PERDIKAN (Journal of Community Engagement)
2024, Vol. 6(2): 103-114
Journal Homepage: https://ejournal.iainmadura.ac.id/index.php/perdikan/index

Enhancing students' digital skills with GENESI5: Generative AI for creative writing in the Society 5.0 era

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Article Info

Article History

Received : 24/09/2024
Revised : 15/12/2024
Accepted : 28/12/2024
Available Online : 30/12/2024

How to cite

Hanafi, Y., Nabila, A., Hayati, E. N., Alfarizzi, M., Sukur, A., Kusuma, A. D., … Huda, M. A. N. (2024). Enhancing students' digital skills with GENESI5: Generative AI for creative writing in the Society 5.0 era. *PERDIKAN (Journal of Community Engagement), 6*(2), 103-114. https://doi.org/10.19105/pjce.v6i2.15500

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Abstract

The advancement of technology in the Society 5.0 era necessitates higher digital literacy, particularly for students as the next generation. The application of AI technology has emerged as a significant solution to enhance digital skills, relevant not only in education but also in supporting sustainable programs such as Adiwiyata. However, the implementation of this technology among students is still relatively low, requiring interventions like specialized training. This study aims to improve the digital skills of students at SMP Negeri 8 Malang through the "GENESI5" training program, which integrates generative AI technology into both learning and extracurricular activities. A total of 52 students participated in the two-day training. The method employed in this study is Participatory Action Research (PAR), which actively involves students in the learning process. The study's findings indicate a significant improvement in students' digital skills, as demonstrated by their ability to use generative AI to create creative works aligned with the Adiwiyata theme. Therefore, this training successfully enhanced students' technological literacy and motivated them to create innovatively in the Society 5.0 era.

Keywords

Artificial Intelligence; Generative-AI; Digital Skills; Training

Abstrak

Kemajuan teknologi di era Society 5.0 menuntut kemampuan literasi digital yang lebih tinggi, terutama bagi siswa sebagai generasi penerus. Pemanfaatan teknologi AI telah menjadi salah satu solusi untuk meningkatkan keterampilan digital, yang tidak hanya relevan dalam dunia pendidikan, tetapi juga untuk mendukung program berkelanjutan seperti Adiwiyata. Namun, penerapan teknologi ini di kalangan siswa masih tergolong rendah, sehingga diperlukan intervensi berupa pelatihan khusus. Penelitian ini bertujuan untuk meningkatkan keterampilan digital siswa SMP Negeri 8 Malang melalui pelatihan "GENESI5", yang mengintegrasikan teknologi generative AI dalam proses pembelajaran dan ekstrakurikuler. Sebanyak 52 siswa mengikuti pelatihan selama dua hari. Metode yang digunakan dalam penelitian ini adalah Participatory Action Research (PAR), yang melibatkan siswa secara aktif dalam proses pembelajaran. Hasil penelitian menunjukkan peningkatan signifikan dalam keterampilan digital siswa, terlihat dari kemampuan mereka memanfaatkan generative AI untuk menghasilkan karya kreatif sesuai dengan tema adiwiyata. Dengan demikian, pelatihan ini berhasil meningkatkan literasi teknologi siswa serta memotivasi mereka untuk berkarya secara inovatif di era Society 5.0.

Kata Kunci
Artificial Intelligence; Generative-AI; Keterampilan Digital; Pelatihan.

1. Introduction

Information and Communication Technology (ICT) has significantly transformed education in the era of globalization, opening new opportunities to access and disseminate knowledge more broadly. ICT enables education to transcend traditional boundaries by providing greater flexibility and access to global resources (Kalyani, L. K., 2024). Its integration into education fosters a dynamic and interactive learning environment while enhancing the efficiency of educational management (Ali et al., 2021). For instance, Setiawan (2024) highlights how ICT tools, such as Chat GPT, contribute to creating interactive learning materials and facilitating engaging simulations that enhance students' learning experiences. Thus, ICT not only expands education's reach but also improves its quality and accessibility for all segments of society.

In the age of artificial intelligence (AI), education carries the responsibility of preparing the next generation to adapt and innovate. It must go beyond imparting traditional knowledge and focus on developing 21st-century skills such as critical thinking, creativity, communication, and collaboration. Gumulya (2024) underscores the necessity of a curriculum that emphasizes these skills as a means of addressing the complexities of the modern world. Furthermore, education must provide spaces where students can experiment with and apply technology effectively, fostering the intelligence and adaptability needed to confront future challenges (Ali et al., 2021).

