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Improving Teachers' Digital Competency in Society 5.0 Through Canva AI-based Learning Videos

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IMPROVING TEACHERS' DIGITAL COMPETENCY IN SOCIETY 5.0 THROUGH CANVA AI BASED LEARNING VIDEOS

Abstract: In the Society 5.0 era, mastery of digital competencies is the main demand for teachers to be able to integrate technology effectively in learning. This study aims to analyze the effectiveness of Canva AI-based learning video creation training in improving teachers' digital competence. The research method uses a Research and Development (R&D) approach with a One Group Pre-test Post-test design involving 16 teachers from various levels of education in Indonesia. The training was conducted online for three days with a combination of synchronous (interactive webinar) and asynchronous (self-task with modules and video tutorials). Data was collected through pre-test, post-test, and learning experience questionnaires, then analyzed using the N-Gain method. The results of the study showed a significant increase in teachers' digital competence with an average effectiveness of 89.94% and an N-Gain value of 0.62 (medium category). The most notable improvements were seen in visual design skills, video script drafting, and the utilization of artificial intelligence-based features for creative and interactive learning. These findings prove that Canva AI can be an innovative and practical solution in teacher professional development, while contributing to continuous training strategies in the face of 21st-century educational challenges.

Keywords: Teachers' digital competencies, society 5.0, Canva AI, innovative learning videos

Introduction

Era Society 5.0 is a concept of society that integrates digital technology, artificial intelligence (AI), and big data in daily life to create more innovative solutions in various fields, including education (Fukuyama, 2018). In the context of education, digital transformation is a must so that educators are able to adapt to the times and increase the effectiveness of the learning process. One of the important aspects of this transformation is the improvement of teachers' digital competence in order to be able to utilize technology to support teaching and learning activities (Redecker & Y, 2017)

Teachers' digital competencies include skills in using various software, applications, and digital platforms to create engaging and interactive learning experiences for students (Koehler & Mishra, 2009). These competencies include knowledge, skills (McClelland, 1973). Realizing the importance of the role of teachers as learning agents in the implementation of student teaching in the classroom, the improvement of teachers' digital competence needs to be pursued optimally through effective and efficient methods. The complexity of teaching students in the classroom must also be part of the training material for teachers (Jacobsen, Eggen, & Kauchak, 2009).

The main challenge facing teachers today is how to integrate technology into the learning process to make it more interesting and relevant for students. Many teachers still have difficulty designing and implementing digital technology effectively in the classroom, especially in creating interactive and engaging learning media (Sri Wiyanah & Nuryani, 2022). Another challenge faced is that there are still teachers who have difficulty adapting

technology into learning (Prensky, 2001), both due to limited understanding of digital technology and lack of appropriate training (Martin, Polly, & Ritzhaupt, 2019), to overcome this challenge, solutions that are easily accessible and can assist teachers in creating innovative teaching materials are needed. One of the solutions that can be used is Canva AI, an artificial intelligence based design platform that allows teachers to create learning videos more easily and professionally (Canva, Canva AI Features and Benefits, 2022).

Therefore, continuous professional development is indispensable because teachers need to constantly develop new skills, adapting to the times (Līga Āboltiņa, Lāma, & et.all, 2023). Systematic efforts are needed to improve teachers' digital competencies through practice-based training and accessible technology applications, one of which is through the use of Canva AI for innovative learning video creation. In this era, the concept of digital-based learning is increasingly emphasized as an approach that must be adapted by educators. 21st century learning demands more interactive and technology-based methods in order to increase students' interest and understanding of the material presented. Thus, skills in using digital platforms such as Canva AI are essential for teachers to be able to create engaging and effective learning materials. Canva AI provides a variety of features, such as automated templates, AI-based editing, and animations that make it easy for teachers to structure learning materials in a more visual and creative way (Canva, Canva AI Features, 2023). Using Canva AI, teachers can develop learning content that is not only engaging but also relevant to students' needs in the digital age.

