Published online on the page: https://jurnal.mifandimandiri.com/index.php/jpvi

J P V I
Jurnal Pendidikan Vokasi Indonesia

| ISSN (*Online*) 2962-4649 |

Enhancing Active, Innovative, Creative, Effective, and Enjoyable Learning in Information and Communication Technology Subjects

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Article Information

Article History:
Submit: 04 Agustus 2024
Revision: 07 Agustus 2024
Accepted: 21 Agustus 2024
Published: 30 Agustus 2024

Keywords

Active; Innovative; Creative

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A B S T R A C T

This study aims to enhance the quality of Active, Innovative, Creative, Effective, and Joyful Learning (commonly referred to as PAIKEM) in the Information and Communication Technology (ICT) subject at UPT SMP Negeri 15 Medan. The primary objective is to encourage active student participation, increase learning motivation, and foster a positive attitude toward ICT learning. The research employed a Classroom Action Research (CAR) method conducted in two cycles, each consisting of planning, action implementation, observation, and reflection stages. Data were collected through observation, interviews, and learning outcome tests. The findings indicate that the implementation of PAIKEM strategies significantly improved student engagement, motivated students to participate more actively, and positively impacted their learning outcomes. Thus, the PAIKEM approach has proven to be effective in creating a more meaningful and enjoyable learning environment in ICT classes.

1. Introduction

Education plays a crucial role in shaping character, imparting knowledge, and developing the talents and potential of students (Juliana et al., 2020). As a fundamental pillar of national development, education directly contributes to the enhancement of human resource quality. In this era of rapid advancements in science and technology, educational systems are required to continuously innovate to meet the demands of the times. New, creative, and sustainable learning approaches are essential to ensure that educational processes in schools are effective and meaningful (Maesaroh et al., 2019; Dakabesi & Louise, 2019).

In this context, the School Field Introduction Program (Pengenalan Lapangan Persekolahan or PLP) is one of the essential components of teacher professional education. Through PLP, seventh-semester teacher education students are given the opportunity to directly observe classroom learning processes, enhance their competencies in developing instructional tools, and practice guided teaching. This program is a critical step in preparing future educators to face contemporary educational challenges with professionalism.

One subject that particularly requires an innovative instructional approach is Information and Communication Technology (ICT). This subject not only introduces students to technology but also fosters logical thinking, creativity, and communication skills. ICT serves as both a medium and a tool

to facilitate the transfer, processing, storage, and dissemination of information. Its rapid advancement has significantly impacted human life, including the education sector (Fauziah & Hedwig, 2010). Therefore, it is essential for educators to design engaging and relevant learning strategies that empower students not only to be passive users of technology but also to utilize it meaningfully in the learning process.

However, observations conducted during the PLP program at UPT SMP Negeri 15 Medan revealed that ICT instruction remains monotonous. Teachers tend to rely heavily on lecturing methods without incorporating practical activities, resulting in students being less active, unfocused, and easily disengaged. This contradicts the fundamental goals of education, which aim to provide active, meaningful, and student-centered learning experiences (Darsono, 2015).

The Active, Innovative, Creative, Effective, and Joyful Learning (PAIKEM) approach emphasizes active student engagement and teacher creativity in creating an appealing learning environment. According to Muslim (2014), PAIKEM involves two key dimensions: teacher and student. From the teacher's perspective, effective learning requires active monitoring of student activities, providing feedback, asking challenging questions, and designing varied and relevant learning media. From the student's perspective, learners are expected to express their ideas, ask questions, summarize information, and demonstrate courage in experimenting and creating throughout the learning process.

Based on this background, the present study aims to improve the quality of ICT instruction in schools through the implementation of the PAIKEM approach. This research is considered both significant and urgent, considering the need to create a learning environment that is not only active and enjoyable but also effective in achieving educational goals.

2. Research Methods

This study uses the Classroom Action Research (CAR) approach. CAR is a reflective form of research conducted by teachers or educational practitioners within the classroom to improve and enhance the quality of the teaching and learning process (Kemmis & McTaggart, 1988). This method is employed to address problems in learning directly in the classroom through a series of actions that are planned, implemented, observed, and reflected upon. According to Arikunto (2010), CAR is conducted through four main stages in each cycle: (1) planning, (2) action, (3) observation, and (4) reflection. This study is designed with two cycles, where each cycle aims to improve student engagement and learning outcomes in the subject of Information and Communication Technology (ICT) through the implementation of the PAIKEM approach. The choice of CAR as the research method is based on the necessity to improve the identified ineffective learning practices, particularly in fostering active student involvement during the learning process. By involving teachers directly as researchers, CAR allows for continuous and contextual improvements in teaching practices (Mertler, 2017).

