Workshop on in-Depth Learning and 3D-Based Learning Media for Teachers and Students at UPTD SD Negeri 155684 Lubuk Tukko 1

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Abstract: The development of digital technology and the demands of 21st-century learning require teachers to implement meaningful and student-centered learning through an immersive learning approach. However, many elementary school teachers still face limitations in understanding the concept of immersive learning and utilizing technology-based learning media, especially three-dimensional (3D) and Artificial Intelligence (AI)-based media. Therefore, this Field Study activity aims to improve the knowledge and skills of teachers and students in implementing immersive learning through the use of 3D-based learning media and AI technology at the UPTD of SD Negeri 155684 Lubuk Tukko 1, Pandan District. The activity was implemented through a four-day workshop involving teachers and students, using an approach of socialization, demonstrations, hands-on practice, discussion, and reflection. The workshop materials covered the concept of immersive learning, the use of 3D-based learning media, gamification of learning through 3D Media applications, and the use of Artificial Intelligence in developing teaching materials and learning media. Evaluation of the activity was conducted through pre- and post-tests, participant observation, and analysis of the resulting learning products. .The results of the activity showed an increase in teachers' understanding and skills in designing and implementing technology-based immersive learning. Teachers were able to produce interactive learning media, teaching modules, and evaluation questions using 3D media, 3D media, and AI. Furthermore, this activity also increased teachers' motivation, creativity, and awareness of the importance of digital literacy in learning. This Field Study activity made a positive contribution to improving teacher competency and supporting the creation of more innovative, interactive, and relevant learning that reflects the characteristics of 21st-century learners.

Keywords: 3D Learning Media; Artificial Intelligence; Deep Learning; Elementary Education; Teacher Workshop

1. Introduction

The world of education continues to undergo rapid transformation, particularly in the 21st century, marked by the development of digital technology and shifting learning paradigms. Learning no longer focuses on superficial mastery of material (surface learning), but instead emphasizes in-depth learning that encourages students to fully understand concepts, think critically, creatively, and reflectively, and connect knowledge to real-life contexts. In this context, teachers are required to act as learning facilitators capable of designing meaningful, active, and student-centered learning experiences.

Immersive learning emphasizes students' cognitive, affective, and psychomotor engagement through exploration, problem-solving, collaboration, and reflection. However,

the implementation of immersive learning in elementary schools still faces various challenges, particularly related to the limited availability of strategies, methods, and learning media capable of concretely visualizing abstract concepts. Therefore, learning innovations supported by the use of technology-based learning media relevant to the characteristics of 21st-century students are needed.

In line with these demands, teachers, as the primary agents of educational change, need to be equipped with adequate pedagogical and technological competencies. Teachers are required not only to understand in-depth learning concepts theoretically but also to be able to implement them through the selection of appropriate learning media, including 3D-based media. This aligns with the 21st-century teacher competency framework, which emphasizes critical thinking, creativity, collaboration, and the use of technology to improve the quality of learning.

However, the reality on the ground shows that most elementary school teachers still face limitations in understanding and implementing in-depth learning and utilizing 3D-based learning media. Based on the conditions of teachers at the UPTD of SD Negeri 155684 Lubuk Tukko 1, learning still tends to be teacher-centered, emphasizes memorization, and minimal use of innovative media. Limited knowledge, skills, and opportunities to participate in training or workshops are the main factors hindering the optimization of meaningful learning that is appropriate to the characteristics of today's students.

These conditions result in low student engagement in learning, underdevelopment of higher-order thinking skills, and learning that is not fully contextual and engaging. Therefore, systematic efforts are needed to improve teacher competency through relevant and applicable professional development activities.

Based on the description, it is necessary to implement a Workshop on Deep Learning and 3D-Based Learning Media for Teachers and Students at the UPTD of SD Negeri 155684 Lubuk Tukko 1. This workshop is expected to be a means for teachers to understand the concept of deep learning comprehensively, develop skills in designing and using 3D-based learning media, and integrate it into the learning process in the classroom. Thus, it is expected to create a more meaningful, innovative, interactive learning process, and in line with educational demands.

