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The implementation of the cooperative MURDER learning model to improve student learning outcomes

Ayu Puji Lestari, Muhammad Lintang*, Rusli Rusli
Universitas Musamus, Merauke, Papua Selatan, Indonesia
*Correspondence author: lintang@unmus.ac.id
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ABSTRACT

Purpose: to examine the effectiveness of the cooperative MURDER (Mood, Understand, Recall, Digest, Expand, Review) learning model in improving students' learning outcomes, engagement, and understanding in basic computer learning within Information Technology subjects.
Method: this study employed a classroom action research (CAR) design conducted in two cycles, each consisting of planning, acting, observing, and reflecting stages. Data were collected through learning outcome tests and classroom observations, and analyzed using descriptive quantitative and qualitative approaches.
Findings: the results indicate a significant improvement in students' learning outcomes. Classical completeness increased from 53.34% in cycle I to 86.67% in cycle II. In addition, student learning activities improved from the "good" category to "very good," while teacher performance during instruction remained consistently high.
Implications: the MURDER model is an effective alternative to enhance student engagement and learning outcomes in education, particularly in contexts with limited technological exposure.
Originality: lies in applying the cooperative MURDER learning model to basic computer learning in a resource-limited junior secondary school context, providing new empirical evidence of its effectiveness in improving student outcomes.

Introduction

Education plays a strategic role in improving the quality of human resources through a learning process that optimally develops learners' cognitive, affective, and psychomotor potential (Gunawan et al., 2023; Owan et al., 2022). The national education system affirms that education aims to develop learners' abilities so that they become individuals who are faithful, knowledgeable, creative, independent, and

responsible (Indrayani et al., 2023). In this context, the quality of learning becomes a key factor in achieving educational goals (Artyukhov et al., 2022). The quality of learning is inseparable from the teacher's ability to design effective learning strategies, including selecting learning models that can encourage active student engagement (Xiong, 2025). An inappropriate learning model often leads to teacher-centered instruction, leaving students passive and providing fewer opportunities to develop critical thinking and collaborative skills (Alguacil et al., 2024). Therefore, a learning model that can shift the paradigm towards more student-centered learning is needed.

An approach considered effective in promoting active learning is the cooperative learning model (Lorente et al., 2024). This model emphasizes the importance of social interaction in the learning process through collaboration in heterogeneous groups to achieve shared learning objectives. Previous research has shown that cooperative learning not only improves academic learning outcomes but also enhances social skills, communication abilities, and students' self-confidence (Beigzadeh et al., 2024; Keramati & Gillies, 2022; Shah et al., 2024). This indicates that cooperative learning has significant potential for application in learning that requires active student engagement, including in information technology learning (Nguyen & Oanh, 2025; Tadesse et al., 2024). Cooperative learning that has the potential to improve learning quality is the MURDER model (Mood, Understand, Recall, Digest, Expand, Review) (Anggraeni & Komalasari, 2022; Rahmayani et al., 2025). This model integrates cognitive and metacognitive aspects in learning through systematic stages, ranging from conditioning learning readiness to reflecting on understanding the material (Anwarudin & Dafik, 2019; Tadesse et al., 2024). Conceptually, this model is relevant for enhancing conceptual understanding because it encourages learners not only to receive information, but also to actively process, discuss, and reconstruct knowledge (Rahmayani et al., 2025; Tegeh et al., 2021).

Nevertheless, empirical evidence from the field indicates that learning information technology, particularly basic computer material, still faces various challenges. Based on observations, the learning process is still dominated by the lecture method, resulting in relatively low student participation. In addition, some students still struggle to master basic computer skills, such as using word processing and presentation applications. The low student involvement in learning is also evident in the lack of academic interaction, low learning motivation, and a tendency to lose focus during the learning process (Feng & Xiao, 2024; Li & Xue, 2023). This issue becomes increasingly complex when combined with the characteristics of students from underdeveloped regions, who generally have limited experience with digital technology. This situation demands innovative learning models that are not only focused on delivering material but also capable of enhancing learning motivation, active participation, and students' conceptual understanding through a more collaborative and adaptive approach.