Based on this background, this study is directed to examine the effectiveness of Canva AI-based learning video creation training in improving teachers' digital competence. The research question posed in this study is: to what extent is Canva AI-based learning video creation training effective in improving teachers' digital competence? In line with this question, the hypothesis of this study is that practice-based training using Canva AI can significantly improve teachers' digital competence, which is reflected in the improvement of pre-test and post-test results and the learning experience of trainees.

This study aims to analyze the effectiveness of Canva AI-based learning video creation training through a practice-based approach, which includes strengthening visual design skills, storyboarding, and the use of digital technology in learning. The results of this research are expected to contribute to the development of more effective, applicative, and sustainable teacher training strategies to face learning challenges in the Society 5.0 era.

Literature Review

Teachers' Digital Competencies

Competency is defined as a combination of knowledge, skills, and attitudes needed to carry out tasks or work effectively (Mulder, 2017). Meanwhile, McClelland introduced the concept of competence as a more relevant attribute to measure an individual's ability to

perform certain tasks (McClelland, 1973). Digital competence refers to the ability of teachers to utilize technology to improve learning effectiveness (Redecker & Y, 2017). These competencies include skills in using software, applications, and digital platforms to create engaging learning experiences. Digitalization in learning includes not only the use of visual media, but also technology-based interactions that allow for more dynamic collaboration between students and teachers. In the world of education, teachers' digital competencies include the ability to guide students to be able to utilize technology and learning resources effectively. As one of the aspects of professional competence, teachers' digital competence refers to the knowledge and skills in utilizing digital technology to complete their tasks and activities optimally, in accordance with ethics and appropriate goals (Ferrari, Punie, & Redecker, 2012)

Canva AI as a Learning Media

According to Wartman & Combs (2018) artificial intelligence (AI), which is often described by the general public as the ability of machines or computers to think and behave like humans, is an attempt to create computer systems that can mimic human thoughts and actions In this context Mohammed & Watson (2019), defines the basis of AI as the ability of a tool or program to skillfully mimic human behavior or thought. Furthermore, Haenlein & Kaplan (2019) explain that AI can be interpreted as the ability of a system to understand external data accurately, learn it, and apply learning outcomes to achieve goals and complete certain tasks with flexible adjustments. According to Lu (2019) states that Artificial Intelligence (AI) includes theories, methods, and techniques that assist machines, especially computers, in analyzing, simulating, utilizing, and exploring human thought processes and behaviors.

Canva AI is an artificial intelligence-based design platform that provides innovative features such as automated templates, AI-based editing, and animations to support the learning process (Canva, Canva AI Features and Benefits, 2022). According to Olatunde-Aiyedun & Hamma (2023) defines Canva as a multifunctional graphic design tool that is increasingly popular among educators and researchers, due to its ability to create visually appealing material and effective in attracting attention. According to Brown, Smith, & Johnson (2022) Canva AI can support personalized learning through its machine learning algorithms that are capable of analyzing user data and offering design suggestions that suit each individual's preferences. According to Williams & Davies (2023) by providing intuitive and easy-to-use tools, Canva allows users to learn the principles of design, typography, and color usage. Canva AI can support collaborative content creation between students and teachers. Furthermore, Olatunde-Aiyedun & Hamma (2023) explain that Canva provides various benefits for educators in teaching. Canva provides an easy-to-use platform with a variety of customizable templates, making it easy for teachers to create visually appealing presentations, infographics, posters, and other teaching materials.