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2.   Materials and Method

This Field Study activity was carried out at UPTD SD Negeri 155684 Lubuk Tukko 1, Pandan District, Central Tapanuli Regency. The Pandan District Education Sector is an institution under the auspices of the Central Tapanuli Regency Education Office which functions primarily as a technical implementing unit in fostering elementary school level education units in the Pandan District work area.

The organizational structure at UPTD SD Negeri 155684 Lubuk Tukko 1, Pandan District, Central Tapanuli Regency consists of several leadership and staff elements who coordinate with each other in carrying out the functions of coaching and educational administration.

The primary activities of the UPTD SD Negeri 155684 Lubuk Tukko 1 focus on the management and development of elementary education institutions in the Pandan sub-district.

The outreach activities were carried out in the form of a workshop on In-Depth Learning and 3D-Based Learning Media for Teachers and Students. This workshop took place over four days, December 15-18, 15, 16, 17, and 18, 2025, with each session lasting three hours. The details of the workshop activities are as follows:

Day 1- Orientation and introduction to Deep Learning

The event began with an official opening, explaining the workshop's objectives, and administering a pre-test to gauge participants' initial understanding. The material focused on Immersive Learning teacher competencies, the importance of digital literacy, and an overview of Immersive Learning and 3D-Based Learning Media. Participants also discussed their experiences using technology in the classroom.

Day 2 - Introduction to 3D-Based Learning Media

The event began with an official opening, an explanation of the workshop's objectives, and a pre-test to gauge participants' initial understanding. The material focused on teacher competencies in 3D-Based Learning Media, the importance of digital literacy, and an overview of technology use in learning. Participants also discussed their experiences using technology in the classroom.

Day 3 – Introduction and Practice of 3D-Based Learning Media

Workshop participants were introduced to the concept of gamified learning through applications. Speakers demonstrated media creation. Participants then practiced creating learning media relevant to their chosen subjects and presented their results.

Day 4 - Introduction to Artificial Intelligence or AI

Workshop participants were introduced to the basic concepts of Artificial Intelligence in education. As a resource person, I demonstrated the use of several AI applications, such as ChatGPT, to create questions and teaching modules, and to design media using Canva AI. After understanding the material, participants practiced creating simple teaching tools using artificial intelligence and discussed the ethics of its use.

During the workshop, students prepare a Field Study activity report that outlines the series of events, the materials presented, participant participation, and the teacher's products. This report serves as academic documentation and evaluation of the effectiveness of the Field Study activities carried out by the students. The prepared event schedule is as follows:

Table 1. The prepared event schedule.

Day	Activity	Time
1	● Opening, pre-test, workshop introduction.	30 minutes
	● Short material → Deep Learning	60 Minutes
	● Discussion group → experience Teacherusing technology in the classroom.	60 Minutes
	● Small group reflection and presentation.	30 minutes
2	● Short material → 3D-Based Learning Media.	30 minutes
	● Demo → create quizzes, live/homework mode, analyze results.	60 Minutes
	● Practice → the teacher makes a quiz according to the subject and then tries it together (plays the quiz between participants).	60 Minutes
	● Reflection discussion: how 3D media immersive learning helps teachers in evaluation.	30 minutes
3	● The concept of gamification of learning.	30 minutes
	● Demo manufacturing Media 3D Based Learning,	60 Minutes
	● Individual practice of creating 3D-based learning media according to subjects.	60 Minutes
	● Presentation of teacher's work + feedback from resource persons.	30 minutes
4	● What is AI? Example applications for teachers (ChatGPT).	30 minutes
	● Demo → creating questions, lesson plans, or teaching materials with AI.	60 Minutes
	● Individual practice → teachers try to create teaching materials or learning devices using AI.	60 Minutes
	● Sharing work results & discussing the ethics of using AI.	30 Minute

3. Results and Discussion

Field Study Achievements

The implementation of the workshop on In-Depth Learning and 3D-Based Learning Media for Teachers and Students which was carried out at the UPTD of SD Negeri 155684 Lubuk Tukko 1, Pandan District, obtained the results which I will describe as follows:

Improving Teacher Knowledge

Teachers who attended the workshop significantly improved their understanding of the concepts of immersive learning and 3D-based learning media, the importance of digital literacy, and strategies for utilizing interactive technology in learning. To assess participants' prior knowledge, the resource person administered a pre-test at the beginning of the activity.

