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# DEVELOPMENT OF INTEGRATED E-LEARNING WITH A DEEP LEARNING APPROACH TO IMPROVE THE PEDAGOGIC COMPETENCE OF ELEMENTARY SCHOOL TEACHERS

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**Abstrak**
Kompetensi pedagogik guru penting untuk ditingkatkan sesuai dengan perkembangan dunia pendidikan dan peraturan pemerintah tentang kompetensi guru. Pelatihan penguatan kompetensi guru yang dilakukan sebelumnya dinilai memiliki berbagai keterbatasan sarana, prasarana, dan efektivitas pelatihan yang perlu diperbaiki. Penelitian ini bertujuan untuk mengembangkan dan menguji media e-learning terintegrasi deep learning untuk meningkatkan kompetensi pedagogik guru. Model ADDIE diterapkan dengan instrumen non-tes untuk pengujian validitas dan kepraktisan e-learning dan instrumen tes pilihan ganda digunakan untuk uji efektivitas produk melalui desain eksperimen pra tes dan pasca tes. Terdapat dua ahli isi, dua ahli media, dan dua belas guru untuk uji coba serta satu kelas guru sekolah dasar yang berasal dari berbagai instansi di Provinsi Bali yang mengikuti kegiatan pelatihan. Penelitian ini menghasilkan e-learning terintegrasi deep learning bernama SiKejar Bali dengan prinsip joyful dituangkan dalam bentuk fleksibilitas, tampilan yang menarik, dan unsur gamifikasi. Prinsip meaningful diterapkan melalui aktivitas mengaplikasikan materi. Prinsip mindful diterapkan melalui aktivitas-aktivitas reflektif. Hasil pengujian produk menunjukkan e-learning ini bernilai valid, praktis dan efektif dalam meningkatkan kompetensi pedagogik guru sekolah dasar. Penelitian berikutnya dapat mengintegrasikan pendekatan pembelajaran mendalam dalam berbagai jenis media pembelajaran dan mengevaluasi setiap kompetensi guru bersama dengan subjek yang lebih luas.

**Kata Kunci**: E-Learning; Deep Learning; kompetensi; pedagogik; guru

***Abstract***
*Teachers' pedagogical competencies need to be improved in order to keep pace with developments in the educational field and government regulations on teacher competencies. Previous teacher competency enhancement training programs have been found to have various limitations in terms of facilities, infrastructure, and training effectiveness that need to be addressed. This study aims to develop and test integrated deep learning e-learning media to improve teachers' pedagogical competencies. The ADDIE model was applied with non-test instruments to test the validity and practicality of e-learning, and multiple-choice test instruments were used to test the effectiveness of the product through a pre-test and post-test experimental design. There were two content experts, two media experts, and twelve teachers for the trial, as well as a class of elementary school teachers from various institutions in Bali Province who participated in the training activities. This study produced an integrated deep learning e-learning program called SiKejar Bali with the principle of joyful learning embodied in the form of flexibility, attractive appearance, and gamification elements. The principle of meaningful learning was applied through activities applying the material. The mindful principle was applied through reflective activities. The results of testing the product showed that this e-learning program is valid, practical, and effective in improving the pedagogical competence of elementary school teachers. Future research can integrate the deep learning approach into various types of learning media and evaluate each teacher's competence along with a broader subject.*

***Keywords****: E-Learning; Deep Learning; competency; pedagogic; teacher*

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## INTRODUCTION

Improving teacher competency is a strategic necessity in creating quality education that is relevant to current developments. However, the implementation of education and training (diklat) often faces obstacles that impact its effectiveness. Specifically, these include the use of conventional learning media, one-way lectures, printed modules, and static presentations. These conditions lead to low motivation and understanding among training participants (Destrivo et al., 2023; Mahesti & Koeswanti, 2021). Therefore, pedagogically and contextually based training is essential to support learner-centered learning (Widiana et al., 2024)..