Several previous studies have examined the effectiveness of cooperative learning models in improving learning outcomes (Hamadi et al., 2022; Lázaro et al., 2022; Novitasari et al., 2024; Qureshi et al., 2023; Ridwan & Hadi, 2022). However, research specifically investigating the application of the MURDER type cooperative learning model in basic computer learning is still relatively limited. In addition, studies examining the implementation of this model in schools in underdeveloped areas have not been widely conducted. Thus, there is a research gap that indicates the need for an empirical study on the effectiveness of the MURDER cooperative learning model in improving information technology learning outcomes in an educational context

characterized by students with diverse academic and social backgrounds. The novelty of this research lies in integrating the MURDER-type cooperative learning model into basic computer education within the context of schools in underdeveloped regions with limited access to information technology and technological readiness. Furthermore, this study provides an empirical perspective on the effectiveness of a cooperative learning approach structured around cognitive stages in improving information technology learning outcomes. This area is still relatively rarely examined in the context of junior secondary education in marginalized areas.

This study aims to analyze the effect of implementing the MURDER type cooperative learning model on students' learning outcomes in basic computer subjects. This study also aims to test the effectiveness of this learning model as an innovative alternative to enhance students' active engagement and understanding in information technology learning. This research has both theoretical and practical significance. Theoretically, this study contributes to the development of research on cooperative learning models, particularly the MURDER type, in the context of information technology learning. In practice, this research is expected to serve as a reference for educators in implementing innovative learning models to improve learning quality, especially in schools with similar information technology characteristics. In addition, this research is also expected to serve as a basis for the development of learning policies that are more adaptive to the needs of students in underdeveloped areas (Nahumury & Antony, 2022).

Method

This study uses a classroom action research (CAR) approach to improve student learning outcomes by implementing the MURDER type cooperative learning model (Anggraeni & Komalasari, 2022). Classroom action research is chosen because it is oriented towards improving the learning process directly in the Classroom through systematically designed actions. Furthermore, this method allows researchers to reflect on the ongoing learning process, enabling continuous improvement (Rahmayani et al., 2025). This classroom action research is carried out through an action cycle comprising four main stages: planning, acting, observing, and reflecting. These four stages form a single unit that constitutes one research cycle. The action cycle is repeated until the research success indicators are achieved. Through these stages, the researcher can evaluate the effectiveness of the learning model's implementation in improving students' learning outcomes.

The learning model applied in this study is the cooperative learning model of the MURDER type, which is an acronym for Mood, Understand, Recall, Digest, Expand, and Review (Tegeh et al., 2021). This model was first developed by Hythecker et al. (1988) from a cognitive psychology perspective. The MURDER model is designed to support cooperative learning through structured learning stages to develop students' cognitive abilities. Students in underdeveloped areas have limited access to digital technology, necessitating an adaptive, collaborative model (Magfirah et al., 2020). The implementation of this model emphasizes students' readiness to learn, understanding of concepts, reinforcement of memory through repetition, in-depth study of the material, development of insights, and reflection on the material learned. Murder (cooperative) learning had a positive effect on student learning outcomes and motivation (Lilawati & Rohmah, 2019). MURDER collaborative learning model improved cognitive abilities but did not affect learning motivation (Ratnasari, 2020).

MURDER learning model improved mathematical problem-solving skills compared to conventional learning (Cintya & Sthephani, 2025). This research was

conducted at Satap Satu Wasur Merauke Middle School. The subjects in this study are all grade VII students, totaling 15 individuals. The selection of research subjects was based on initial observations that indicated the class experienced problems with learning outcomes in the Information Technology subject, particularly in basic computer material. Therefore, the class was considered relevant for use as subjects in the implementation of the learning action. The data collection techniques in this study utilized learning outcome tests and observations. The learning outcome tests were used to measure students' understanding of basic computer material after implementing the MURDER-type cooperative learning model. The test results were then analyzed to determine the improvement in students' learning outcomes following the learning actions. Meanwhile, the observation technique was used to monitor students' and teachers' activities during the learning process. Observing student activities was also used to assess aspects of students' attitudes and engagement in the cooperative learning process.

The data analysis in this study used quantitative and qualitative descriptive methods. The analysis of learning outcomes was conducted by examining students' mastery of learning at both the individual and class levels. A student is considered to have achieved individual mastery if they attain the minimum score of 69, as defined by the minimum mastery criteria (MMC). Meanwhile, classical mastery is considered achieved if the majority of students in the class have reached the established mastery standard. In addition, the analysis of observational data involved comparing the prepared lesson plans with the actions taken in the classroom. Observational data on student and teacher activities were analyzed to assess the level of implementation of the learning model and student engagement in the learning process. The results of the observations of student activities were also used to evaluate the development of students' attitude competencies during the learning process.

