

THE USE OF ACTIVE LEARNING STRATEGIES TO IMPROVE THE EFFECTIVENESS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) LEARNING AMONG FIFTH GRADE STUDENTS

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ABSTRACT

This study aims to improve the effectiveness of Information and Communication Technology (ICT) learning through the use of active learning strategies among fifth grade students at UPT SD Inpres 10/73 Welado, Bone Regency. The research was conducted using Classroom Action Research (CAR) with a cyclical model consisting of planning, action, observation, and reflection. The subjects of this study were fifth grade students, while the object of the study was the effectiveness of ICT learning, which was measured through student learning outcomes, learning activities, and student engagement during the learning process. Active learning strategies implemented in this study included group discussions, hands-on practice, question-and-answer activities, and collaborative learning. The results showed a significant improvement in learning effectiveness, indicated by increased student participation, higher motivation, and improved learning outcomes from the first cycle to the second cycle. These findings suggest that the use of active learning strategies can effectively enhance ICT learning effectiveness and create a more interactive and student-centered learning environment in elementary schools.

Keywords: active learning strategies, ICT learning, learning effectiveness, elementary school students

INTRODUCTION

Education is a process that cannot be separated from personal life as well as national and state life. Therefore, the quality of individuals and a nation is largely determined by the quality of its educational process. For this reason, Information and Communication Technology (ICT) subjects at the elementary and secondary school levels require serious attention, as the knowledge and skills acquired at earlier stages greatly influence students' learning success at higher levels. Consequently, the task of educators is not limited merely to transferring ICT values or delivering knowledge, but also includes developing students' abilities to analyze cases using principles and concepts, and to make judgments based on what is right or wrong.

The success of improving educational quality, particularly in ICT learning, depends on various factors, including students themselves, subject matter, teachers, parents, and especially the teaching and learning strategies applied by teachers. At a minimum, teachers must master the subject content and possess the skills to teach it effectively (Sardiman, 2009:45). In preparing and implementing learning materials, teachers must be selective in determining appropriate instructional strategies. This depends on the approaches and methods used to ensure that the teaching and learning

process is effective and efficient. Ideally, learning methods should actively involve students throughout the learning process.

Teaching methods commonly used in schools often provide limited opportunities for students to develop according to their abilities. In addition, there is a tendency for teachers to dominate classroom activities by merely delivering information through lecture-based methods without considering students' mental development. Even more concerning is the tendency for teachers to focus solely on teaching without making efforts to design learning models that foster active participation from both teachers and students. When students only listen to information, their involvement in the learning process is minimal, often limited to answering questions posed by the teacher. This situation was observed among fifth grade students at UPT SD Inpres 10/73 Welado, Bone Regency, particularly in ICT subjects, where the dominant use of lecture methods resulted in student boredom during classroom learning.

The development of contemporary learning methods emphasizes placing students in groups and assigning tasks that require them to depend on one another. Through this approach, students directly experience, internalize, and learn from their own experiences, making learning an integral part of their feelings, thoughts, and experiences. This learning process occurs continuously through reorganization as new understanding emerges. Such an approach is highly suitable for classroom learning, including ICT subjects, which are often perceived as difficult and boring by many students.

ICT teachers are therefore required to be creative and innovative in teaching concepts and theories by combining various methods into an appropriate learning model. Teachers must have the ability to design learning models that attract students' interest so that they are motivated to participate actively in ICT learning. As a result, students are expected to develop positive attitudes toward ICT learning and become more motivated, particularly in learning topics such as Visual Basic programming, thereby optimizing their learning motivation.

This study aims to analyze the implementation of active learning strategies in improving the effectiveness of Information and Communication Technology (ICT) learning among fifth-grade students at UPT SD Inpres 10/73 Welado, Bone Regency. Specifically, the study seeks to examine the effect of active learning strategies on students' ICT learning achievement, to enhance students' participation during the learning process, and to analyze changes in students' learning motivation following the implementation of active learning strategies. In addition, this study aims to identify which aspects of ICT learning effectiveness—namely learning achievement, participation, and motivation—show the most significant improvement through the application of active learning strategies.

