| RESEARCH ARTICLE

Development of Multiliteracy-Gemini AI Module to Improve Education Guru Penggerak

Dedi Hernadi[1], Wildan Rizky Mulia[2]✉, Suherli Kusmana[3], Yusida Gloriani[4]
[1,2,3,4] *Swadaya Gunung Jati University, Cirebon, Jawa Barat, Indonesia*
Corresponding Author: Wildan Rizky Mulia, **E-mail**: wildanrizkymulia@gmail.com

| ABSTRACT

The rapid development of digital technology requires teachers, especially Guru Penggerak, to have multiliteracy competencies in utilizing technology as a learning aid. This competency includes the ability to understand, share, and apply various information formats in written, visual, and digital form. However, until now, the development of artificial intelligence (AI)-based training modules that support this competency is still limited. This study aims to design and evaluate the effectiveness of training modules designed to improve the multiliteracy competence of Guru Penggerak in Kuningan City, Indonesia. This research uses the ADDIE process development paradigm - analysis, product design, product development, product implementation, and evaluation. The feasibility level of the training module is determined by the assessment of material experts with an average score of 3.5 in the feasible category, as well as media experts who give an average score of 3.2 in the feasible category. Around 61.26% of survey respondents to the survey of 50 Guru Penggerak stated that it was very feasible based on the results of the feasibility test. Based on the results of the pre and post-tests conducted during the program, the multiliteracy ability of the Guru Penggerak increased quite significantly. Before the test, the average score was 57.44; After the test, the average score was 83.6. Statistical analysis of the paired sample t-test showed that there was a significant difference ($p<0.05$) between the pre-test and post-test scores. Based on the results of this study, this Gemini AI-based training module is feasible and effective in improving the multiliteracy competence of Guru Penggerak in Kuningan City. Recommendations are given for the improvement of modules and advanced training that further supports the improvement of teacher professionalism in the digital era.

| KEYWORDS

Multiliteracy Competencies, Gemini AI, Guru Penggerak

| ARTICLE INFORMATION

1. Introduction

The rapid growth of digital technology has had a major impact on many industries, including education. Teachers, as the spearhead in learning, are required to have adequate competence in utilizing technology as a learning aid. In this context, multiliteracy competence is very important, especially for Guru Penggerak who are expected to be able to become agents of change in their schools and communities. Not only in traditional writing and reading skills, multiliteracy competencies also include the capacity to understand, share, and apply a variety of information formats in written, visual, and digital languages. This digital transformation requires an increase in multiliteracy competencies for educators, especially in mastering and implementing electronic education modules (Yap & Gurney, 2023).

Educators are driven by multiliteracy to use various means of communication in their teaching. To improve the learning process and make it more applicable in students' daily lives, it involves interactive, multimedia, sound, and visual elements. The multiliteracy approach encourages educators to redefine the meaning, essence, and goals of literacy, media, and education as a whole. The literacy required for individuals to actively participate in the workforce and the wider community is more complex today than it was in the past (Gouthro & Holloway, 2019).

Developing multiliteracy skills is an important first step in equipping educators with the tools they need to meet the demands of teaching in the digital age. Teachers are expected not only to be passive consumers of information; They must be

builders of an active learning environment and process. This encourages a more participatory and transformative approach to education. Integrating multimedia and interactive elements, helps teachers develop cross-curricular competencies that combine knowledge, skills, attitudes, values, and ethics, demonstrating a holistic approach to education, and preparing students to actively participate in various aspects of global life. One way that can be done to improve this competency is to develop technology-based training modules.

integrating artificial intelligence (AI) in learning has significant potential to create a more adaptive and interactive learning experience. Workplace technology has evolved from a basic discrete office application to a digital platform connected to elements of automation and AI-based self-learning capabilities embedded in today's digital workplace (Baptista et al., 2020).

Gemini AI, an AI platform that supports learning with various intelligent features, is expected to overcome the challenges of multiliteracy training for teachers. Through Gemini AI-based training modules, Guru Penggerak hopes to improve their competence in understanding and mastering multiliteracy-based educational content more effectively. However, until now, there are still limitations in developing AI-based training modules that can comprehensively support multiliteracy competencies.