The research's success indicators serve as benchmarks for evaluating the success of the implemented actions. This research is considered successful if there is an improvement in students' learning outcomes in the subject of information technology, with a minimum classical completeness reaching a score of ≥ 69. In addition, the success of the research is demonstrated by an increase in students' learning activities rated good or very good, with a minimum achievement rate of 75%. The success of the actions is also supported by the teacher's activity in managing learning, which should at least be categorized as good.

Results and discussion

Results of the implementation of cycle I

Analysis of the data from the observation of teacher learning activities during the implementation of cycle I, conducted in 2 meetings by the observer, namely the classroom teacher of information technology subjects using the cooperative MURDER learning model (Mood, Understand, Recall, Digest, Expand, Review). The results of the cycle I teacher teaching observation show that the total score for the first meeting was 62 with a percentage of 91.17%, categorized as very good, and for the second meeting was 64 with a percentage of 94.11%, also categorized as very good. Based on Table 1 and Figure 1, in cycle I, 8 students achieved classical mastery (score ≥69), representing 53.34%. Meanwhile, 7 students did not achieve classical mastery (score ≤69), representing 46.66%.

Table 1 classical completion of cycle I

Nu.	Score	Frequency	Percentage
1	Completed	8	53.34%
2	Not completed	7	46.66%

Source: primary data, processed

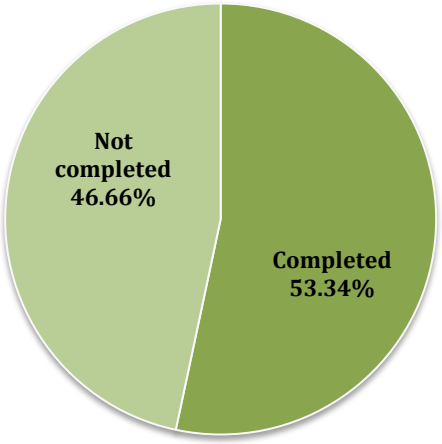

Figure 1 classical completion of cycle I
Source: primary data, processed

During the first meeting, several shortcomings were identified. A small number of students had not yet fully understood how to implement the MURDER cooperative learning model. Notes on the teacher and student observation sheets indicated that, in this first meeting, students were not fully engaged in expressing their opinions. In addition, some students remained reluctant to cooperate within their groups, so the steps in the MURDER cooperative learning model did not proceed smoothly.

Results of the implementation of cycle II

In this study, the teacher also observed the teaching and learning process between the researcher and the students. The data analysis of the teacher's teaching activities during the implementation of cycle II, consisting of two meetings conducted by the researcher in the information technology lesson using the cooperative MURDER learning (Mood, Understand, Recall, Digest, Expand, Review), was conducted. The results of the observation of the teacher's teaching activities in cycle II: the total score from the first and second meetings was 67, with a percentage of 98.52% in the very good category. The results of the observation of student learning activities in cycle II during the two meetings also obtained the same score, namely 45, with a percentage of 93.75% in the very good category. Based on Table 2 and Figure 2, in cycle II, 13 students achieved classical mastery (score ≥69), representing 86.67%. Meanwhile, 2 students did not achieve classical mastery (score ≤69), representing 13.33%.

Table 2 classical completion of cycle II

Nu.	Score	Frequency	Percentage
1	Completed	13	86.67%
2	Not completed	2	13.33%

Source: primary data, processed

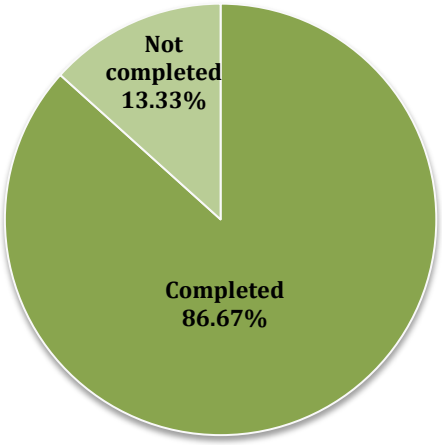

Figure 2 classical completion of cycle II
Source: primary data, processed

In this study, by using the MURDER cooperative learning model, a significant difference in student learning outcomes was observed. The researcher succeeded in improving learning outcomes in information technology, as evidenced by observations across two meetings in cycle II. The researcher designed the implementation of this cycle II into two meetings. The first and second meetings in cycle II showed that students achieved satisfactory results. The observation table showed that students began to be active learners, showing interest in the researcher's cooperative MURDER (Mood, Understand, Recall, Digest, Expand, Review) model.