Initial observations of teacher competency improvement training in Bali Province indicate that the learning media used are not yet interactive, tend to be monotonous, and do not support experiential learning styles (Caswita & Noviyani, 2024). Data from the Bali Provincial Teachers' Center for Teacher Development (Balai Guru Penggerak) in 2024 showed that 65% of training still used conventional methods, with only 40% of participants reporting significant understanding. Although 78% of institutions have access to digital platforms, 90% of their use is still limited to administrative purposes (Yusra & Sesmiarni, 2022). Only 30% of participants felt more engaged when using interactive media, and 60% complained about a lack of media variety. Furthermore, 58% of teachers stated that the training media was not relevant to real-life learning challenges. This situation demonstrates the urgency of utilizing interactive technology to support the learning process. Teacher competency mapping in Bali for 2024–2025 showed that 31.4% of teachers fell below pedagogical competency standards. Analysis of elementary school teachers for lower grades also revealed significant weaknesses in pedagogical aspects. This challenge demands innovative, flexible competency-building strategies that utilize digital resources to enable teachers to learn independently without the constraints of time or location. The Bali Teachers and Education Personnel Center (BGTK) faces significant challenges in providing effective training that meets the broad needs of teachers, particularly through the use of learning technology.

Developments in information and communication technology increasingly require teachers to master pedagogical competencies in technology. Digitalization in education requires teachers to learn new things to keep pace with technological developments (Hilhamsyah et al., 2024). Research shows that teachers' understanding of students' psychological aspects, such as learning motivation, significantly impacts academic achievement (Hafizha et al., 2022). Furthermore, project-based approaches and cooperative learning models encourage teachers to design active and collaborative learning strategies, in line with the demands of 21st-century skills (Ariyani & Kristin, 2021; Wuryandani & Herwin, 2021). Numerous studies have confirmed the effectiveness of technology-based learning media, ranging from 3D animation and augmented reality to interactive mobile applications (Pahlevi et al., 2024; Rasvani & Wulandari, 2021; Sudipta et al., 2023). Digital learning media and case-based learning have even been shown to improve student motivation and learning outcomes (Padmadewi et al., 2022). Thus, technology is a crucial foundation for developing teachers' pedagogical competence in the digital age. This poses a significant challenge in improving teachers' pedagogical competence through the implementation of technology-based learning in the digital age.

To address these challenges, Moodle-based e-learning has become a strategic alternative. LMS, a technological innovation, has been adopted in education and training as an online learning medium (Halimah et al., 2024). Moodle, as an open-source Learning Management System (LMS), enables flexible and personalized online learning management. Moodle supports interactivity, collaboration, and real-time tracking of learning progress (Cahyaningrum & Cuhanazriansyah, 2023). However, Moodle's optimal use is achieved through the use of an appropriate pedagogical approach, including deep learning. This approach emphasizes in-depth conceptual understanding,

critical thinking, and the application of knowledge in real-world contexts (Kelleher, 2019). Unlike surface learning, this approach encourages reflective and sustained engagement, making it relevant for teacher training. In the context of the Independent Curriculum, deep learning helps teachers not only master content but also transform learning contextually, creatively, and student-centeredly (Haq & Fitriani, 2024). The digital transformation of education demands learning media that are effective, adaptive, and suited to the challenges of the 21st century. Moodle is considered strategic because it supports the integration of deep learning with features such as simulations, project-based assignments, and audiovisual media. These features promote mindful, meaningful, and joyful learning (Aguiar-Castillo et al., 2021; He et al., 2021; Liu et al., 2022). Furthermore, Moodle also supports learning data analysis, real-time feedback, and personalized learning (Bojiah, 2022; Gamage et al., 2022). However, for optimal results, appropriate learning design and intensive mentoring for teachers are required.