This research focuses on the development of a Gemini AI-based multiliteracy competency training module to improve the mastery of educational Guru Penggerak materials. This study aims to design and evaluate the effectiveness of training modules designed to improve the multiliteracy competence of Guru Penggerak in Kuningan City, Indonesia. Using a Research and Development (R&D) approach, this research is expected to produce training modules that are interesting, relevant, and by the needs of Guru Penggerak in facing educational challenges in the 21st century.

2. Literature Review
2.1 Multiliteracy Competencies

The idea of multiliteracy, first introduced by the New London Group in 1990, implies the ability of individuals to master various forms of literacy and apply them in a variety of situations. Multiliteracy includes various modes of meaning creation (visual, textual, and audio) and takes into account social contexts from local to global environments. This framework prioritizes multimodal understanding and socio-cultural dimensions in learning, including media, visual, information, and technology literacy (Kalantzis & Cope, 2023; Kulju et al., 2018; Eisenmann & Meyer, 2018).

Multiliteracy, an idea first introduced by the New London Group, prepares individuals to be actively involved in a variety of situations, both formal and informal, in the digital age. This skill shows the importance of the ability and desire to continue learning throughout life. The New London Group's comprehensive view of literacy is particularly relevant to the demands of the modern world (Kim, 2023). By expanding the scope of literacy beyond traditional reading and writing skills, multiliteracy prepares learners to participate in a variety of dynamic social and economic contexts (Puteh-Behak & Ismail, 2018).

The emphasis on multimodality and broad social contexts demonstrates the importance of flexibility and adaptability in today's learning. In addition, the integration of media, visual, information, and technology literacy shows a deep understanding of the competency needs needed in the digital era (Nabhan & Hidayat, 2018). This concept is very relevant in preparing individuals to face global challenges, both in their professional and personal lives (Palsa & Mertala, 2019).

Multiliteracy pedagogy not only develops reading and writing skills, but also deepens students' understanding of the social, cultural, and ideological contexts in messages (Mandarani et al., 2024). By covering situational practice, open-ended instruction, critical framing, and the use of modern technology, this approach builds deep and critical literacy, as well as prepares students for real-world communication challenges (Mertala, 2021).

2.2 Gemini AI

Gemini AI is an artificial intelligence platform designed to support the learning process through various integrated intelligent features. This platform is expected to be able to be a solution to the challenges faced by teachers in developing multiliteracy skills. In the context of education, multiliteracy is not only limited to reading and writing skills, but also includes digital literacy, data literacy, critical literacy, and a broader understanding of media and technology (Masalkhi et al., 2024). With its AI technology, Gemini AI can help teachers understand and apply these concepts in the classroom, through data analysis tools, multimedia-based educational content, and personalized teaching methods tailored to the needs of each student.

Gemini AI provides deeper insights into student progress through accurate data-driven analysis, assists teachers in identifying students' specific needs, and provides recommendations that can improve learning effectiveness (Lang et al., 2024). With the various conveniences offered, Gemini AI has the potential to support the development of teachers' competencies, make them better prepared to face educational challenges in the digital era and prepare students to be better prepared to adapt to the needs of an ever-evolving world.

2.3 Guru Penggerak

Guru Penggerak has an important role as an adaptive and innovative learning leader in facing educational challenges in the digital era. As agents of change, Guru Penggerak is not only tasked with teaching but also as an inspiration and facilitator in the development of relevant and contextual learning. In the face of rapid technological developments and the need for multiliteracy skills, Guru Penggerak is required to be able to integrate a variety of literacy skills, such as digital, information, visual, and media

literacy, into the learning process. Through this role, they have the responsibility to create a learning environment that is responsive to changing times and student needs, as well as being an example in utilizing technology to encourage active and critical participation among students (Gustiningsi et al., 2024).

In carrying out their role as learning leaders, Guru Penggerak also needs to develop collaborative competencies with fellow educators, parents, and external parties who support the educational process, such as literacy communities and the technology industry. This collaboration is important to deliver comprehensive and integrated learning, where students can learn from a variety of perspectives and sources. Guru Penggerak must be able to identify and meet the unique learning needs of each student. Additionally, it creates educational opportunities that emphasize students' social, emotional, and character development alongside their academic success. Guru Penggerak must also be careful when choosing and delivering digital learning materials that suit the needs of students. Thus, they can create a safe and conducive digital learning environment for the development of students' digital literacy. Therefore, Guru Penggerak participates in preparing a generation that is not only technologically skilled, but also critical, creative, and empowered in facing challenges (Istiqomah, 2022).