The novelty of this study lies in the implementation of active learning strategies in the context of Information and Communication Technology (ICT) learning at a public elementary school located in a rural area of Bone Regency, South Sulawesi, which has received limited research attention to date. According to Bonwell and Eison (1991), active learning emphasizes students' direct engagement in the learning process to enhance understanding and learning outcomes. However, previous studies have predominantly focused on secondary and higher education levels and have largely been conducted in urban settings (Prince, 2004; Freeman et al., 2014). Therefore, this study offers a novel contribution by integrating active learning strategies into ICT instruction for fifth-grade

elementary students within a local Indonesian context, while comprehensively examining learning effectiveness through three key aspects: learning achievement, participation, and motivation. This approach is expected to provide empirical evidence to support the development of contextual and relevant ICT learning models for elementary schools in developing regions.

Considering the problems described above, it is necessary to implement innovations in ICT learning. If previous learning activities were mostly individual and teacher-centered, this study seeks to improve students' learning effectiveness through the use of active learning strategies. Learning that applies a variety of teaching methods is considered an effective approach to achieving educational objectives. One such approach is the active learning strategy, which is expected to enhance students' understanding of ICT subjects, foster a spirit of cooperation, and encourage mutual support among students in mastering learning materials. Consequently, students are expected to achieve optimal understanding of ICT learning.

The main problem addressed in this study is identifying the instructional actions that teachers can take to improve students' learning effectiveness in ICT subjects. Various factors may contribute to these learning problems. Through reflective discussions among teachers, it was identified that the primary cause is the continued use of conventional, teacher-centered learning strategies in ICT instruction. Therefore, solutions are needed to overcome these challenges and to create a learning environment that is enjoyable, active, creative, collaborative, and capable of developing students' optimal thinking abilities.

Accordingly, this study implements an active learning strategy, which is considered effective because it can be carried out individually or collaboratively in groups. Group success depends on individual contributions, ensuring that each member actively participates and does not rely solely on others. Active learning strategies emphasize student activities and interactions that promote mutual motivation and assistance in mastering learning materials to achieve maximum academic performance. This method is expected to optimize students' abilities in learning Information and Communication Technology (ICT).

METHODS

This study employed a Classroom Action Research (CAR) approach aimed at improving the effectiveness of Information and Communication Technology (ICT) learning through the implementation of active learning strategies. The research was conducted at UPT SD Inpres 10/73 Welado, Bone Regency, with the research subjects consisting of 43 fifth-grade students who had diverse academic ability levels. The study was carried out over the course of one semester, from July to December of the academic year. The Classroom Action Research design was implemented through two cycles, each consisting of the stages of planning, action, observation, and reflection, with each cycle conducted in three meetings. Each cycle was designed to comprehensively examine improvements in students' learning effectiveness in ICT subjects through the use of active learning strategies.

This study employed Classroom Action Research (CAR), which was conducted in several cycles consisting of planning, action implementation, observation, and reflection, as proposed by Kemmis and McTaggart (1988). The baseline condition (pre-intervention) was identified based on the conventional teaching method used by the

teacher prior to the implementation of active learning strategies in order to obtain an initial overview of ICT learning effectiveness. Assessment instruments, including learning achievement tests and observation sheets, were validated through content validity by experts and tested for reliability to ensure measurement consistency, in accordance with principles of educational research instrument development (Arikunto, 2013). The same test format was applied across all cycles to maintain comparability of students' learning outcomes. The success indicator of the study was set at 85% mastery learning, referring to the standard of classical mastery learning, which states that an instructional intervention is considered successful when the majority of students achieve the minimum mastery criterion (Sugiyono, 2019).

