



---

**DIGITAL PEDAGOGY: ENHANCING TEACHERS' COMPETENCE IN TECHNOLOGY-BASED LEARNING MEDIA IN SMKS NGURAH RAI CANGGU****By****Ida Bagus Nyoman Mantra<sup>1</sup>, Anak Agung Putu Arsana<sup>2</sup>, A.A. Istri Yudhi Pramawati<sup>3</sup>, I Gusti Agung Putri Wirastuti<sup>4</sup>, Putu Sri Astuti<sup>5</sup>****<sup>1,2,3,4,5</sup>Faculty of Teacher Training and Education, Universitas Mahasaraswati****Denpasar****E-mail: <sup>1</sup>[bagusmantra@unmas.ac.id](mailto:bagusmantra@unmas.ac.id), <sup>2</sup>[agungarsana@unmas.ac.id](mailto:agungarsana@unmas.ac.id),****<sup>3</sup>[agunkprama@unmas.ac.id](mailto:agunkprama@unmas.ac.id), <sup>4</sup>[putri.wirastuti@unmas.ac.id](mailto:putri.wirastuti@unmas.ac.id), <sup>5</sup>[sriastuti@unmas.ac.id](mailto:sriastuti@unmas.ac.id)**

---

**Article History:***Received: 26-10-2023**Revised: 18-11-2023**Accepted: 26-11-2023***Keywords:***Digital, Pedagogy,  
Technology, Learning, Media*

**Abstract:** Teachers are expected to be able to improve their competencies, one of which is mastery of Information and Communication Technology. It is necessary to support enjoyable, effective, and efficient learning activities. This community service activity aims to improve teachers' pedagogical competence and ability to create interactive learning media. The methods used in this training are lectures, demonstrations, and practice. The data collection technique uses a questionnaire regarding participants' perceptions of the implementation of the training. Indicators of the success of this training include learning level, behavior level, reaction level, and result level. The results obtained from processing the data on all indicators were that participants agreed that the training had gone well. In contrast, most participants believed that the training had provided profound benefits and was very helpful in improving the participants' personal quality.

---

**INTRODUCTION**

National education seeks to develop students' various potentials to have intelligence, personality, religious, spiritual strength, self-control, noble morals, and skills needed by themselves, society, and the nation. National Education functions to develop abilities and shape the character and civilization of a dignified nation to make the nation's life more intelligent, aimed at developing the potential of students to become human beings who have faith and are devoted to God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens (Mantra & Widiastuti, 2023).

Education is an essential aspect of human life. Preparing young people with relevant knowledge and skills is vital to creating a thriving and innovative society (Maba, Mantra, et al., 2023). In today's digital era, the integration of Information and Communication Technology and digital skills has become essential in preparing students to face the challenges of the modern world. Students not only learn conventional subject matter but can also apply technology and digital skills in solving everyday problems. The project-based



learning approach is also an effective strategy for integrating Information Technology and digital skills in learning (Mantra et al., 2023).

Learning media is a learning aid, namely anything that can be used to stimulate students' thoughts, feelings, attention, and abilities or skills so that they can encourage the learning process. This limitation is still quite broad and deep, including understanding sources, environment, people, and methods used for learning purposes (Maba et al., 2023). Learning media is a form of integrating technology into the world of education. Learning media is a valuable intermediary to facilitate the teaching and learning process to make communication between teachers and students more effective. So, learning media is a tool teachers use to support the learning process and can help students receive material. Learning media is a communication intermediary between teachers and students and can facilitate interaction. (Handayani & Widiastuti, 2019)

The use of technology in everyday life cannot be avoided. Technological developments in the current era of globalization are very rapid (Yilmaz, 2021). For this reason, society is required to make changes in every activity. Teachers are expected to be able to follow these changes to improve the quality of teaching and learning activities. Along with the development of Information and Communication Technology, the integration of ICT in the learning process changes the paradigm of the teacher's role to become a facilitator, collaborator, mentor, coach, director, and study partner who can provide great choice and responsibility for students to experience learning events, so it is hoped that students will become more active in the learning process (Karim, 2018).

The learning experience gained by students will influence good learning outcomes. Learning media is a component of the teaching delivery system that can be used to support the learning process (Mantra et al., 2022). Media development is based on the perception that learning will be good, effective, and enjoyable if it is supported by learning media that can attract students' interest and attention. Therefore, developers need to understand learning media's concepts, models, principles, design, and evaluation. One of the learning media integrated with ICT is Android-based learning media (Widiastuti et al., 2020).