Several studies confirm that the use of technology in teacher training is still limited to administrative functions (Syofian et al., 2023). Therefore, Moodle has great potential if developed in an integrated manner with deep learning-based artificial intelligence. In this case, Moodle is not only a means of distributing materials but also capable of analyzing participant progress, providing learning recommendations, and adapting to individual needs. Systematic validation of this learning medium has also been shown to significantly improve learning outcomes (Mertasari, 2022). Therefore, the development of deep learning-based Moodle e-learning is highly relevant for improving the pedagogical competence of elementary school teachers. This innovation is expected to be applied in the Bali Provincial Teacher and Education Personnel Center (BGTK) training program. With its interactive, flexible, and constructivist nature, this platform has the potential to comprehensively improve training effectiveness. Therefore, the purpose of this research is to develop an e-learning platform integrated with a deep learning approach and test its quality in improving the pedagogical competence of elementary school teachers. This research will provide an overview of e-learning platform integrated with deep learning, with indicators of joyful, mindful, and meaningful learning, and will have a direct impact on improving the pedagogical competence of elementary school teachers.

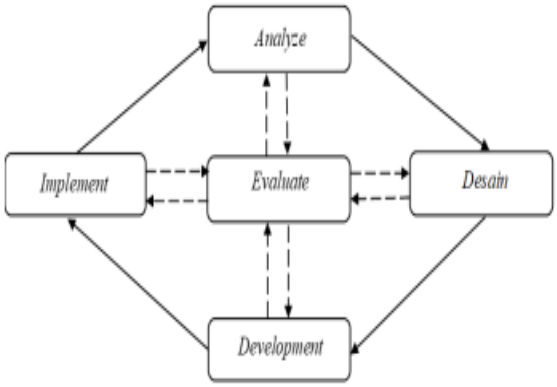


**Figure 1. ADDIE Research and Development Model**

## METHOD

In this study, the model used to develop Moodle e-learning media refers to the Research and Development (R&D) model with the ADDIE approach. This model was chosen because it can provide a systematic framework for developing effective learning media that meets the needs of training participants. The ADDIE approach (Analysis, Design, Development, Implementation, Evaluation) was applied in this study and serves as an alternative, more systematic approach to

designing, developing, and evaluating e-learning media (Rusman, 2021). The e-learning media was designed using Moodle software and integrated with a deep learning approach. The ADDIE research model is shown in Figure 1 (Branch, 2009).

**Table 1. Percentage Criteria for E-Learning Validity**

| Percentage | Qualifications | Description |
|---|---|---|
| 90 – 100 | Excellent | Very Valid |
| 80 – 89 | Good | Valid |
| 65 – 79 | Fair | Quite Valid |
| 40 – 64 | Poor | Less Valid |
| 0 – 39 | Very Poor | Very Invalid |

The subjects of this study involved experts consisting of two media experts and two material experts. The experts came from Ganesha University of Education and were tasked with testing the feasibility of media display aspects, content, and learning methods on the Moodle-based e-learning platform that was developed. This study also involved several teachers, namely 12 teachers for the product practicality test, and a group of teachers consisting of 30 elementary school teachers throughout Bali Province for field testing at one of the Balai Guru Penggerak or partner schools. The research instrument used to measure product quality based on the product quality framework in formative evaluation according to Niveen (1999) including validity, practicality, and effectiveness (Van Den Akker et al., 1999). The developed Moodle e-learning was declared valid through validity tests using non-test techniques with validity test instruments. The aspects of media validity measured in the Moodle e-learning product were aspects of text message design, image message design, video message design, and e-learning organization. Meanwhile, the aspects of content/material validity measured were curriculum, materials, language, and evaluation (Surjono, 2017). The results of the Moodle e-learning validity test were measured by comparing the total score percentage with the score percentage criteria as shown in Table 2 (Anshori et al., 2020).