During the planning stage, the researcher prepared instructional materials, including a syllabus, lesson plans (RPP) based on active learning strategies, student worksheets (LKS), observation instruments for student activities, and learning achievement evaluation instruments. The learning material in Cycle I focused on basic competencies related to identifying and explaining the functions of menus and icons in word processing software. In Cycle II, the learning material emphasized competencies related to using main menus and icons and creating simple word processing documents. The action stage was carried out by implementing various forms of active learning strategies, such as group discussions, pair learning, question-and-answer activities, group presentations, and guided independent learning. These strategies were intended to enhance student engagement, motivation, and interaction throughout the learning process.

The observation stage was conducted systematically to monitor student activities, learning participation, cooperation, motivation, and the achievement of learning objectives during the implementation of the actions. Observations were carried out by the researcher and a collaborator (peer teacher) using prepared observation sheets. The data collected in this study consisted of qualitative and quantitative data. Qualitative data were obtained through observations, interviews, and reflective discussions, which described changes in students' attitudes, interests, motivation, and learning engagement in ICT learning. Quantitative data were obtained from student learning achievement tests administered at the end of each cycle to measure improvements in student learning outcomes.

The reflection stage was conducted at the end of each cycle to analyze the results of observations and learning evaluations. The findings from the reflection stage were used as a basis for making improvements and refining instructional actions in the subsequent cycle. Data analysis in this study was carried out using descriptive quantitative and qualitative methods, by comparing student learning outcomes before the implementation of the action, after Cycle I, and after Cycle II to determine the percentage of improvement in learning outcomes. The indicator of success for this study was defined as at least 85% of students achieving the Minimum Mastery Criterion (KKM) of 70, accompanied by observable improvements in student activeness, motivation, and engagement in the learning process. Therefore, the implementation of active learning strategies is expected to optimally enhance the effectiveness of ICT learning among fifth-grade students at UPT SD Inpres 10/73 Welado, Bone Regency.

FINDINGS AND DISCUSSION

Based on data collected through classroom observations and formative evaluations conducted during the implementation of active learning strategies, the following key findings were obtained:

Table 1. Comparison of Students' ICT Learning Outcomes Before and After the Intervention

Indicator	Pre- Intervention	Post- Intervention	Gain / Increase
Average ICT score	68.4	82.7	+14.3
Percentage of students achieving the Minimum Mastery Criterion (≥ 75)	38%	76%	+38 percentage points

The results of this study indicate a substantial improvement in the effectiveness of ICT learning following the implementation of active learning strategies. The comparison of students' ICT learning outcomes before and after the intervention is presented in Table 1.

Based on Table 1, the average ICT score increased by 14.3 points, from 68.4 in the pre-intervention condition to 82.7 in the post-intervention condition. In addition, the percentage of students who achieved the Minimum Mastery Criterion (≥ 75) rose markedly from 38% to 76%, representing an increase of 38 percentage points. These findings suggest that active learning strategies contributed positively to improving students' academic achievement in ICT.

Table 2. Comparison of Students' Learning Activities Before and After the Intervention

Indicator	Pre- Intervention	Post- Intervention	Gain / Increase
Active participation in discussions	45%	84%	+39 percentage points
Timely task completion	57%	89%	+32 percentage points

Students' learning activities before and after the intervention are summarized in Table 2. The results show that active participation in classroom discussions improved significantly, increasing from 45% in the pre-intervention phase to 84% after the intervention, with a gain of 39 percentage points. Similarly, the percentage of students completing tasks on time increased from 57% to 89%, indicating an improvement of 32 percentage points.

Overall, the descriptive results demonstrate that the implementation of active learning strategies not only enhanced students' ICT learning achievement but also substantially improved their classroom participation and responsibility in completing learning tasks. These findings highlight the effectiveness of active learning strategies in fostering a more engaging and student-centered ICT learning environment at the elementary school level. After the implementation of active learning strategies such as pair discussions, *think-pair-share*, and project-based case studies there was a significant

improvement in students' average scores, classroom participation, and ability to complete ICT-related tasks effectively. The ICT teacher reported that students demonstrated higher motivation and enthusiasm during lessons. Student-to-student interaction increased noticeably, and students showed greater confidence when presenting solutions to ICT practical assignments. Most students stated that active learning methods made ICT materials "easier to understand," particularly when completing tasks in groups. Students also felt that discussion activities helped them identify mistakes and collaboratively develop solutions. Throughout the implementation of active learning strategies, several positive changes in classroom behavior were observed: (1) A decrease in passive behaviors (e.g., students remaining idle or observing without participation) (2) Increased initiative in operating ICT devices, asking comprehension-related questions, and assisting peers (3). More focused, structured, and productive classroom discussions