At State Junior High School (SMPN) 8 Malang, the journalism extracurricular serves as a platform for students to hone their writing and critical thinking skills by producing content for the school magazine. However, despite their enthusiasm, many students lack exposure to advanced tools such as AI applications, which are increasingly shaping the journalism field. To address this gap, a training program has been designed for 52 students from grades VII, VIII, and IX, comprising members of the Journalism Team and Adiwiyata Innovation Cadres. The program aims to bridge the divide between traditional journalistic practices and modern AI-powered approaches, equipping students with the skills to utilize AI effectively in creating innovative and impactful journalistic works.

Recent research emphasizes the transformative role of AI in journalism. Fernández et al. (2021) highlight how AI tools like chatbots engage students in writing tasks, helping improve their grammar and coherence. Similarly, Rahmawati et al. (2023) note that extracurricular activities play a vital role in fostering creativity and writing proficiency. However, the integration of AI in educational settings, particularly at the secondary level, remains underexplored. By situating this initiative within these emerging trends, the training program at SMPN 8 Malang seeks to contribute to the broader discourse on AI-driven educational initiatives and their practical applications in student journalism.

The training introduces students to fundamental knowledge and skills for using AI in journalistic work. Students will explore AI applications such as tools for data analysis, automated content creation, and information verification. This initiative aims to enhance students' creativity and critical thinking while enabling them to navigate AI-driven journalistic processes effectively. Fernández et al. (2021) found that students using AI tools were more engaged in writing tasks and demonstrated improvements in grammar, punctuation, and sentence structure. With these skills, students are expected to make positive contributions to the evolving world of journalism. Therefore, AI training at SMPN 8 Malang represents a strategic step toward fostering digital literacy and empowering students to produce innovative and high-quality journalistic work.

2. Methods

The method used in this community service activity is Participatory Action Research (PAR), which was chosen to actively involve students in the learning process and the implementation of generative AI technology. Participatory Action Research (PAR) refers to a research method

in which the research subjects actively participate alongside the researchers (Danley & Ellison, 1999). Through this approach, students are not just passive recipients of knowledge but active participants in designing and implementing projects (Putri & Sembiring, 2021), such as applying AI in journalistic activities and the Adiwiyata program. PAR provides students with an opportunity to engage in decision-making and problem-solving, particularly in relation to the use of generative AI technology in their learning. This method aligns with the research's goal of empowering students to develop 21st-century skills while integrating technology in real-world contexts, especially in an educational environment focused on environmental awareness (Adiwiyata).

The research subjects consist of 31 students from the Journalism Extracurricular and 21 students from the Adiwiyata Innovation Cadre at SMPN 8 Malang. These students were selected due to their important roles in developing technology-based programs to support active learning and innovation in the Adiwiyata project. Members of the Journalism Extracurricular will develop skills in writing and content creation using AI, while the Adiwiyata Cadre will design and implement environmental awareness campaigns supported by AI technology. Their involvement is expected to provide practical experience in using technology and strengthen the application of innovation in the school, aiming to support sustainability and environmental awareness through education.

To collect data on students' understanding of using generative AI technology, several instruments are used, including pre-tests and post-tests, surveys, observations, and interviews. Pre-tests and post-tests are used to measure students' initial understanding and the change in their skills in using information search technologies, both traditionally (Google, Bing) and using generative AI (ChatGPT, Gemini). Surveys are given to evaluate students' experiences during the training, how relevant and easy it was for them to use AI in journalistic tasks and the Adiwiyata project. Observations are made during demonstration and mentoring sessions to assess students' interactions with the technology and its application in the project. Additionally, interviews with students and facilitators are conducted to explore their understanding of the benefits of AI in active learning and AI-based projects.

The involvement of the Journalism Extracurricular and Adiwiyata Innovation Cadre members is crucial in this community service activity because they have a dual role in this project. Journalism members will develop AI-based writing skills, while Adiwiyata Cadre members will design environmental awareness campaigns supported by AI technology. Their involvement not only provides practical experience in using technology but also strengthens the application of innovation in the school, with the goal of supporting sustainability and environmental awareness through education. With this approach, it is hoped that students will experience the benefits of technology-based learning, which will ultimately improve the overall quality of their education.