Teachers can use Android-based media as an alternative learning medium to increase student interest and learning outcomes. Based on the results of surveys and interviews conducted by the implementing team with the school, it was revealed that the problems are being faced in connection with the new study program that was opened. The school already has ICT facilities consisting of a computer laboratory, hotspot facilities, and LCDs in each classroom for learning media. Computer laboratory hotspot facilities are provided as a means of learning and as a medium for teacher learning. However, the already available facilities have yet to be accompanied by the availability of interactive learning media and computer-based learning materials for every subject at school (Sze Yean, 2019).

Apart from that, existing teachers have not optimally utilized the ICT facilities in schools for learning media because they still need to gain the competence to develop ICT-based learning materials. With this background, it is necessary to hold training activities for teachers to optimize existing ICT facilities to support effective learning (Weng & Luo, 2022). With this training, it is hoped that teachers at this school will further optimize existing facilities to develop learning media so that the learning process is no longer teacher-centered but student-centered. In this way, it is not only student achievement that can be



improved but also teacher competence in utilizing ICT to support engaging, effective, and efficient learning activities (Mirsharapovna et al., 2022). Thus, the target of this service activity is teachers.

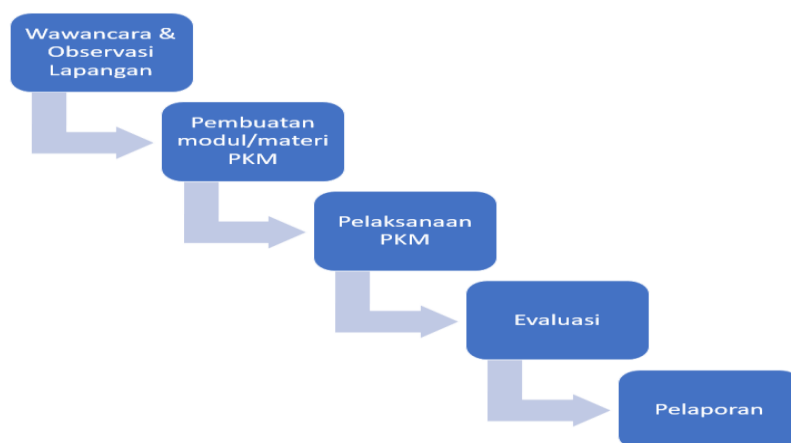
The solutions offered to overcome problems faced in schools through Community Partnership Program activities are: (1) Providing knowledge and skills in developing Android-based interactive learning media for teachers in order to increase teacher competency in mastering Information Technology and Computers, (2) Utilization of Information Technology-based learning media to assist teachers and students in carrying out the learning process, (3) Contributing ideas for teachers in improving the quality of learning activities in schools.

The benefits of using ICT-based learning media are as follows: (1) it can be used as an effective and efficient learning media because it can be taken practically anywhere, (2) it makes it easier for students to find references, (3) it attracts students because the content of the application can various things such as materials, images, videos and interactive quizzes, (4) Training students' abilities or knowledge of the material through interactive quizzes. Therefore, understanding the phenomenon described above, this community service was conducted to enhance teachers' competence in technology-based learning media in SMKS Ngurah Rai Canggu.

## METHOD

This community service was conducted in SMKS Ngurah Rai Canggu. Achieving the goals set in this activity is carried out using the following methods: (1) Lecture Method: This method is used to convey theories, concepts, and principles that are very important for the training participants to understand and master, (2) Demonstration method: this method shows and demonstrating a systematic work process, easy to do and followed by training participants, (3) Practice method: this method is used to give tasks to training participants to practice making technology-based learning media that has been delivered.

Based on this, a training flow was arranged in the thinking framework chart in Figure 1.



The data collection technique uses a questionnaire regarding participants' perceptions of the implementation of the training. Indicators of the success of this training include the learning level (measuring the level of learning experienced by the training participants), the behavior level (measuring the implementation of the training results), the reaction level (measuring the level of satisfaction with the training participants with the



training program they participated in) and the results level (measuring the success of the training from the point of view of an increase in both the capacity and competence of training participants).

## **RESULTS AND DISCUSSION**

This training activity was conducted at SMKS Ngurah Rai Cangu, from 18 to 19 August 2023. The work stages in this activity were the preparation stage, activity implementation stage, and evaluation stage.