**Table 2. Category Intervals of Six UEQ Aspects**

| Aspects | Category | | | | |
|---|---|---|---|---|---|
| | ***Excellent*** | ***Good*** | ***Above Average*** | ***Below Average*** | ***Bad*** |
| Attractiveness | >1,75 | >1,52 | >,17 | >0,7 | ≤ 0,7 |
| Clarity | >1,9 | >1,56 | >1,08 | >0,64 | ≤ 0,64 |
| Efficiency | >1,78 | >1,47 | >0,98 | >0,45 | ≤ 0,54 |
| Accuracy | >1,65 | >1,48 | >1,14 | >0,78 | ≤ 0,78 |
| Stimulation | >1,55 | >1,31 | >0,99 | >0,5 | ≤ 0,3 |
| Novelty | >1,4 | >1,05 | >0,71 | >0,3 | ≤ 0,3 |

The practicality test of this product uses a non-test technique with the UEQ (User Experience Questionnaire) questionnaire with six aspects and categories shown in Table 2. The developed e-learning product will achieve the criteria for being suitable for use when each aspect obtains a minimum category above average (Arimbawa et al., 2024; Parwati et al., 2025).

**Table 3. Teacher Pedagogical Ability Indicators**

| Indicators | Description |
|---|---|
| 1.1 Safe and comfortable learning environment | Teachers can understand, apply, evaluate, collaborate, and guide colleagues in a safe and comfortable learning environment. |
| 1.2 Effective, student-centered learning | Teachers can understand, apply, evaluate, collaborate, and guide colleagues in effective, student-centered learning. |
| 1.3 Student-centered assessment and feedback | Teachers can understand, apply, evaluate, collaborate and guide colleagues in conducting student-centered assessments and feedback. |

The effectiveness of e-learning was tested by measuring the pedagogical competence of elementary school teachers involved in the experimental group through pre- and post-tests. The pedagogical ability test instrument refers to Perdirjen GTK number 2626 of 2023, as shown in Table 3.

Differences in the pedagogical abilities of elementary school teachers are shown by a paired sample t-test preceded by prerequisite testing in the form of a data normality test for pre-test and post-test data. The t-test is conducted to find the calculated t and compare it with the t-table at a significance level of 0.05. This can indicate whether or not there are significant differences in the pedagogical competence of elementary school teachers. Thus, the effectiveness of the use of Moodle-based E-learning media in improving teachers' pedagogical competence in the Teacher Competency Improvement Training at the Bali Province Teacher and Education Personnel Center is obtained.

## RESULT

Research and development of Moodle e-learning integrated with a deep learning approach has produced an e-learning platform called "SiKejar Bali," an acronym for "Learning Control System" by the Bali Provincial Teachers' Center. The final product of the e-learning platform integrated with deep learning is published online and will become part of the Bali Provincial Teachers' Center officially so that it can be searched through search engines on internet browsers anytime and anywhere with each hardware. The SiKejar Bali e-learning page, as a product of this development, can be accessed at https://sikejarbali.com. There are various displays on the e-learning platform that can be accessed as teachers participating in the teacher competency improvement training, including the homepage, log-in, training menu, training opener, introduction, training modules integrated with a deep learning approach, assignments and tests, evaluation and feedback, and a certificate download display. An example of the SiKejar Bali e-learning display can be seen in Figure 2.

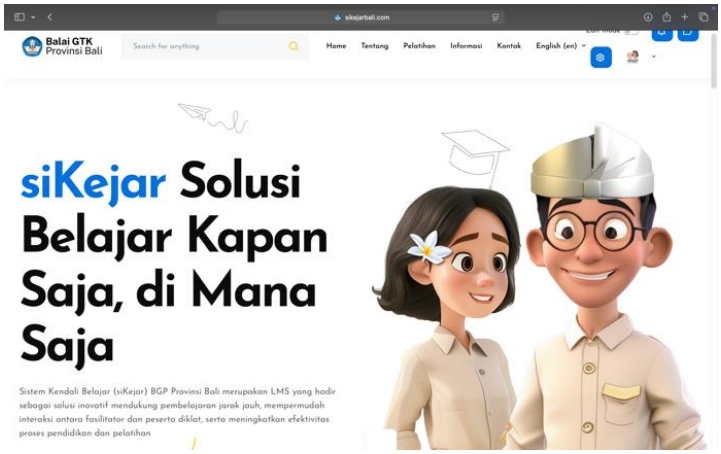


**Figure 2. Example of the SiKejar Bali E-Learning display**

The SiKejar Bali e-learning platform incorporates elements of a deep learning approach, namely joyful, meaningful, and mindful learning. The SiKejar Bali e-learning platform incorporates joyful learning through flexible learning times, engaging content presentations, and gamification elements in quizzes and assessments within the module. The principle of meaningful learning is implemented through application activities, enabling teachers and training participants to experience more meaningful learning. The principle of mindful learning is incorporated into reflection activities at the end of each learning module. As a core part of the research and

development of the SiKejar Bali product, the following describes the results of the product quality testing.