The classical completeness data above shows that the learning outcomes of information technology in grade VII at Satap Satu Wasur Merauke Middle School, using the MURDER cooperative learning model in cycle I, included 8 students (53.34%) who were declared complete. In comparison, in cycle II, 13 students (86.67%) declared completion with scores above the MMC, which is 69. The developments in cycles I and II are shown in Figure 3. The students' learning achievement results after the intervention showed that cycle I had slight deficiencies or did not improve sufficiently. 8 students (53.34%) achieved completeness, while 7 (46.66%) had not yet achieved it. The obstacles encountered in cycle I were: (1) Students were still afraid and embarrassed to ask questions; (2) Students were not confident enough to actively express their opinions in front of the class; (3) Students were still busy talking among themselves with friends. Considering these factors, the researcher makes improvements to be implemented in cycle II. Subsequently, the learning achievement results in cycle II showed good improvement, with 13 students (86.67%) achieving completeness, whereas 2 students (13.33%) did not achieve completeness in cycle II.

Although 2 students have not yet achieved completeness according to the minimum mastery criteria (MMC), the progress of other students provides confidence that the MURDER Cooperative learning model improves learning outcomes in basic computer skills at Satap Satu Wasur Merauke Middle School. The research results show that student activities during cycle I to cycle II improved significantly. In cycle I, the number of students was 8 (53.34%), increasing to 13 (86.67%) in cycle II. Meanwhile, teacher activities during classroom learning increased in cycle I, with the first meeting at 91.17% and the second at 94.11%, both categorized as "very good". In cycle II, there was also an increase in the first meeting (98.52%) and in the second meeting (98.82%), categorized as "very good". This indicates that, through the cooperative MURDER learning model, student learning outcomes can be improved. Meanwhile, student

activity in learning increased from the first cycle's first meeting (70.83%) to the "good" category, and in the second meeting (83.33%) to the "very good" category. In the second cycle, there was also a significant increase in the first meeting (93.75%) with the category of "very good" and in the second meeting (93.75%) with the category of "very good".

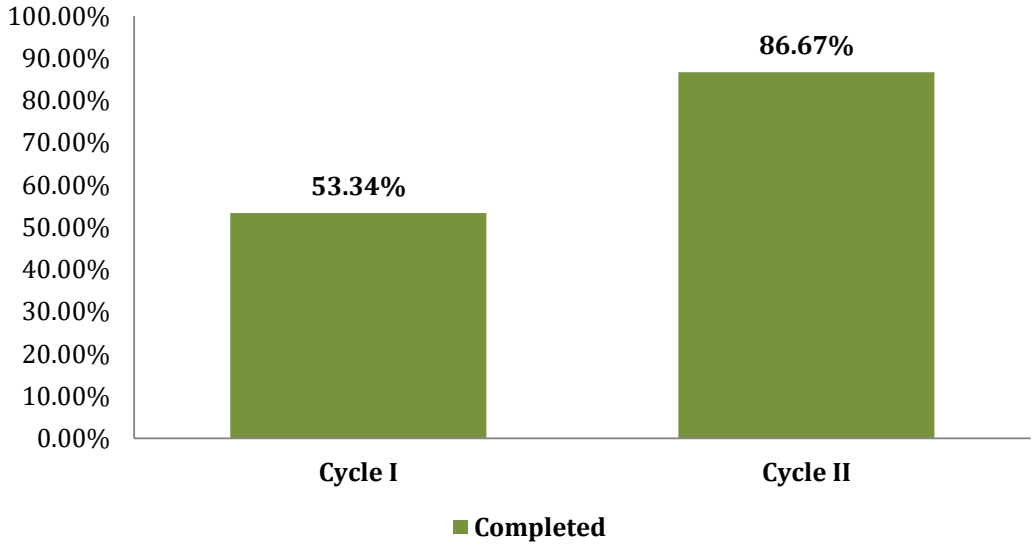

Figure 3 comparison of the experiment results of cycle I and cycle II
Source: primary data, processed

The improvement observed across cycles reflects not merely a quantitative gain but a qualitative transformation in the learning process. The MURDER cooperative learning model appears to function as a structured scaffold that gradually shifts students from dependence on teacher explanations toward active knowledge construction. In the initial phase, students' hesitation and limited participation can be interpreted as a natural response to a learning paradigm that differs from their previous experiences. However, as implementation progressed, repeated exposure to clearly sequenced learning stages enabled students to internalize the process, leading to more confident engagement and smoother collaboration. This indicates that consistency in applying structured cooperative strategies is essential to achieving meaningful pedagogical change (Geletu, 2022).