Learning Videos

Teachers are now encouraged to integrate technology in the learning process. One example of integrating technology in learning is the use of video media. Videos are able to convey teaching materials through a combination of images and sounds. In line with the opinion of Sablić, Mirosavljević, & Škugor, (2023), video-based learning is a learning method that uses video to convey information to students through visual and audio elements. Another opinion from Ibrahim, Antonenko, Greenwood, & Wheeler (2012) explains the definition of video as a form of presenting information through a dynamic stream of visual and audio content, including live recordings, dynamic cartoons, stop motion, and computer-generated animations, learning media in the form of video is one of the innovative audio-visual media that can support more interesting learning. Menururt Bonwell & Eison (1991) Interactive learning videos, which allow students to answer questions, conduct simulations, or participate in discussions, can increase student participation and motivation. Interactivity in learning videos can help reinforce concepts learned and encourage critical thinking. Citing the opinion of Mayer (2001) explains that learning becomes more effective if information is conveyed through a combination of text, images, and sound. Video learning is an innovative technology-based media that is effective in supporting the teaching and learning process Sablić, Mirosavljević, & Škugor (2023) In line with the multimedia theory of Mayer (2001), the combination of text, images, and sound in video has been shown to increase learning retention and effectiveness.

Society 5.0

Society 5.0 first emerged in Japan as a vision of a human-oriented society with the use of modern technology to improve the quality of life (Fukuyama, 2018). This idea developed from the Industrial Revolution 4.0 which is synonymous with digitalization, IoT, big data, AI, and robotics. If the Industrial Revolution 4.0 focuses more on the technological aspect, then Society 5.0 puts humans at the center so that technology can be used to solve social problems, not just as an industrial tool.

Research Method

This research uses the Research and Development (R&D) method with the Borg and Gall development model combined with the One Group Pre-test Post-test design approach. This study aims to analyze the effectiveness of Canva's AI-based learning video creation training in improving teachers' digital competencies and to measure changes in participants' competencies before and after participating in the training program. The data was analyzed using the N-Gain method to determine the effectiveness of the training, where the N-Gain score describes the improvement in the participants' understanding after participating in the training.

$$N_{Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretest}}$$

The training approach is carried out by a practice-based synchronous and asynchronous online. A total of 16 teachers from various levels of education in Indonesia participated in this study. Participant selection was carried out using a simple random sampling technique, which is a sampling method that is carried out randomly from all members of the population without considering certain differences or strata in the population (Sugiyono, 2013). The research instrument consisted of pre-test and post-test questionnaires to measure the improvement of teachers' digital competence. The validity of the instrument is carried out through expert judgment by involving material experts, media experts. This study has limitations on a relatively small sample size (n = 16). However, the findings of this study still provide an initial empirical picture of the effectiveness of Canva AI-based training and could be the basis for further research with a larger number of participants and a more comprehensive experimental design.

The training method was carried out for three days with a practice-based approach with Synchronous, which is a direct training session through webinars and Asynchronous, which is an independent task with module guidance and video tutorials. Meanwhile, in hands-on practice, teachers are tasked with creating learning videos using Canva AI which are then evaluated by instructors. Data was collected through pre-tests and post-tests to measure teachers' digital competency improvements and through questionnaires to assess teachers' experience in training and analyze the effectiveness of Canva's AI-based learning video creation training in improving teachers' digital competence. The data analysis technique is carried out using the N-Gain Method, which is an approach that is often used to assess the effectiveness of a learning or intervention in improving learning/training outcomes. This method provides a solid basis for evaluating the extent to which the training program contributes to the improvement of trainee understanding and competence. The N-Gain score has a range from -1 to 1. If the score is positive, it means that there is an increase in student learning outcomes after the learning process, while a negative score indicates a decrease in learning outcomes.