### **Preparation Stage**

prior to conducting this community service, preparatory activities are carried out, including:

1. Conduct observations of target objects so that the information obtained provides a clearer picture of the activities that will be carried out later. This activity is an initial coordination with the school. Information about using ICT to support learning media was obtained through interviews with the school principal and several teachers. So far, teachers have experienced difficulties in developing information Technology-based learning due to teachers' limitations in following IT developments. So far, most teachers only use conventional learning methods to provide students with an understanding of the learning material. As a result of coordination with school leaders, it was agreed that activities would be carried out at school.
2. Hold meetings/discussions with members of the service implementation team and formulate what steps must be implemented for this activity, including determining the preparation of training equipment, training materials, and forms of skills that will be carried out. From the results of initial coordination, the implementation team prepares training materials by considering suggestions from the school principal or according to teacher needs.
3. Determination of Training Participants The training participants consisted of several teachers from SMKS Ngurah Rai Cangu.
4. The next activity is determining training materials, including an introduction to various learning applications and Artificial Intelligence.
5. Determine the schedule for implementing activities along with the schedule of community service activities.

### **Implementation Stage**

The training implementation begins with the process of introducing the application and its use. In this activity, the implementing team involved assistants and students as tutors. The activity was carried out in two stages, namely (1) the stage of providing material regarding the creation of Information Technology-based learning media and (2) directly practicing the material that had been provided in order to increase knowledge and understanding of the material provided. The methods used in delivering material, both theoretical and practical, are lecture and question-and-answer methods, as well as direct practice.

### **Evaluation Stage**

Indicators of the success of Android-based learning media development training for teachers include learning level (measuring the level of learning experienced by training participants), behavior level (measuring the implementation of training results), reaction



level (measuring the level of satisfaction of training participants with the training program they participated in) and level of results (measuring the success of the training from the perspective of increasing both the capacity and competence of the training participants).

**Table 1. Recapitulation of Teacher Perceptions Regarding Training Implementation**

Indicator	Percentage
Strongly agree	70 %
Agree	20%
Neutral	10%
Disagree	0%
Strongly disagree	0%

Learning indicators are used to determine the extent of the training program participants' absorption of the training material that has been provided, and can also determine the impact of the training program that the participants participated in in terms of increasing knowledge, skills, and attitudes regarding something learned in the training. Based on the table of calculation results above, the learning indicators show that participants strongly agree with the increase in teacher competency after taking part in information technology-based learning media development training, and the training methods provided are suitable. It can be seen by the assessment score reaching 70%, which indicates those who fall into the criteria range strongly agreed.

The behavioral indicators show that, in general, the training participants responded well to the importance of using Information Technology-based learning media and applying it in teaching and learning activities. The assessment score on this indicator reaches 20%, which is included in the agreed criteria. The assessment score on this indicator reached 10%, which fell into neutral criteria, and no one stated that they did not agree or strongly disagreed. This shows that participants were satisfied with the implementation, presenters, and training facilities and could also practice the training material provided themselves.

From the assessment scores of respondents' answers above, the highest score was obtained for the learning indicator, where the answer score range was 70%. Participants strongly agreed with the increased knowledge, skills, and attitudes after participating in information technology-based learning media development training, and the training methods were suitable. Based on the overall score for the strongly agree and agree indicators, a score of 90% was obtained, and a score of 10% was in the neutral criteria range. This shows that participants agree that the training has gone well.

Learning media has a different meaning from learning resources and teaching materials. Learning media can deliver messages to students through information about learning material from learning sources. Learning resources are anything that can produce messages in the form of information about learning material as study material in learning. Meanwhile, teaching materials contain messages in the form of information about learning materials and are used or utilized by students for learning. For example, maps can be used as a learning medium to convey messages to students in the form of information about the capital of a country where students need help to know the capital of a country directly but need active efforts to find out.

The learning media used in learning activities can influence the effectiveness of learning. In the beginning, learning media only functioned as a tool for teachers to teach



through visual aids. Around the middle of the 20th century, efforts to utilize visual media were equipped with audio tools, so audio-visual aids were born. In line with the development of science and technology in education, the use of learning tools or media is becoming increasingly widespread and interactive with the support of information and communication technology. Learning media is message-carrying technology that can be used for learning purposes. According to him, learning media must be modern or straightforward technology that carries learning messages for students to learn.

Learning media, in general, are tools for the teaching and learning process that can be used to stimulate students' thoughts, feelings, attention, and abilities or skills so that they can encourage an effective learning process. Learning media is a physical means to stimulate students so that the learning process occurs or to convey the content of learning material, whether audio, visual, or audiovisual. Learning media can bridge students' learning process regarding abstract learning material through physical objects that students can observe or imagine. In this way, learning material that is difficult to convey to students can be bridged by learning media to make it easier for them to understand. In line with the development of Science and Technology in education, the use of learning tools or media is becoming increasingly widespread and interactive with the support of Information and Communication Technology.