3. Methodology

This research uses the ADDIE process development paradigm - analysis, product design, product development, product implementation, and evaluation (Zulkepli et al., 2024). Therefore, this study takes a research and development (R&D) strategy. This method was chosen because it can be used in multiliteracy competency training and is suitable for creating products in the form of technology-based training modules and applied in multiliteracy competency training.

Figure 1. Research Procedure
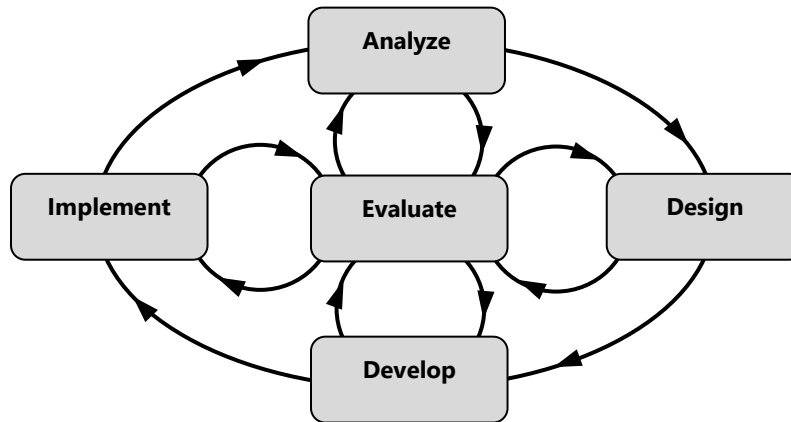
The subject of this study is 50 Guru Penggerak in Kuningan City who are involved in the Guru Penggerak Education program and need to improve multiliteracy competence. The object of the research is the feasibility of a Gemini AI-based multiliteracy competency training module. The technical aspects include the assessment of the module design by media experts, while the pedagogical aspects are assessed by material experts and through field trials with 50 Guru Penggerak. The research will be carried out in stages from August to October 2024 by the development of a Gemini AI-based multiliteracy competency training module. The data analysis technique uses scoring criteria and value conversion guidelines.

This research was carried out through several stages by the ADDIE model, including: 1) Analysis Stage: Identifying the multiliteracy competencies of Guru Penggerak in Kuningan City, as well as the need for the availability of Gemini AI-based multiliteracy competency training modules in improving the mastery of Guru Penggerak educational materials. The survey data was used to understand the multiliteracy skills that need to be improved, as well as the need for Gemini AI-based materials; 2) Design Stage: Collecting information that supports the development of Gemini AI-based multiliteracy competency training modules to improve the mastery of Teacher Guru Penggerak materials includes: a) Designing the design of Gemini AI-based multiliteracy competency training modules; b) Preparation of materials, competency test questions and competency test answer keys; and c) Selection of illustrations, images and photographs. The module is designed to be interactive and adaptive, with AI features that can provide feedback and material adjustments according to the teacher's abilities; 3) Development Stage: Developing training modules in digital format using the Gemini AI platform includes product creation, due diligence by material experts, and media experts, as well as product revisions. This process involves content creation, cover design, materials, illustrations of images and photos, competency test questions and answers to the Gemini AI-based multiliteracy competency test; 4) Implementation Stage: In the implementation stage, conducted a trial to measure the effectiveness of the training module in improving the multiliteracy competence of the Guru Penggerak and get direct input on the advantages and disadvantages of the module; dan 5) Evaluation Stage: To find out the positive sides and aspects that need to be improved from the training module,

material experts, media experts, and Guru Penggerak will study in depth the data from the feasibility test at the evaluation stage. The results of this analysis will be the basis for making improvements and enhancements to the module.