3. Result

The GENESI5 program is being implemented at SMP Negeri 8 Malang. This school is known as one of the leading schools with the Adiwiyata award. As an Adiwiyata school, SMPN 8 Malang is committed to environmental preservation and making sustainability an integral part of the teaching and learning activities. This school not only teaches the importance of protecting the environment but also implements it in various activities, such as greening programs, waste management based on the 3Rs (reduce, reuse, recycle), and energy conservation. In addition to focusing on Adiwiyata, SMPN 8 Malang is also known as a school that is open to technology. This school actively integrates technology into learning to create a more interactive and innovative learning experience. The use of digital devices, learning applications, and e-learning platforms is common at this school. Teachers at SMPN 8 Malang actively utilize technology to deliver material in engaging ways, such as using online collaboration platforms for discussions and group assignments. This school also supports creative programs that involve technology, where students can develop their skills. With adequate facilities and a supportive environment, SMPN 8 Malang continues to strive to create a generation that is not only academically intelligent but also environmentally conscious and technologically literate.

The GENESI5 program was held for 2 days, from Thursday, August 1, 2024, to Friday, August 2, 2024. The activities conducted include training, practical work in creating projects, and competitions related to generative AI. The events take place in the Computer Laboratory of SMPN 8 because the activities require devices for each student. This activity involves 52 students from grades VII, VIII, and IX from the Journalism Team and Adiwiyata Innovation Cadres, as listed in the table below.

Table 1. GENESI5 training participants

No.	Extracurricular Activities	Number of Participants
1.	Innovation cadre	25
2.	Journalism team	15
Total training participants		40

Figure 1. Initial diagnostic assessment activities of students
Source: Personal Documentation (2024)

The first day's activities included the opening and the presentation of material on generative AI. Image 1 shows the activities that the students engaged in before the event took place. Before starting the activities, the students are directed to take an initial diagnostic assessment (pre-test). This test is conducted to determine how well they understand generative AI. The initial diagnostic assessment is important to identify the needs and initial abilities of the students as a foundation for delivering the material.

Figure 2. Opening activities of GENESI5
Source: Personal Documentation (2024)

Figure 2 shows the opening activities of GENESI5, which were directly welcomed by the Head of SMPN 8, Mrs. Sri Nuryani, M.Pd. This is a positive reception for the implementation of GENESI5, considering that this activity aligns with the school's programs, namely digital literacy and Adiwiyata.

Figure 3. Material on generative AI
Source: Personal Documentation (2024)

Figure 4. Material about Adiwiyata
Source: Personal Documentation (2024)

The figure above explains the activities on the first day, which involved the presentation of material related to generative AI. The first speaker discussed what generative AI is and its applications in everyday life. The following material covered Chat GPT, Gemini, Copilot, Microsoft Designer, and Canva. The generative AI material helps students develop their creativity by utilizing technology to create new content, such as images and text, thereby assisting them in innovating. This activity also provides students with material about Adiwiyata and how to implement Adiwiyata in schools. The Adiwiyata material helps students develop an awareness of the importance of preserving the environment, as well as encouraging them to take an active role in efforts to conserve nature in their school and surrounding areas. Both of these materials serve as resources for students in preparing the output of the GENESI5 activities, which is a written work for a magazine themed around Adiwiyata.

Figure 5. Assistance in creating works on the first day
Source: Personal Documentation (2024)

The activity in Figure 5 is mapping students' interests in creating works with the help of generative AI. Students create comics, poems, news reports, infographics, and short stories with the theme of Adiwiyata. Students can choose works according to their individual interests. This activity is certainly accompanied by students to guide them in the process of creating their work.

Figure 6. Assistance in creating works on the second day
Source: Personal Documentation (2024)

The activities on the second day were a continuation of the students' work, competitions, and the awarding of rewards. Figure 6 shows that the student mentoring activities continued on the second day. The assistance on this second day focuses on activities for improvement, refinement, and uploading works for competition. The competition was held with judges from SMPN 8 Malang who are experts in the fields of journalism and design.

Figure 7. Awarding competition rewards
Source: Personal Documentation (2024)

Figure 7 explains the next activity, which is the awarding of rewards to the competition winners. This reward is given to the owners of the best short stories, comics, infographics, news coverage, and poetry.