## CONCLUSION

This community service activity has been carried out in the form of training in developing learning media based on information technology. With good community service team collaboration and the active participation of the presenters in this service activity, everything has gone as expected, and it is hoped that it can provide benefits for community service partners, namely teachers, in preparing learning materials interestingly and interactively. Based on the results obtained from the evaluation stage, it can be concluded that the participants agreed that the implementation of the training had gone well. In contrast, most participants believed that the implementation of the training had provided profound benefits and was very helpful in improving the participants' personal quality. Through this training, teachers can create mobile learning media based on information technology to increase their pedagogical abilities.

From the results of discussions with activity participants and school principals, they really hope for training that can support maximum learning activities such as the training that has been implemented. With many guidelines in the teaching and learning process, where teachers must create an active and interactive classroom atmosphere, teachers are expected to utilize technological advances as supporting media in the learning process. However, this activity will not end here; it can continue in collaboration in developing materials and information about learning media using information technology.

## REFERENCES

- [1] Handayani, N. D., & Widiastuti, I. A. M. S. (2019). Integrating Quantum Learning to Improve Students' Linguistic Competence. *International Journal of Linguistics and Discourse Analytics (IJOLIDA)*, 1(1), 22–28.
- [2] Karim, R. A. (2018). Technology-Assisted Mind Mapping Technique in Writing Classrooms: An Innovative Approach. *International Journal of Academic Research in*



- Business and Social Sciences*, 8(4). <https://doi.org/10.6007/ijarbss/v8-i4/4146>
- [3] Maba, W., Mantra, I. B. N., & Widiastuti, I. A. M. S. (2023). Teachers Of 21st Century: Teachers'roles In Innovating Learning Strategies And Challenges. *International Journal of Social Science*, 2(6), 2405–2410.
- [4] Maba, W., Widiastuti, I. A. M. S., Mantra, I. B. N., Suartama, I. K., & Sukanadi, N. L. (2023). Learning loss: Impact of the COVID-19 pandemic on the students' psychosocial condition. *Journal of Education and E-Learning Research*, 10(2), 209–214.
- [5] Mantra, I. B. N., Handayani, N. D., & Pramawati, A. A. I. Y. (2022). Online Learning Strategies amid New Normal Era in Indonesia. *SOSHUM: Jurnal Sosial Dan Humaniora*, 12(1), 54–63.
- [6] Mantra, I. B. N., Handayani, N. D., Pramawati, A. A. I. Y., & Widiastuti, I. A. M. S. (2023). Brainstorming Combined With Project-Based Learning as an Effective Learning Strategy in Writing Classrooms. *Journal of Language Teaching and Research*, 14(6), 1590–1596. <https://doi.org/10.17507/jltr.1406.17>
- [7] Mantra, I. B. N., & Widiastuti, I. A. M. S. (2023). Brainstorming, Exploring, Sharing, Transferring Knowledge (Best) As an Effective Strategy To Upraise Students' Writing Skills. *JOSELT (Journal on Studies in English Language Teaching)*, 4(1), 21–30.
- [8] Mirsharapovna, S. Z., Shadjalilovna, S. M., Kakhramonovich, A. A., & Malikovna, K. R. (2022). Pros and Cons of Computer Technologies in Education. *Texas Journal of Multidisciplinary Studies*, 14, 26–29.
- [9] Sze Yean, L. (2019). Promoting Active Learning and Independent Learning Among Primary Student using Flipped Classroom. *International Journal of Education, Psychology and Counseling*, 4(30), 324–341. [www.ijepc.com](http://www.ijepc.com)
- [10] Weng, W., & Luo, W. (2022). Exploring the Influence of Students' ICT Use on Mathematics and Science Moderated by School-Related Factors. *Journal of Computers in Mathematics and Science Teaching*, 41(2), 163–185.
- [11] Widiastuti, I. A. M. S., Mantra, I. B. N., & Sukoco, H. (2020). Mobile Internet-Based Learning To Cultivate Students ' Speaking Skill During Coronavirus Pandemic. *International Journal of Applied Science and Sustainable Development (IJASSD)*, 2(1), 6–10.
- [12] Yilmaz, A. (2021). The effect of technology integration in education on prospective teachers' critical and creative thinking, multidimensional 21st century skills and academic achievements. *Participatory Educational Research*, 8(2), 163–199.



HALAMAN INI SENGAJA DIKOSONGKAN