Practical Skills Improvement

In addition to gaining a conceptual understanding of 3D-based learning media and immersion, participants were also able to effectively practice using 3D-based immersion learning applications. Participants successfully created interactive questions and learning media tailored to their chosen subjects, making them immediately relevant for teachers to use in their teaching and learning activities.

Utilization of AI Applications in Education

Through workshops introducing and practicing AI applications like ChatGPT, participants were able to create teaching tools such as learning modules, practice questions tailored to learning outcomes, and more efficient problem-solving techniques for students. This demonstrated that participants, as teachers, were increasingly open to the use of AI-based technology.

Produced Concrete Products

The concrete outcome of this workshop was the development of a technology-based teaching module integrated with 3D media immersive learning applications, 3D media, and Artificial Intelligence (AI). The resulting product was presented through microteaching activities, where each topic, such as 3D media immersive learning, was presented by one group, followed by 3D media and Artificial Intelligence by another group. This demonstrated an increase in the participants' creativity and enhanced collaboration skills.

Growing Digital Motivation and Awareness

The workshop successfully fostered a renewed enthusiasm among the participants, who were primarily teachers, to be more active in innovating in their learning. The workshop proceeded effectively, positively impacting the participants. All participants felt enthusiastic and motivated to consistently incorporate technology into classroom learning, understand the material presented, and gain new insights into the application of interactive technology and artificial intelligence in education. The workshop fostered self-confidence, creativity, and an awareness of the importance of collaboration among teachers, along with an understanding that technology is a tool while teachers still play a key role in classroom learning. Teachers also recognized that the use of interactive technology is not merely an optional option but a primary need to address the characteristics of today's digital generation.

Obstacles and Solutions

During the workshop on Immersive Learning and 3D-Based Learning Media for Teachers and Students, several obstacles emerged, both technical and non-technical. The following are some of the obstacles encountered and possible solutions:

a. Barriers to Digital Literacy
b. Internet Connection Limitations
c. Time Limitation

d. Level of Variation in Technology Mastery

e. Limited Facilities

Some teachers do not bring adequate devices like laptops, so they are less comfortable using 3D media deep learning applications. The use of AI, especially when creating questions with 3D media deep learning, will take longer because of the limited screen on a phone, which does not display all the views in 3D media deep learning, and the same goes for ChatGPT. Additionally, using a phone makes it difficult to operate.

Student Reflection

This field study was a valuable experience for me as a postgraduate student in the Master of Elementary Education program. The workshop, which focused on in-depth learning and 3D-based learning media for teachers and students, provided me with the opportunity to interact directly with teachers in the field, particularly those in Pandan District. I learned about the real challenges they face and actively contribute to providing solutions related to the use of technology. Through this workshop, I learned a lot about effective communication, managing training activities, and adapting my approach to delivering materials to the diverse characteristics of my participants.

The field study was also a valuable learning experience for me, as I learned the importance of digital literacy and adaptive skills for teachers. Integrating interactive and interactive technology into learning has been proven to increase motivation and effectiveness when used appropriately. Furthermore, I learned a lot about how to design training that is not solely theory-oriented but also emphasizes hands-on practice so participants truly understand the application of technology in teaching and learning. This experience reinforced the realization that the success of twenty-first-century learning depends heavily on teachers' competencies in innovation and collaboration.

From an academic and professional perspective, this field study program has been incredibly beneficial in developing my competencies as a teacher and education practitioner. The experience gained from teaching, mentoring, and developing technology-based learning tools provides valuable capital to support future research and community service. Furthermore, this field study has expanded my professional network with schools and education agencies, which will be invaluable for future academic collaborations and educational development projects.

4. Conclusion

The implementation of the Field Study with the Deep Learning and 3D-Based Learning Media Workshop for Teachers and Students at UPTD SD Negeri 155684 Lubuk Tukko 1, Pandan District, has gone well and achieved the intended goals of the activity. This Field Study through the workshop has been able to enhance teachers' understanding and skills in utilizing digital technology such as deep learning 3D media, as well as Artificial Intelligence (AI) to support the learning process.

Through workshop activities, collaborative learning between universities and partner schools aims to develop 21st-century teachers who are creative, adaptive, and digitally literate.

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