From a theoretical standpoint, the findings reinforce the principles of cooperative learning, particularly the role of positive interdependence and individual accountability (Nguyen & Oanh, 2025; Zhou & Colomer, 2024). When students are required to engage in stages such as recall, digest, and expand, they are not only processing information individually but also negotiating meaning collectively. This aligns with findings by Tadesse et al. (2024); Nguyen & Oanh (2025), who highlight that cooperative learning environments significantly enhance both academic achievement and social interaction skills. The current results extend this perspective by showing that such benefits are also evident in contexts with limited technological exposure, suggesting that cooperative structures can compensate for resource constraints through peer-supported learning.

The effectiveness of the MURDER model can also be explained through cognitive learning theory, particularly in relation to information processing and metacognition (Brayadi et al., 2022; Dinsmore et al., 2023; Rahmayani et al., 2025). Each stage of the model corresponds to specific cognitive functions, such as activating prior knowledge

(Mood), encoding new information (Understand), strengthening memory (Recall), and elaborating knowledge (Digest and Expand). This structured progression supports deeper comprehension and retention, consistent with the findings of Anwarudin & Dafik (2019); Tegeh et al. (2021), who emphasize that MURDER facilitates higher-order thinking through systematic cognitive engagement. Furthermore, the inclusion of the review stage promotes metacognitive reflection, allowing students to evaluate their own understanding, an aspect often lacking in conventional instruction.

Empirically, this study's results align with previous research demonstrating the positive impact of the MURDER model on learning outcomes. For instance, Lilawati & Rohmah (2019) found that applying MURDER significantly improved students' academic performance and engagement, while Cintya & Sthephani (2025) reported enhanced problem-solving abilities through the same model. Although Ratnasari (2020) noted that the model did not significantly influence motivation. The current findings suggest that, within a collaborative classroom context, motivation may still improve indirectly through increased participation and peer interaction. This suggests that the model's effectiveness may depend on its implementation, particularly in terms of group dynamics and teacher facilitation.

Another important dimension of the findings is their contextual relevance to students in underdeveloped regions. The challenges associated with limited access to technology and prior experience often hinder students' ability to grasp basic computer concepts. In this regard, the MURDER model serves as an adaptive instructional strategy by integrating collaborative learning with step-by-step cognitive guidance. This supports the argument by Magfirah et al. (2020) that instructional models in such contexts must be both structured and socially interactive to address disparities in readiness and access. The observed improvements suggest that peer collaboration can act as an effective bridge for students who lack individual familiarity with digital tools.

Despite the overall success, the persistence of a small number of students who did not achieve mastery highlights the need for differentiated instructional support. Cooperative learning does not automatically guarantee equal outcomes for all students, particularly those with lower initial abilities or confidence levels (D'Elia et al., 2025). Therefore, additional strategies such as targeted scaffolding, more intensive teacher guidance, or adaptive grouping may be necessary. This aligns with broader educational research, which emphasizes that effective instruction must balance group-based learning with attention to individual needs (Mugabekazi et al., 2025; Zhong et al., 2022). The findings demonstrate that the MURDER cooperative learning model is not only effective in improving learning outcomes but also capable of fostering a more interactive, reflective, and inclusive learning environment. The integration of cognitive structure and social collaboration emerges as a key factor underlying its success, supported by both theoretical frameworks and empirical evidence from prior studies.

Conclusions

The findings of this study indicate that implementing the MURDER (Mood, Understand, Recall, Digest, Expand, Review) cooperative learning model is effective in improving students' learning outcomes in Information Technology, particularly in basic computer material. The model not only increased mastery of classical learning but also enhanced student learning activities and the quality of classroom interaction. Through its structured stages, students became more actively engaged, participated in discussions, and demonstrated a deeper understanding of the material compared to conventional learning approaches. Theoretically, it reinforces the concept that

structured cooperative learning can effectively integrate cognitive, social, and metacognitive aspects to improve learning quality. In practice, the MURDER model can serve as an innovative teaching strategy, especially in schools with limited technological resources.

However, this study has several limitations, including the small sample size, the focus on a single class, and the relatively short duration of the research, which was limited to two cycles. Therefore, the generalization of the findings should be approached with caution. Based on these limitations, future research is recommended to involve larger and more diverse samples and to be conducted over a longer period to obtain more comprehensive results. Further studies may also explore the effect of the MURDER model on other variables such as learning motivation, critical thinking skills, or students' digital literacy. Additionally, employing different research designs, such as experimental or quasi-experimental methods, would help to further validate and strengthen the findings of this study.

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