Table 1. Normalized Gain (N-Gain) Criteria

N-Gain Score	Interpretation
$0.70 \leq g \leq 1.00$	High
$0.30 \leq g < 0.70$	Medium
$0.00 \leq g < 0.30$	Low
$g = 0.00$	No Improvement
$-1.00 \leq g < 0.00$	Decrease Occurred

*N-Gain = Normalized Gain

Table 2. Criteria for Determining Effectiveness Level

Percentage (%)	Interpretation
< 40	Ineffective
40 – 55	Less Effective
56 – 75	Moderately Effective
> 76	Effective

Discussion and Conclusion

Result

The results showed that there was a significant increase in teachers' digital competence after participating in practice-based training with a synhcronous and asynchronous approach. These improvements can be seen in several key aspects, namely: increased knowledge related to the use of technology in learning, skills in designing visuals using Canva AI, and the ability to integrate digital technology into the learning process in a more creative and interactive way. All participants totaling 16 teachers from various levels of education managed to complete a series of training tasks well. One of the indicators of the success of this training is the ability of teachers to create a final product in the form of learning videos using Canva AI. The resulting videos not only reflect their understanding of the training materials, but also demonstrate creativity and technical skills in combining visual, audio, and animation elements. Here's a graph of the average rating of participants based on five aspects of training using Canva's AI media in the training effectiveness test:

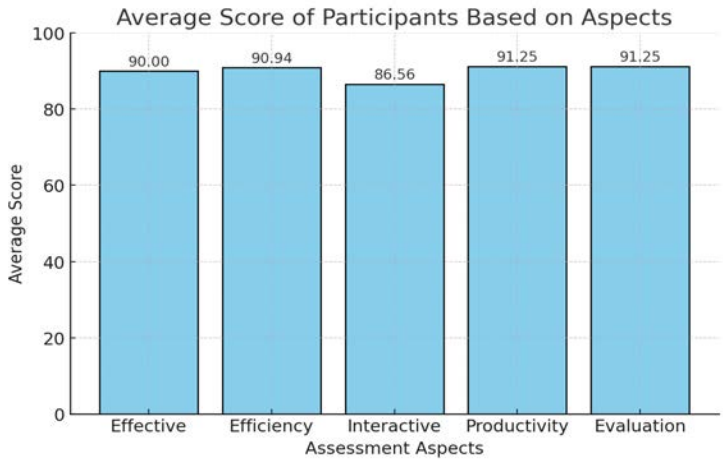


Figure 1. Effectiveness Test Results

From the above data, it can be concluded that:

1. Average effectiveness

   The average overall score was 89.94%, which indicates that the training has an "excellent" level of effectiveness, which means that the training management products developed are already feasible to use. Assessments in each aspect also show the "Excellent" criterion which indicates that the developed training program has met the implementation feasibility standards.

2. Outcome Implications

   With excellent training effectiveness, the program can be considered successful in achieving the goals that have been set. Improvements can be focused on aspects that still have below-average scores to improve quality in the future.

   At this stage, the researchers also measured the effectiveness of learning video creation training products using Canva AI media. The purpose of this measurement is to find out the extent to which the training product developed is able to improve participants' understanding of the training material. The measurement was carried out by comparing the results of the pretest and post test given to participants before and after participating in the training. The data obtained was then analyzed using the N-Gain formula to determine the level of improvement in participants' understanding. Average N-Gain Value: 0.62 ("medium category"), average percentage increase: 62.82%, Effectiveness Rate: Quite Effective