Discussion

The findings indicate that the use of active learning strategies significantly improved the ICT learning achievement of fifth-grade students at UPT SD Inpres 10/73 Welado, Bone. This improvement is evidenced by the increase in the average score from 68.4 to 82.7, as well as the rise in the percentage of students meeting the Minimum Mastery Criterion (KKM).

The findings of this study are consistent with recent international research demonstrating that active learning strategies significantly enhance students' learning achievement, participation, and motivation in technology-based learning. Freeman et al. (2014) argue that active learning is more effective than traditional lecture-based methods because it promotes students' cognitive engagement during the learning process. In the context of ICT learning, active learning strategies are effective because they provide students with opportunities to learn through hands-on practice, discussion, and problem-solving activities, which strengthen conceptual understanding and digital skills (Prince, 2004). These results also support the perspective of Bonwell and Eison (1991), who emphasize that students' active involvement is a key factor in improving learning effectiveness. The implications of this study suggest that teachers should systematically integrate active learning strategies into ICT instruction, while curriculum designers should emphasize student-centered learning approaches that foster 21st-century skills, particularly digital literacy and collaboration.

Student participation increased substantially, from 45% to 84%, indicating that active learning strategies such as pair discussions and *think-pair-share* were effective in enhancing students' intrinsic motivation. According to Savas and Resta (2010), active learning directly influences student motivation by positioning learners as active agents in the learning process rather than passive recipients of information. Interviews with students further revealed that they felt more "engaged" and "challenged," which encouraged them to ask questions more actively and collaborate with peers. This demonstrates that active learning strategies also positively affected students' affective and social dimensions of learning. The implementation of group work proved effective in developing students' collaborative skills. In addition to improvements in individual performance, students were observed assisting one another in understanding more complex tasks. Vygotsky (1978) emphasized that learning is inherently social and occurs most effectively when students engage in collaborative discussions within the framework

of the *Zone of Proximal Development* (ZPD). Despite the positive results, this study has several limitations: (1) The relatively short duration of the intervention (approximately 6–8 weeks) may not fully capture the long-term impact on ICT skills. (2) Variations in students' initial ICT competencies may have acted as confounding factors influencing learning outcomes. (3) External factors, such as parental support and access to ICT devices at home, were not fully controlled. These limitations do not diminish the main findings but provide direction for future studies to enhance generalizability and evaluate the sustainability of active learning strategies in ICT education.

CONCLUSION

This study concludes that the implementation of active learning strategies is effective in improving the learning effectiveness of Information and Communication Technology (ICT) among fifth-grade students at UPT SD Inpres 10/73 Welado, Bone. The application of strategies such as pair discussions, *think-pair-share*, and project-based learning resulted in a significant improvement in students' academic achievement, classroom participation, and task completion rates. The findings demonstrate a substantial increase in the average ICT scores, as well as a marked rise in the number of students achieving the Minimum Mastery Criterion. In addition, students showed higher levels of motivation, engagement, and confidence during ICT learning activities. The learning process became more student-centered, encouraging collaboration, critical thinking, and practical application of ICT concepts. Furthermore, the use of active learning strategies positively influenced students' social interaction and collaborative skills, enabling them to support one another in solving ICT-related problems. Although the study has certain limitations, including the short duration of the intervention and uncontrolled external factors, the overall results indicate that active learning strategies provide a meaningful contribution to enhancing ICT learning effectiveness at the elementary school level. Therefore, it is recommended that teachers integrate active learning strategies into ICT instruction to foster more engaging, interactive, and effective learning environments. Future research is suggested to examine the long-term impact of these strategies and explore their application across different subjects and educational contexts.

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