The following are the tools used for data collection in this study: 1) Test (Pre-test and Post-test): Given to see the extent to which the training module succeeded in improving the multiliteracy competence of participants before and after the training. 2) Questionnaire: Used to measure teachers' perception and satisfaction with Gemini AI-based training modules, including aspects of material development, language use, illustration presentation, and module content design; and 3) Interviews: Through semi-structured interviews, researchers flexibly explore the opinions and experiences of the Guru Penggerak regarding various aspects of the module, ranging from design, materials, to their impact. The data analysis methods applied include: 1) Quantitative Analysis: To test the effectiveness of the training module, statistical analysis was carried out using paired t-tests on pre-test and post-test data. This analysis aims to find out how much influence Gemini AI-based modules have on improving participants' multiliteracy competencies; and 2) Qualitative Analysis: Data from the interviews were analyzed by thematic analysis methods to identify the main themes related to the participants' experiences in using the training modules and the qualitative evaluation of the training. By involving the dual perspectives of material experts and media experts, it is hoped that a comprehensive assessment of the quality and relevance of the Gemini AI-based multiliteracy competency training module can be obtained.

4. Results and Discussion
4.1 Results

The ADDIE model was adapted and modified to develop this Gemini AI-based training module, with an emphasis on the integration of artificial intelligence technology in every stage of development. The following are the details of the five stages of development:

a. Analysis Stage

In the analysis stage, the researcher surveyed to identify the multiliteracy competencies of the Guru Penggerak in Kuningan City, as well as the need for the availability of a Gemini AI-based multiliteracy competency training module to improve the mastery of the Guru Penggerak educational materials. Based on the results of a survey of 81 Mobilizer Teachers Batch 3 of Kuningan City, it is known that the Guru Penggerak in Kuningan City has shown good ability in adapting to the digital and information environment that continues to develop. A total of 48 teachers (59.3%) often use various literacy resources (e.g. books, articles, the internet) to improve their mastery of electronic education modules. Additional sources that they use to enrich their understanding of the e-education module include: reference books (69.1%), scientific journal articles (28.4%), research articles (17.3%), e-books (58%), educational websites (61.7%), blogs or educational forums (53.1%), and others (18.5%). 50.6% of Guru Penggerak often use visual content (images, graphics, videos) to fulfill the tasks listed in the e-education module. A total of 69 teachers (85.2%) answered that the type of visual content that is often used is video.

Teachers also stated their ability to use various digital tools and understand the basic concepts of information technology as important skills that support the mastery of multiliteracy competencies. Based on survey data, it is known that 65.4% of Guru Penggerak often use technology, especially in doing learning tasks in electronic education modules. A total of 71 teachers (87.7%) often use internet technology to do tasks in the electronic education module. 71 teachers (87.7%) of Guru Penggerak use Canva's video editing software to work on tasks in e-education modules.

One of the important elements that must be possessed by Guru Penggerak is the ability to assess the reliability and quality of information sources and have ethical awareness of the use of technology and information. Questionnaire data related to search engines that are often used to complete learning tasks in electronic education modules, Google was chosen by 100% of respondents. 6.2% of respondents answered Bing. 17.3% of respondents answered Yahoo, and 9.9% of respondents answered others. Related to the most important skills in analyzing visual content on the internet about mastery of electronic education modules: 71.6% understand visual contexts; 67.9% examined the source of information; 66.7% compare various points of view; 63% rated the credibility of the information; 35.8% identified bias in information; and another 1.2%.

Teachers also can communicate effectively through a variety of media and formats. This ability is an important component of multiliteracy competence. As many as 84% often communicate and collaborate virtually with peers in discussing e-education modules. Regarding the social media platform used to disseminate material content in the e-education module, YouTube was chosen by 91.4% of respondents. 70.4% of respondents answered Instagram. 55.6% of respondents answered Facebook. 46.9% of respondents answered TikTok, 16% of respondents answered Twitter, 3.7% of respondents answered Linkedin and 1.2% of respondents answered others.