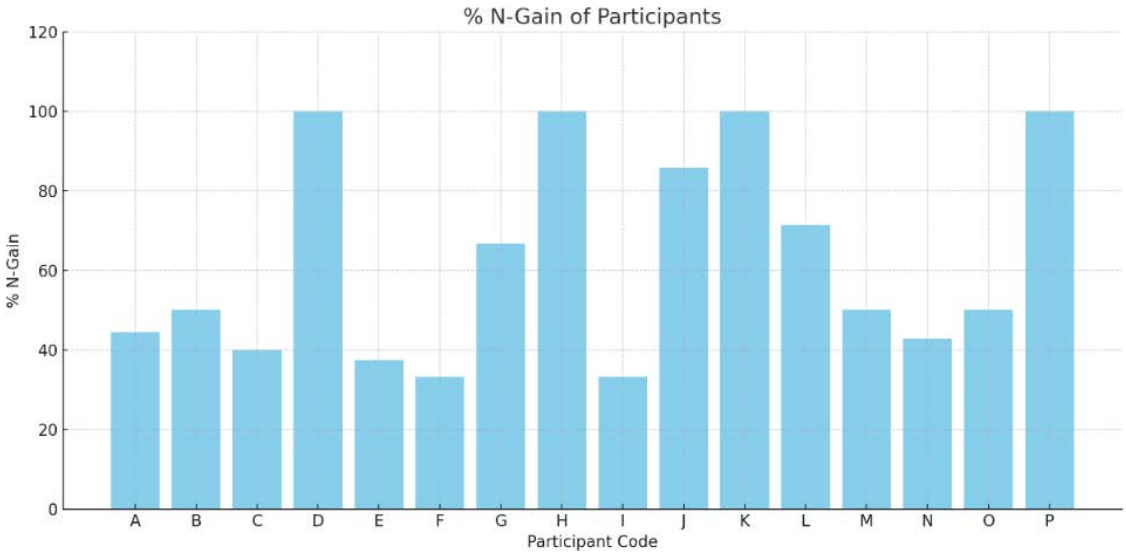


Figure 2 Value N gain

Based on the graph of the N-Gain distribution (%) of participants, it can be concluded that the training developed proved to be quite effective in improving participants' understanding. Thus, the training products used can be said to be suitable for wider application in order to improve the competence of trainees by improving.

This research proves that the use of Canva AI in learning video creation training can significantly improve teachers' digital competence. Teachers are more confident in integrating technology into learning, which has an impact on improving the quality of teaching in the digital era.

Advanced training is required to deepen the use of Canva AI in various subjects.

1. Integrate Canva's AI into teacher training curriculum to make more educators ready for digital challenges.

2. Further research with a larger sample count to see the long-term impact of using Canva AI in education.

Discussion

The results showed that Canva AI-based learning video creation training significantly improved teachers' digital competence, as demonstrated by an average effectiveness score of 89.94% and an N-Gain score of 0.62 (medium category). These findings indicate that a practice-based training approach that integrates artificial intelligence technology is able to have a positive impact on improving teachers' digital skills. The improvement in competencies that occurs, especially in the aspects of visual design, storyboard preparation, and the use of AI features, is in line with the framework of teachers' digital competencies put forward by Redecker (2017) in DigCompEdu, which emphasizes the importance of teachers' ability to create and modify digital learning resources creatively. In addition, the results of this study support the theory of TPACK (Koehler & Mishra, 2009), which states that effective integration of technology, pedagogy, and content is key in digital-based learning.

When compared to previous research, these findings reinforce the results of studies by Sri Wiyanah & Nuryani, 92022) and Nadeak & Malahayati (2023) which show that training on the use of Canva can improve teachers' skills in developing digital learning media. However, this research makes a more specific contribution by integrating AI-based features in Canva, rather than just using conventional graphic design. Thus, this study expands on previous findings by showing that the use of AI-based technology has greater potential in supporting learning innovation. In addition, the results of this study are also in line with Sablić *et al.* (2021) and Mayer (2001), who affirm that the use of video-based and multimedia-based media can improve understanding and learning effectiveness. The difference is that this study not only focuses on the effectiveness of video as a learning medium for students, but also on the process of developing teachers' capacity in producing this media through a structured training approach.

The main contribution of this research lies in the development of a practice-based training model that integrates AI technology directly in the professional development of teachers. The study shows that training designed with a combination of synchronous and asynchronous, as well as end-product oriented (learning videos), can improve digital skills in a measurable way. As such, this study not only provides empirical evidence regarding the effectiveness of Canva AI, but also offers a strategic approach to designing teacher professional development programs that are adaptive to the demands of Society 5.0. However, the limited sample size (n = 16) is one of the limitations of this study. Follow-up research with experimental designs involving control groups and a larger number of participants is needed to reinforce the generalization of findings and explore the long-term impact of using Canva AI in learning practices.