The SiKejar Bali product validity testing was conducted offline with experts. The experts involved were lecturers and practitioners in the fields of human resource development and educational technology. The e-learning validity testing also provided valuable input for revising the product so that it can be implemented as a learning medium in elementary school teacher competency improvement training. The results of the content validity testing are summarized in Table 4, and the results of the media validity testing are shown in Table 5.

**Table 4. Results of Content Validity Test**

| Aspect | Total Score | Maximum Score | Percentage |
|---|---|---|---|
| Curriculum | 27 | 30 | 90% |
| Material | 49 | 60 | 82% |
| Language | 26 | 30 | 87% |
| Evaluation | 15 | 20 | 75% |
| **Total** | **117** | **140** | **84%** |

Based on the results of the content validity test in Table 4, it was obtained that the score percentage reached 84% with the highest aspect achieved by the curriculum aspect with a score percentage of 90%, while the lowest aspect was the evaluation aspect at 75%. The total score percentage of 84% indicates that the SiKejar Bali E-Learning obtained valid criteria according to content/learning experts. Next, in the media validity test in Table 5, it is shown that the highest percentage was achieved by the video message design aspect with a score percentage of 90%, while the lowest aspect was the organization aspect of the Moodle E-Learning with a deep learning approach at 85%. The total score obtained a percentage of 87% in this test is a valid category.

**Table 5. Media Validity Test Results**

| Aspects | Total Score | Maximum Score | Percentage |
|---|---|---|---|
| Text Message Design | 78 | 90 | 87% |
| Image Message Design | 35 | 40 | 88% |
| Video Message Design | 27 | 30 | 90% |
| Organizing Moodle E-Learning with a Deep Learning Approach | 17 | 20 | 85% |
| Total | **157** | **180** | **87%** |

The practicality testing of the SiKejar Moodle e-Learning product was conducted using the UEQ instrument. This test was conducted individually and in groups with 12 teachers outside the field trial subjects during the implementation phase. The results of the SiKejar Bali e-learning practicality testing are shown in Table 6 below. It can be seen that each measured aspect obtained an average score of excellent, so that the e-learning product has practical value and is ready to be applied to a wider range of subjects in training activities to strengthen the pedagogical competence of elementary school teachers.

**Table 6. Practicality Test Results with UEQ**

| Aspects | Mean | Category |
|---|---|---|
| Attractiveness | 2.29 | *Excellent* |
| Clarity | 2.19 | *Excellent* |
| Efficiency | 2.42 | *Excellent* |
| Accuracy | 2.25 | *Excellent* |
| Stimulation | 2.06 | *Excellent* |
| Novelty | 2.13 | *Excellent* |

The effectiveness of SiKejar Bali is demonstrated through the difference in pre-test and post-test scores for the elementary school teachers' pedagogical competency test. The scores for each test were then aggregated and subjected to a prerequisite test, namely the normality test. The results of the normality test, using SPSS, are shown in Table 7.

**Table 7. Results of the Normality Test for Pre-test and Post-test Data**

| | *Kolmogorov-Smirnov*[a] | | | *Shapiro-Wilk* | | |
|---|---|---|---|---|---|---|
| | *Statistic* | *df* | *Sig.* | *Statistic* | *df* | *Sig.* |
| *Pretest* | .178 | 30 | .017 | .939 | 30 | .085 |
| *Posttest* | .133 | 30 | .186 | .951 | 30 | .180 |

Based on the test results in Table 7, the value in the sig column using the Shapiro-Wilk method (because the number of subjects <50) is greater than the 0.05 significance level, thus it can be concluded that the pre-test and post-test scores of the 30 subjects are normally distributed. Next, we can proceed to the hypothesis test. The results of the hypothesis test using the paired sample t-test method are shown in Table 8.