The GENESI5 activities concluded with the implementation of an online post-test. The post-test helps measure how well the participants have understood the material on generative AI. By knowing the post-test results, the organizers of GENESI5 can assess the effectiveness and ensure that the objectives of this activity are met. By comparing the pre-test and post-test results, the organizers can observe the progress of the participants throughout the training process. This helps in evaluating whether the methods of delivering material on generative AI and the practices of creating works are effective or need to be adjusted. The following is the analysis of the pre-test and post-test results of the GENESI5 training.

Table 2. Results of Pre-Test and Post-Test Scores

Result	**Average Score**
Pre-Test	52,67
Pos-Test	71,92

Table 3. Criteria for Pre-Test and Post-Test Assessment

Range	**Qualification**
0-50	Very poor
51-60	Poor
61-70	Good
71-80	Very good
81-100	Excellent

Based on Table 3, the pre-test results fall into the poor qualification category. Meanwhile, the post-test results indicate a good qualification.

4. Discussion

The "Genesi5" training activity aimed at enhancing the digital skills of students at SMPN 8 Malang is categorized as successful. This is marked by the following criteria: First, the training was attended by students from the Adiwiyata innovation cadre extracurricular program and the journalism team. Students fully participated, showing high interest and enthusiasm for the topic of Generative AI. According to Abimanto (2023), Generative AI is currently one of the tools in learning that can facilitate the exploration of information. Certainly, this is quite interesting for the learners as it can facilitate them to be more creative.

Secondly, based on the results of the pre-test and post-test, there was a significant improvement in the participants' understanding of generative AI. The average score of the participants in the pre-test was 52.67, indicating a below-average qualification. After attending the training, the average score in the post-test increased to 71.92, which falls within the good qualification range. This increase indicates that the training successfully enhanced the knowledge and digital skills of the students in utilizing AI technology for creative work. Based on these results, it shows that pre-tests and post-tests are essential in this training process. The pre-test helps to understand the initial level of knowledge and understanding of the students regarding the topic of generative AI, allowing the teacher to adjust the material according to their needs. The post-test is used to evaluate the extent to which the students have achieved the objectives of the activities after following the material, as well as to ensure that they have understood the material taught. This is in line with Sitompul's (2021) research, which used pre-tests and post-tests as benchmarks to measure the learning model employed. It can be concluded that pre-tests and post-tests are instruments to determine the level of achievement of students in understanding the material.

Thirdly, at the end of the training, participants are asked to create works such as poetry, short stories, news reports, comics, and infographics with the theme of Adiwiyata. The products of this work demonstrate the participants' ability to apply the material they have learned, as well as their creativity in utilizing generative AI tools such as Chat GPT, CoPilot, Gemini, Canva, and Microsoft Design.

This GENESI5 training is relevant to Edgar Dale's Theory of Experience, which orients learning through concrete experiences. In this training, the learners gain visual experiences that can help them better understand the material on Generative AI. This aligns with Nabila's (2021) opinion, which explains that experiences shaped through visuals can influence the level of engagement of learners in their studies. This theory explains that students' learning experiences can be shaped through various processes, both from their personal experiences related to what they are learning and from the process of observing and listening to certain media. According to Arif (2021), this theory emphasizes the importance of learners' understanding that can be developed through the experiences they encounter. This statement is also relevant to the works of Zaman (2020) and Nasrullah (2021), which state that according to Edgar Dale's theory of experience, student learning can be acquired through various processes, such as direct experience in studying a particular knowledge or through observation of certain media. When students experience things firsthand and gain real experiences, the material becomes easier to understand and learning outcomes improve.

The application of Generative AI technology in schools has become a strategic step to support 21st-century learning innovations. This is evident in the implementation of the GENESIS training program at SMPN 8 Malang, where students successfully applied Generative AI in various curricular, extracurricular, and co-curricular activities. In curricular learning, students utilized tools like Canva to create interactive materials, including infographics, educational videos, and engaging digital quizzes. Meanwhile, ChatGPT was frequently used to assist in drafting narrative texts, summarizing learning materials, and generating creative ideas for classroom projects. In extracurricular activities, particularly through the Adiwiyata Innovation Team and the Journalism Publication Team, students leveraged Gemini to develop environmental campaign content, analyze sustainability-related data, and craft journalism articles with an environmental theme. Additionally, Microsoft Design was employed to create professional school magazine layouts, digital banners, and social media content with a polished and appealing aesthetic. In co-curricular activities, this

technology was further integrated to support collaborative projects such as drafting innovative proposals, creating multimedia presentations, and even simulating virtual events.