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References

Bonwell, C. C., & Eison, J. A. (1991). Active Learning: Creating Excitement in the Classroom. *ASHE-ERIC Higher Education Reports. ASHE-ERIC Higher Education Report*, 147–152. doi:https://doi.org/10.1002/aehe.3640200414

Brown, A., Smith, B., & Johnson, C. (2022). Visualizing Uncertainty in Big Data: Current Trends and Future Directions. *Information Sciences*, 508-525.

Canva. (2022). *Canva AI Features and Benefits*. Retrieved from https://www.canva.com: https://www.canva.com

Canva. (2023). *Canva AI Features*. Retrieved from www.canva.com: www.canva.com

Ferrari, A., Punie, Y., & Redecker. (2012). Understanding Digital Competence in the 21st Century. *http://link.springer.com/10.1007/978-3-642-33263-0_7*, 79–92. doi:10.1007/978-3-642-33263-0_7

Fukuyama, M. (2018). Society 5.0: Aiming for a New Human-Centered Society. *Japan Spotlight, 27*(5), 47–50.

Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California management review, 61*(4), 5-14.

Ibrahim, M., Antonenko, P. D., Greenwood, M. C., & Wheeler, D. (2012). Effects of segmenting, signalling, and weeding on learning from educational video. *Learning, Media and Technology*, 220-235. doi:10.1080/17439884.2011.585993

Jacobsen, D., Eggen, P., & Kauchak, D. (2009). *Methods for Teaching: Promoting Student Learning in K–12 Classrooms (8th ed.).* Boston: Pearson.

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary Issues in Technology and Teacher Education, 9*(1), 60-70.

Līga Āboltiņa, G., Lāma, G., & et.all. (2023). Challenges and opportunities for the development of future teachers' professional competence in Latvia. *Frontiers in Education, 8*.

Lu, Y. (2019). Artificial intelligence: a survey on evolution, models, applications and future trends. *Journal of management analytics,, 6*(1), 1-29.

Martin, F., Polly, D., & Ritzhaupt, A. (2019). Teachers' perceptions of digital tools for fostering student engagement in the online learning environment. *Educational Technology Research and Development, 67*(4), 913-936.

Mayer, R. E. (2001). *Multimedia Learning.* Cambridge University Press.

McClelland, D. (1973). Testing for competence rather than for 'intelligence'. *American Psychologist, 28*(1), 1-14.

Mohammed, & Watson. (2019, june). Towards Inclusive Education in the Age of Artificial Intelligence: Perspectives, Challenges, and Opportunities. *Chapter*. doi:10.1007/978-981-13-8161-4_2

Mulder, M. (2017). Competence theory and research: A synthesis. *Competence-Based Vocational Education, Springer.*, pp. xx–xx.

Nadeak, E. E., & Malahayati, M. (2023). Pelatihan Pembuatan Modul Ajar Interaktif Bagi Guru dengan Menggunakan Canva. *Jurnal Masyarakat Madani Indonesia, 2*(3), 201–206.

Olatunde-Aiyedun, T., & Hamma, H. (2023). Impact of artificial intelligence (AI) on lecturers' proficiency levels in MS PowerPoint, Canva and Gamma in Nigeria. *Horizon: Journal of Humanity and Artificial Intelligence, 2*(8), 1-16.

Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon, 9*, 1-6. doi:https://doi.org/10.1108/10748120110424816

Redecker, C., & Y, P. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu.* Publications Office of the European Union.

Sablić, M., Mirosavljević, A., & Škugor, A. (2023). Video-based learning (VBL)—Past, present and future: An overview of the research published from 2008 to 2019. *Technology, Knowledge and Learning: Learning mathematics, science and the arts in the context of digital technologies, 26*(4), 1061–1077. doi:https://doi.org/10.1007/s10758-020-09455-5

Sri Wiyanah, K., & Nuryani, C. E. (2022). Pelatihan Aplikasi Canva Bagi Guru Dalam Mengembangkan Materi Pembelajaran di SMPN 1 Kasihan Yogyakarta. *J-ABDI: Jurnal Pengabdian Kepada Masyarakat, 2*(1), 3703–3712.