**Table 8. Paired Sample T-Test Results**

| | | | *Significance* | | |
|---|---|---|---|---|---|
| | *t* | *df* | *One-Sided p* | *Two-Sided p* | *Mean Difference* |
| Pretest_Score | 25.595 | 29 | <.001 | <.001 | 56.75000 |
| Posttest_Score | 32.956 | 29 | <.001 | <.001 | 76.77800 |

The t-test results are shown in the significance column with a two-sided p sub-column (two-tailed test) that is less than the 0.05 significance level. In this test, a significance value of less than 0.05 or a 5% significance level was obtained, so it was concluded that there was a significant difference in teachers' pedagogical competence after participating in the SiKejar Bali e-learning development training integrated with a deep learning approach. In other words, there was a significant difference in the pre-test and post-test scores after elementary school teachers participated in the training with SiKejar Bali deep learning integrated e-learning. Therefore, it can be said that the SiKejar Bali e-learning product developed in this study is effective in improving the pedagogical abilities of elementary school teachers.

## DISCUSSION

The integrated deep learning e-learning program, SiKejar Bali, developed in this study, packages learning or training activities into a deep learning flow by applying joyful, meaningful, and mindful concepts to its learning (Benu et al., 2025). The joyful principle is implemented by creating a positive learning atmosphere so that teachers can enjoy learning more enjoyable. The SiKejar Bali e-learning program embodies joyful learning through flexible learning times, engaging content displays, and gamification elements in quizzes or assessments developed and integrated with the Quizziz platform (Feriyanto & Anjariyah, 2024). Furthermore, the meaningful learning principle is implemented through the application and connection of the learned material to the needs and realities experienced by teachers (Wijaya et al., 2025). SiKejar Bali provides application activities aimed at eliciting the principles of meaningful learning so that teachers or training participants can experience more meaningful learning. In these activities, teachers can apply their understanding of the material learned at the understanding stage to real-life problems and discuss various real-life experiences experienced by fellow elementary school teachers in various schools. Through these activities, teachers are expected to feel the connection between the material being studied and real-world problems and solutions. Furthermore, the principle of mindful learning is incorporated into reflective activities to foster awareness of the learning process experienced by teacher trainees (Mulyani et al., 2025). SiKejar Bali e-Learning

incorporates this principle into reflective activities at the end of each learning module. Teacher trainees can complete reflection sheets and consult with other teachers about their learning process and learning outcomes. Through these reflective activities, participants are expected to increase their awareness of the learning process, enabling them to engage emotionally, cognitively, and behaviorally in online e-learning.

The validity test of the SiKejar Bali material showed that the highest percentage of 90% was achieved in the curriculum aspect. This indicates that SiKejar Bali has an appropriate and valid curriculum structure to be used as a learning media for training/education to strengthen the pedagogical competence of elementary school teachers. In addition, the curriculum aspect of the developed e-learning is supported by the integration of deep learning as an innovative, structured, and clear learning approach (Eriani et al., 2025). This approach facilitates the design of the learning flow in the SiKejar Bali e-learning. In the media validity test, a high percentage score in the video message design aspect was achieved because the video display in the LMS was developed, tested, and revised to improve its quality. This indicates that the integration of video or audiovisual media into the SiKejar Bali LMS is considered effective in helping to distribute information. These videos, which were deemed appropriate, provide a learning experience that teachers enjoy, helping them understand the concepts being studied and encouraging more meaningful learning. These findings align with previous research, which found that integrating video or audiovisual media into the learning process boosts motivation and understanding (Brillian, 2024). This achievement is due to various factors. The ADDIE process allows for testing and revisions before experts receive the product and assess it based on their perspectives and experiences. Furthermore, video, text, and visual displays are developed in collaboration with professional technicians to ensure the results meet valid criteria.