Guru Penggerak generally can create original and meaningful digital content as one of the key components of multiliteracy competencies. Questionnaire data related to online learning platforms that are most often used to carry out learning according to the demands of electronic education modules, as many as 58% of respondents answered Google Classroom. 18.5% of respondents answered Rumah Belajar. 7.4% of respondents answered Edmondo. 4.9% of respondents answered Microsoft Teams, 3.7% of respondents answered Scoology, and 50.6% of respondents answered others. Related to the most important skills in creating effective digital content to meet tasks on the e-education module: 75.3% designed attractive visuals; 71.6% used easy-to-understand language; 65.4% wrote clearly and interestingly; 59.3% chose the right platform to distribute content; 39.5% measured the effectiveness of content; and another 7.4%.

The overall survey results revealed that the Guru Penggerak in Kuningan City have successfully demonstrated their expertise in managing changes in the digital environment and utilizing various technological tools to support a more effective teaching and learning process. They routinely use a variety of quality information sources and have developed strong skills in evaluating the credibility of those sources. In addition, they are also able to create original and meaningful digital content, with special attention to visual design and effective communication. However, several challenges remain, such as limited technology facilities in schools and unstable internet connections, which hinder the optimization of the use of technology. The questionnaire data is related to the most frequently faced forms of obstacles in integrating technology in mastery of electronic education modules: 66.7% stated the lack of technology facilities in schools; 60.5% stated an unstable internet connection; 19.8% stated a lack of skills in using technology; 13.6% stated that there is a lack of technology-based learning materials.

Teachers also realize the importance of mastering digital technology and the need for a special handbook to help them work better in electronic modules. Questionnaire data related to the need for a special guidebook for Guru Penggerak to study and do tasks in electronic modules, as many as 71.6% of respondents answered strongly agree. 24.7% of respondents answered yes, and 3.7% of respondents answered doubtfully. The data shows that most of them, namely 58 teachers (71.6%) answered that they strongly agree with the availability of a special guidebook for Guru Penggerak to learn and do tasks in electronic modules. Thus, although their multiliteracy competencies are already strong enough, additional support in the form of adequate technological facilities and more specific guidance is still urgently needed to improve the effectiveness of the use of e-education modules.

b. Design Stage

Data collection is the main goal of this stage to create a Teacher Mover training module that will improve proficiency in Gemini AI-based multiliteracy. The data findings are:

1) Design of Gemini AI-based multiliteracy competency training module

The storyboard contains an overview of Gemini AI-based multiliteracy competencies. which serves as a guide in the preparation of Gemini AI-based multiliteracy competency training modules. In general, the parts of the Gemini AI-based multiliteracy competency training module are as follows: a) the General instructions section, this section contains general instructions for using the Gemini AI-based multiliteracy competency training module; b) the Special instruction section, section contains instructions for each module to understand Gemini AI-based multiliteracy competency material; c) Material section, this section contains Gemini AI-based multiliteracy competency material and examples of its application; d) Evaluation section, this part consists of instructions for working on the Gemini AI-based multiliteracy competency test; e) Literature section, this literature section contains reference sources that are references for researchers to develop Gemini AI-based multiliteracy competency training modules.

2) Making materials, competency test questions, and competency test answer keys.

At this stage, Gemini AI-based multiliteracy competency material is prepared. The basis for the selection of this material is the need for more specific guidelines for studying and working on tasks in the electronic education module. In addition, there is still a lack of development of Gemini AI-based multiliteracy competencies. On the other hand, the material, competency test questions, and answers to the Gemini AI-based multiliteracy competency test in various references are still very limited. To make it easier for Guru Penggerak to learn the material, the material is grouped into each module that is further elaborated. Gemini AI-based multiliteracy competency materials include: a) Module 1 Introduction to Multiliteracy and Artificial Intelligence (AI) Concepts, b) Module 2 Getting to Know the Gemini AI Interface, c) Module 3 Gemini AI Implementation in Learning, d) Module 4 Development of Gemini AI-Based Learning Materials, and 5) Module 5 Developing Gemini AI-Based Digital Teaching Materials.

3) Selection of illustrations, images, and photos

The illustrations of images and photos used in the Gemini AI-based multiliteracy competency training module are downloaded from several sources with the following criteria: a) Illustrations are presented according to the content of the material using various technology tools and platforms; b) Illustrations describing the content/material of the module; c) Illustrations can express the character of the object; d) Illustrations clarify and simplify understanding; and e) The overall illustration is harmonious and attractive.

c. Development Stage

The third stage, known as the development stage, consists of product manufacturing, product feasibility testing by media and material specialists, and product revision. Researchers developed a Gemini AI-based multiliteracy competency training module at this stage. The storyboard created in the previous step serves as the basis for the preparation of all components, including cover design, materials, illustrations, and photos, as well as questions and answers for the Gemini AI-based multiliteracy competency test. Flipbooks, printed materials, and PDF file modules are the final results of the creation of this Gemini AI-based multiliteracy competency training module.