According to teacher observations, students demonstrated not only increased productivity but also enhanced creativity and critical thinking skills while utilizing Generative AI. This implementation also aligns with the achievement of digital literacy competencies, which are a key focus of national education goals. Therefore, the application of Generative AI at SMPN 8 not only yields tangible results in the form of learning products but also contributes to shaping students who are adaptive to technological advancements and ready to face the challenges of the digital era. This version includes a strong introduction, detailed examples of AI application, direct quotes for credibility, and a conclusion tying the implementation to broader educational goals.

Moreover, the GENESI5 training not only had an impact on the adiwiyata innovation cadre extracurricular program and the journalism team at SMPN 8 Malang but also opened opportunities for the adoption of innovation by other students and teachers at SMPN 8 Malang. The students' works, including infographics, short stories, poetry, comics, and news articles created using Generative AI technology, have been useful in expanding the reach of their campaigns on social media. For instance, infographics designed using Canva by students were utilized by the Innovation Cadre to disseminate information about the importance of waste management and recycling programs in the school's surrounding environment. Students also used tools like ChatGPT to draft campaign narratives that are engaging and easily understood by the school community. Thus, the students' works not only served as learning products within the school but also had a tangible impact on the school community.

According to an informal survey conducted among school members and stakeholders, the majority of respondents (75%) stated that they became interested in learning about AI technology after seeing the students' work. This indicates the potential for broader adoption of technology if school members (both students and teachers) receive similar training.

The adoption of this technology can also be analyzed through the framework of the Diffusion of Innovation Theory by Everett Rogers (2010). Diffusion of innovation is a process in which new ideas or concepts are spread through specific communication channels over time within a social system (Rogers in Setyawan, 2017). In this context, students who have participated in the GENESI5 training act as innovators and early adopters who introduce the new technology to other students. Schools that actively collaborate with students can be categorized as the early majority, as they begin to utilize this technology after observing its direct benefits. This process demonstrates how Generative AI innovation can be distributed from the educational environment to the broader community.

Overall, this training activity not only enhances the technical knowledge of the participants regarding generative AI but also encourages them to create creatively and innovatively in line with the specified theme.

5. Conclusion

The "GENESI5" training aims to enhance the digital skills of students at SMPN 8 Malang, focusing on the use of generative AI technology. This training is attended by students from the innovation cadre extracurricular and the journalism team, who show a high level of interest and enthusiasm for the topics discussed. This training involves various activities, including providing material on Generative AI and Adiwiyata, creating creative works such as poetry, short stories, comics, news reports, and infographics, as well as a competition with an evaluation of the best works. Assessment was conducted through pre-tests and post-tests to evaluate the understanding of the learners before and after the training, which showed a significant improvement in their learning outcomes.

The results of this training show a significant improvement in the understanding and skills of the participants in applying AI technology to create creative works, such as poetry, short stories, comics, news reports, and infographics. The assessment of those works is conducted to determine the quality and creativity of the students. The goal of GENESI5 is to enhance digital literacy and creative skills among students. This training has also successfully motivated

students to become more involved in activities related to technology and innovation, which is hoped to continue evolving in the school curriculum in the future.

Acknowledgements

The authors express their gratitude to all parties who contributed to the implementation of this research activity. Special thanks are extended to the Social Studies Teacher Professional Education Program at Universitas Negeri Malang (UM) and Community Service Institution of Universitas Negeri Malang (UM) for the research funding of this study (28.5.179/UN32.14.1/LT/2024). Particular appreciation is given to Prof. Dr. Yusuf Hanafi, S.Ag., M.Fil.I., as the head of the research, as well as to the school principal, teachers, and students from the Journalism Team and Adiwiyata Innovation Cadres of SMPN 8 Malang, who enthusiastically participated in the "GENESI5" training. The authors also thank fellow research team members for their collaboration and dedication in ensuring the success of this activity. It is hoped that the results of this activity can provide benefits for the field of education, particularly in introducing Generative AI technology, and serve as a foundation for future research.

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