Based on the results of the practicality test, the highest score was in the efficiency aspect, with an average score of 2.42, which is considered very good. This demonstrates that SiKejar Bali provides a learning experience through efficient information delivery, according to teachers who tested the product using the UEQ. Relevant studies support this efficiency gain, as the primary tool, Moodle, is said to be capable of creating an efficient and easy-to-use LMS across various devices (Gamage et al., 2022; Morze et al., 2021). Practicality refers to the acceptance of the developed product by the intended users (Wahyuni et al., 2025). SiKejar Bali Media has obtained minimum criteria above average so it is said to be practical and can be used in learning.

The results of this study indicate that implementing deep learning as an approach in learning media can improve teachers' pedagogical competence. This improvement is relevant to the advantages of deep learning in conveying information, enabling teachers to absorb and retain information more deeply and apply it in real-world situations. Through deep learning, students not only memorize concepts but also strive to relate the material presented to their environment, aligning with Vygotsky's constructivist theory (Pane et al., 2025; Zulela, 2025). Other studies also demonstrate the advantages of deep learning in fostering a stronger understanding of concepts and specific competencies, but this is not without challenges in terms of adequate technology and infrastructure (Maelasari & Lusiana, 2025). Nevertheless, research and development of the SiKejar Bali media have demonstrated the advantages of deep learning as an appropriate pedagogical approach for improving the pedagogical competence of elementary school teachers.

Previous media developments integrating deep learning approaches have also met valid and suitable criteria for use in learning (Fuadi et al., 2025; Nurmidi et al., 2024). This has led to this approach being consistently recommended and implemented at various levels of education. Other research shows that deep learning significantly impacts the strengthening of teachers' pedagogical

competence (Supriyanto & Naila Fitriyana, 2025). This strategy is said to be effective in improving elementary school teachers' ability to design student-centered learning (Iqbal et al., 2025; Saputra et al., 2025). Previous teacher competency development training based on the deep learning approach has also been conducted and successfully improved teachers' pedagogical competence (Atmojo et al., 2025). Numerous previous studies have demonstrated the successful integration of deep learning into various contexts. This study applies deep learning as a relevant pedagogical approach to improve the pedagogical competence of elementary school teachers.

This study does not rule out the possibility of various obstacles and limitations in the results obtained. Several challenges were encountered during the development and implementation of the SiKejar Bali product. Obstacles such as inappropriate display, online training management, and other technical glitches were unavoidable during the research process. The results obtained in this study are limited to the subjects of elementary school teachers and the experts involved, with their number and capacity. Furthermore, this study is also limited to the instruments used to measure various aspects of validity, practicality, and pedagogical competence based on the references used. Furthermore, another limitation is indicated by the various input and suggestions provided by the experts involved in this study that could not be fully followed up by the researcher. Future research is expected to develop e-learning integrated with deep learning for different subjects. In addition, future research is also expected to develop innovative learning media based on deep learning for a broader range of subjects. Considering the teacher competencies in Perdirjen GTK No. 2626 other that were not covered in this study, future research can also develop similar training media and test their quality in improving teacher competencies as a whole.

## CONCLUSION

This research resulted in the design of SiKejar Bali as an integrated Moodle e-learning with an in-depth learning approach to improve the pedagogical competence of elementary school teachers. The joyful principle is expressed in the form of flexibility, an attractive display, and gamification elements. The meaningful principle is implemented through the activity of applying the material. The mindful principle is implemented through reflective activities in the SiKejar Bali e-learning. The SiKejar Bali e-learning obtained valid criteria according to content experts and media experts. Content validity obtained a total score of 84% which is a valid criterion and media validity obtained a total score of 87% also a valid criterion. The SiKejar Bali e-learning was considered practical by teachers based on user experience testing. The effectiveness of SiKejar Bali was demonstrated based on the results of hypothesis testing on pre-test and post-test scores. This study showed a significant difference in teachers' pedagogical competence after participating in training with the SiKejar Bali e-learning. Future research is expected to be able to develop training media that improve teachers' overall competence (pedagogical, professional, personality, and social).

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