This training module is evaluated by media experts, Guru Penggerak, and material specialists after the feasibility test phase. The ability of modules to facilitate independent learning, the completeness of the necessary materials, the autonomy

of the modules in presenting content, the flexibility of the modules in accommodating various learning styles, and the usability of the modules are the five main focus areas of the evaluation carried out by material experts.

Table 1. Results of Material Expert Assessment

Aspects	Score	Category
Self-Instruction	3,3	Feasible
Self Contained	4	Very Worthy
Stand Alone	3	Feasible
Adaptive	3	Feasible
User Friendly	4	Very Worthy
Average	**3,5**	Feasible

Table 2. Results of Media Expert Assessment

Aspects	Score	Category
Module Size	3	Feasible
Cover Design	3,4	Feasible
Content Design	3,2	Feasible
Average	**3,2**	**Feasible**

Based on these results, this module is declared feasible to improve the multiliteracy competence of Guru Penggerak in improving mastery of electronic education modules.

The findings of the feasibility test obtained from the Guru Penggerak questionnaire include the following: material development, language use, illustration presentation, and module content design. Overall, as many as 61.26% of respondents stated that it was very feasible to be used as a study guide and complete tasks in the electronic education module.

A trial was conducted during the implementation phase to ensure the feasibility of the module created and to find out what Guru Penggerak thought about the Gemini AI-based multiliteracy competency training module. 50 Guru Penggerak in Kuningan City participated in the trial of Gemini AI-based training modules. The results of the initial and final tests conducted before and after the training showed a significant increase in the participants' multiliteracy competencies. The average pre-test score of 57.44 shows that most teachers still lack a deep understanding of multiliteracy, especially in terms of the application of Gemini AI in project-based learning and scientific research. The average post-test score of 83.6 improved significantly after training with Gemini AI-based modules. Pre-test and post-test scores differed significantly ($p<0.05$) according to statistical analysis of paired sample t-tests, which showed that the Gemini AI-based training module was successful in improving the multiliteracy competencies of Leading Teachers. The use of Gemini AI to evaluate student performance and encourage creativity recorded the largest increase in scores, with an average increase of 26.16%.

Through questionnaires and interviews, Guru Penggerak gave positive feedback on the Gemini AI-based training modules. Most teachers stated that the intelligent features offered by Gemini AI, such as material recommendations based on individual needs and automated feedback, greatly helped them understand the material better. Teachers also feel that the module can provide an interactive and non-monotonous learning experience. However, there are several suggestions for improvement, including: 1) Improving the quality of visual content: Some participants proposed that the visual content in the module be improved to be more interesting and easy to understand, especially for participants with limited visual literacy; 2) Optimization of training time: Some teachers feel that the duration of training needs to be adjusted to their work schedule so that it is not too crowded and can be more flexible; and 3) Further integration with classroom learning needs: Some teachers suggested that the module focus more on the application of multiliteracy competencies in the context of classroom teaching so that the training materials are more relevant to daily learning practices.

d. Evaluation Stage

During the evaluation phase, the results of the analysis of the feasibility test conducted by media and material experts, the implementation of the trial, and the point of view of the Guru Penggerak were used to conduct a feasibility analysis of the module at the evaluation stage. Aspects such as self-instruction, self-contained, stand-alone, adaptive, and user-friendly are some of the criteria tested by material experts to assess their feasibility. Elements tested by media experts, including module size, cover design, and content design. Guru Penggerak in Kuningan City was involved in the trial. Feedback through questionnaires and interviews of Guru Penggerak on Gemini AI-based training modules. The research that has been carried out proves that the development of a multiliteracy competency training module based on Gemini AI is very feasible to be used as a multiliteracy competency training module for Guru Penggerak in Kuningan City in learning and doing tasks in the electronic education module.