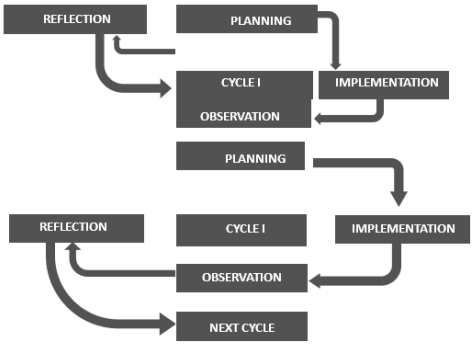

Figure 1. Cycles carried out in Classroom Action Research

3. Results and Discussion

The results of the study indicate that the implementation of the PAIKEM approach in ICT learning at UPT SMP Negeri 15 Medan successfully enhanced student participation and learning motivation. Based on observations conducted over two cycles, students became more engaged in learning activities and showed improvements in critical and creative thinking skills. The more interactive and enjoyable learning environment, which included discussions, hands-on practices, and the use of varied learning media, effectively increased students' focus and enthusiasm. Furthermore, teachers also experienced growth in their classroom management skills and ability to provide constructive feedback. These findings align with the concept that active, innovative, creative, and effective learning can foster a more conducive learning atmosphere, ultimately leading to better outcomes in the educational process.

3.1. Result

The results of implementing active learning strategies in the ICT subject, particularly related to tasks such as expressing opinions, posing questions, answering queries, searching/reading materials, completing assignments, and group discussions, have shown a noticeable increase in student engagement and collaboration. These activities foster a more interactive learning environment, where students actively contribute to discussions, critically analyze information, and work together to solve problems, leading to enhanced understanding and improved academic performance.

Table 1. The results of active learning

Assignment	Average Cycle I	Average Cycle II
Expressing	52%	78%
Proposing	62%	77%
Answering	70%	79%
Searching/Reading	69%	78%
Working on questions	75%	85%
Group Discussion	79%	84%

The results of the innovative learning methods employed by students in the ICT subject demonstrate a notable improvement in their creativity, problem-solving skills, and ability to apply technology in practical contexts.

Table 2. The results of innovative learning

Aspect	Knowledge	Task	Cycle I	Cycle II
Remembering computer devices	Factual knowledge	Mentioning the devices found in a computer	50 %	70%
Understanding Information and Communication Technology material	Conceptual knowledge	Explaining the meaning of Information and Communication Technology	40%	60%

The results of the creative learning methods applied by students in the ICT subject highlight significant improvements in their ability to think outside the box, engage in innovative problem-solving, and develop unique solutions using technology.

Table 3. The results of creative learning

Aspect	Criteria	Cycle I	Cycle II
Fluency	Providing new, relevant ideas to solve problems	50 %	80%
Flexibility	Providing new answers	40%	70%

The results of the effective learning strategies implemented in the ICT subject have shown a marked improvement in student comprehension, retention of knowledge, and the ability to apply concepts in real-world situations.

Table 4. The results of effective learning

Activities	Effective	Not effective
Make a schedule for the learning process at home	✓	-
Take notes of important material when the teacher explains the material	✓	-

The results of implementing enjoyable learning strategies in the ICT subject reveal a positive impact on student motivation, classroom atmosphere, and overall engagement.

Table 5. The result of fun learning

Learning Activities	Enjoyable	Not enjoyable
Lecture method	80%	20%
Group discussion and study	80%	20%

The results of this engaging learning approach indicate that students became more enthusiastic and did not experience boredom during the learning process, due to the variety of instructional methods employed. It can be concluded that students prefer discussions and group learning activities over conventional teacher-centered lectures.

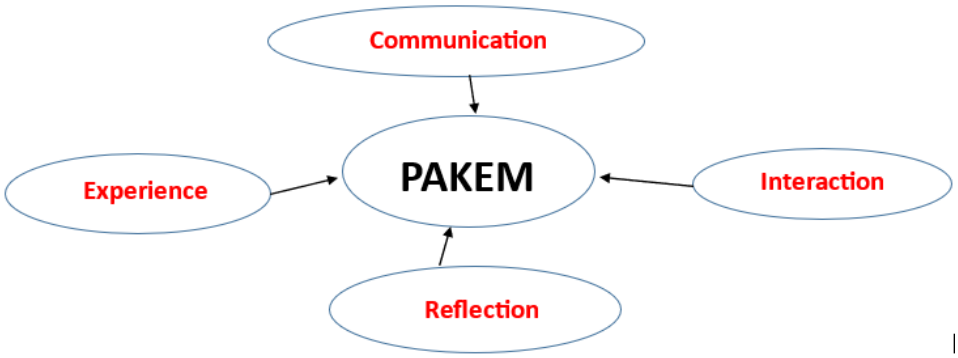

Figure 2. Pakem learning model

4. Conclusion

Based on the results of the research, data analysis, and observations, the researcher concludes that efforts to enhance creative, active, effective, innovative, and enjoyable learning for Grade VII students at UPT SMP Negeri 15 Medan in the ICT subject can be achieved through several strategies. These strategies include strengthening collaboration between teachers and students and placing greater emphasis on practical activities rather than theoretical instruction. This approach enables students to better understand the learning material, fosters creativity in generating ideas, enhances innovation in addressing both classroom and personal challenges, and develops students' ability to independently find solutions to problems. Furthermore, the learning process becomes more effective in achieving its intended objectives. Students also perceive ICT learning as more enjoyable due to the combination of practical activities and easily understandable theoretical explanations.

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