." *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* 6, no. 3 (2022): 1588–98. https://doi.org/10.31004/obsesi.v6i3.1817.
- Zarestky, Jill, Michelle Bigler, Mollie Brazile, Tobin Lopes, and Wolfgang Bangerth. "Reflective Writing Supports Metacognition and Self-Regulation in Graduate Computational Science and Engineering." *Computers and Education Open* 3, no. February (2022): 100085. https://doi.org/10.1016/j.caeo.2022.100085.
- Zheng, Yunxiang, Junyi Zhang, Yumeng Li, Xiaomin Wu, Ruofei Ding, Xianfei Luo, Panpan Liu, and Jingxiu Huang. "Effects of Digital Game-Based Learning on Students' Digital Etiquette Literacy, Learning Motivations, and Engagement." *Heliyon* 10, no. 1 (2024): e23490. https://doi.org/10.1016/j.heliyon.2023.e23490.