4.2 Discussion

The results of this study support a previous hypothesis that the use of Gemini's AI-based learning technology can improve the success of material mastery. Chatbots (ChatGPT, Gemini, and Copilot) present a coherent response to the scientific concepts being investigated, in addition to being configured as a resource that can be used in the teaching of chemistry and helps in the teaching and learning process (Leite, 2018). Increasingly sophisticated AI technologies, such as Gemini and ChatGPT, have had a positive impact on the world of education. One of the advantages is that teachers can easily create different types of learning materials automatically, so they can concentrate on more imaginative and creative learning activities (Rane, N. L., Choudhary, S. P. & Rane, J., 2024). As a multimodal large language model, Google Gemini is not only capable of generating text, but can also process images, videos, and even code. This allows Gemini to create richer and more interactive learning content (Imran & Almusharraf, 2024).

Gemini AI-based modules not only help teachers understand multiliteracy materials but also provide a more personalized and adaptive learning experience. Generative AI Integration (GenAI): Google Gemini in Education presents great potential to reshape the learning experience and empower students and educators (Perera, P., & Lankathilaka, M., 2023). The AI features in this module provide real-time feedback that allows participants to learn at a pace and style that suits their needs. The significant increase in digital literacy shows that AI technology is effective in helping participants understand and master the technological skills needed in the digital era. Visual literacy has also improved, although some participants feel that there is still room to improve the presentation of visual content. This shows that, although AI can help the learning process, the quality of the content delivered must also be considered so that the learning results are more optimal. In the context of Education Guru Penggerak, the development of multiliteracy competencies is crucial considering the demand for broader skills than just basic literacy. Guru Penggerak is expected not only to master the content but also to be able to apply these skills in an innovative learning process. The findings of this study show that Gemini AI-based training modules are very promising to help drive competency development.

Although this study shows positive results, some limitations need to be noted. First, the module trial was carried out on a limited scale, which only involved 50 Guru Penggerak. For a broader generalization of results, a trial on a larger scale is needed. Second, this study only focuses on the aspect of improving multiliteracy competencies, without assessing the impact directly on the learning outcomes of participants. Further studies can further explore how improving teacher competence affects the quality of learning in the classroom.

The study offers useful insights for creating AI-based training materials that improve teacher proficiency. Teachers in various fields can use Gemini's AI-based modules in their professional development programs. In addition, the results of this research can be the basis for education policymakers to apply AI technology to improve learning in the digital era. Improving teachers' multiliteracy skills is expected to help improve education standards in Indonesia in the future.

5. Conclusion

This study aims to design and evaluate the effectiveness of training modules designed to improve the multiliteracy competence of Guru Penggerak in Kuningan City, Indonesia. This research uses the ADDIE process development paradigm - analysis, product design, product development, product implementation, and evaluation. The feasibility level of the training module is determined by the assessment of material experts with an average score of 3.5 in the feasible category, as well as media experts who give an average score of 3.2 in the feasible category. Around 61.26% of survey respondents to the survey of 50 Guru Penggerak stated that it was very feasible based on the results of the feasibility test. Based on the results of the pre and post-tests conducted during the program, the multiliteracy ability of the Guru Penggerak increased quite significantly. Before the test, the average score was 57.44; After the test, the average score was 83.6. Statistical analysis of the paired sample t-test showed that there was a significant difference ($p<0.05$) between the pre-test and post-test scores. The average increase in scores was 26.16%, with the largest increase occurring in the use of Gemini AI in assessing student performance, and the use of Gemini AI in fostering creativity. Thus, it can be concluded that Gemini AI-based training modules have significantly succeeded in increasing the mastery of multiliteracy competencies, especially in digital and visual literacy. The modules developed are proven to be interactive and adaptive, with AI features that allow personalized learning and are tailored to the needs of each teacher. Feedback from the participants also indicated that the use of AI technology greatly helped their learning process, although there are still some aspects that need to be improved, especially in terms of visual content quality and training time adjustment. This research also confirms that AI technology has great potential in supporting teachers' professional training programs, especially in the digital era that demands more comprehensive mastery of multiliteracy.

Conflicts of Interest: The authors declare no conflict of interest.

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