Sugiyono. (2013). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D.* Bandung: Alfabeta.

Wartman, & Combs. (2018, agustus). Medical Education Must Move From the Information Age to the Age of Artificial Intelligence. *Academic Medicine,, 93*(8).

Williams, J., & Davies, K. (2023). Enhancing Visual and Digital Skills Through Graphic Design Tools. *Journal of Digital Education*.

Appendix

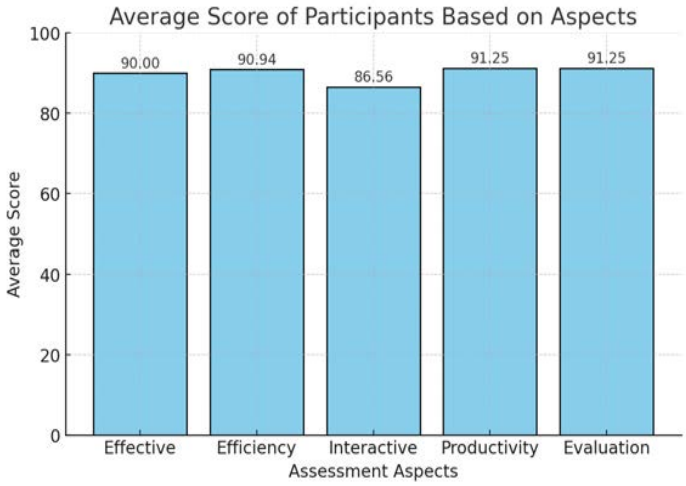


Figure 1. Effectiveness Test Results

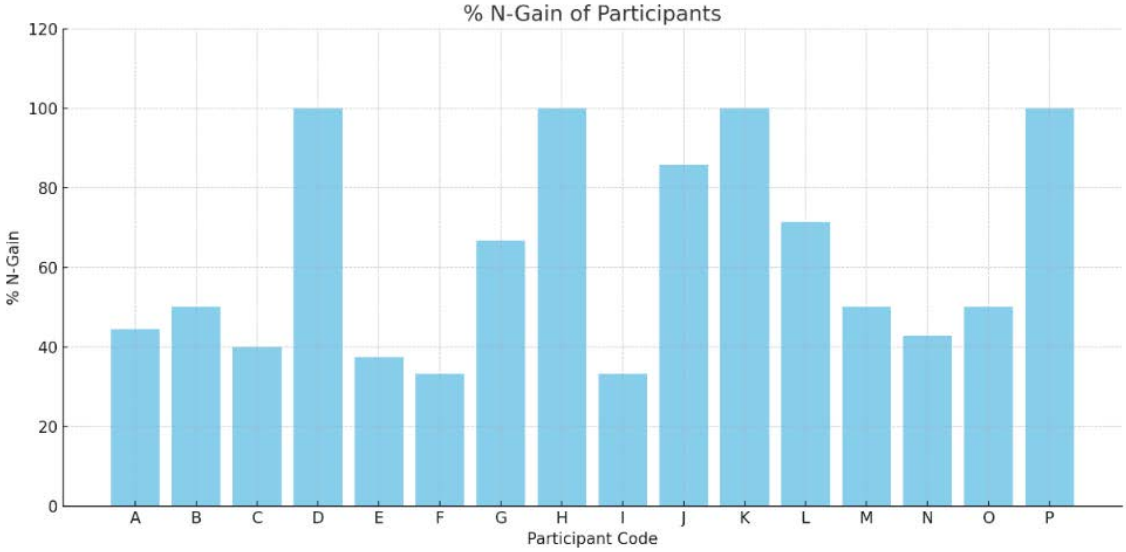


Figure 2 Value N gain