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## IMPLEMENTING THE GALLERY WALK STRATEGY IN COOPERATIVE LEARNING TO IMPROVE HIGH SCHOOL STUDENTS' MOTIVATION AND LEARNING OUTCOMES

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### Abstract

High school students often experience low motivation and suboptimal achievement in mathematics learning, particularly in the topic of sequences and series. This condition underscores the need for instructional strategies that can enhance students' engagement and conceptual understanding. This study aims to examine the effect of Gallery Walk-based cooperative learning on students' learning motivation and achievement in mathematics among Grade X students at SMAN 1 Indramayu. The research employed Classroom Action Research, with students of class X-9 serving as the research subjects. Data were collected through motivation questionnaires, learning achievement tests, and classroom observations, and were analyzed using descriptive qualitative and quantitative methods. The results indicate an improvement in students' learning motivation, as reflected in increased participation, enthusiasm, and collaboration, as well as a significant improvement in learning outcomes from Cycle I to Cycle II. These findings demonstrate that Gallery Walk-based cooperative learning is an effective pedagogical approach for fostering active learning environments and improving students' understanding of mathematical concepts, thereby contributing to the enhancement of mathematics instruction at the secondary school level.

### Keywords:

Cooperative Learning, Gallery Walk, Learning Motivation, Learning Outcomes, Sequences and Series.

### Abstrak

Siswa sekolah menengah sering mengalami rendahnya motivasi dan hasil belajar dalam pembelajaran matematika, khususnya pada materi barisan dan deret. Kondisi ini menunjukkan perlunya strategi pembelajaran yang mampu meningkatkan pemahaman dan keterlibatan siswa secara aktif. Tujuan penelitian ini adalah untuk mengetahui pengaruh penerapan *Cooperative Learning* berbasis *Gallery Walk* terhadap motivasi dan hasil belajar siswa kelas X SMAN 1 Indramayu. Penelitian ini menggunakan metode Penelitian Tindakan Kelas (PTK) dengan subjek siswa kelas X-9. Data dikumpulkan melalui observasi, tes hasil belajar, dan angket motivasi, kemudian dianalisis secara deskriptif kualitatif dan kuantitatif. Hasil penelitian menunjukkan adanya peningkatan motivasi yang ditandai dengan keterlibatan, antusiasme, dan kerja sama siswa, serta peningkatan hasil belajar secara signifikan dari siklus I ke siklus II. Metode ini membantu guru menciptakan pembelajaran yang lebih interaktif dan membantu siswa memahami konsep matematika secara lebih mendalam.

### Kata Kunci:

Cooperative Learning, Gallery Walk. Motivasi Belajar, Hasil Belajar, Barisan dan Deret.

## INTRODUCTION

Academic performance attained during the learning process whether via tests, assignments, or active engagement in class activities is reflected in student learning outcomes (Li & Xue, 2023). Sequences and series are crucial subjects in high school mathematics since they have a direct bearing on the ability to think logically and analytically. In addition to mastering algebraic concepts, students must be able to relate numerical patterns to symbolic representations. In order for pupils to have a thorough comprehension of the subject, Wilkie (2024) highlights that the optimal comprehension of sequences and series must prioritize synchronization between numerical and symbolic reasoning.

Furthermore, the teacher's capacity to recognize the different kinds of student faults and offer pertinent feedback also plays a role in attaining optimal learning results. According to Usodo et al. (2020), students most frequently made mistakes while using formulas, accumulating series, and comprehending concepts because they lacked conceptual mastery. According to Shaik et al. (2023), students' comprehension of sequences and series has improved as a result of classroom discussions based on mistake analysis. As a result, the idealism in assessing learning results is gauged not just by scores but also by conceptual comprehension, representation abilities, and the capacity for introspection and error correction.

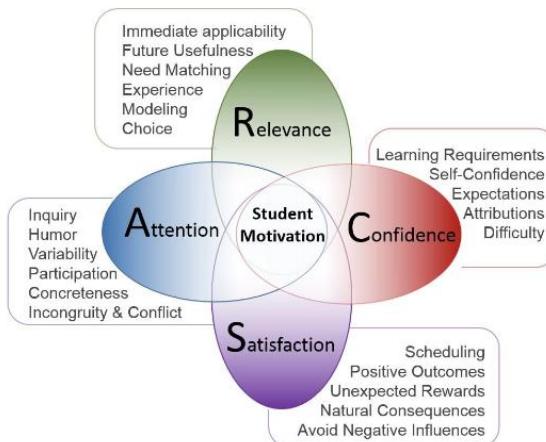
The results of this study are consistent with those of Gunadi et al. (2022), who demonstrated that students' capacity to answer mathematical problems is greatly enhanced by autonomous learning. Higher degrees of independent learning in this study improved students' ability to choose suitable problem-solving techniques and steer clear of conceptual blunders. This demonstrates how the Gallery Walk model's activities like giving feedback to groups, outlining task outcomes, and reflecting can improve autonomous learning, which in turn affects student learning outcomes and motivation.

In reality, though, a lot of students still have trouble grasping the fundamental ideas behind sequences and series. Students frequently mistake the  $n$ th term for the sum of the first  $n$  terms, which leads to mistakes in formula selection, according to observations made in the classroom and teacher interviews. This issue is made worse by students' tendency to memorize formulas without comprehending the concepts, which makes it challenging for them to answer contextual difficulties. This result is consistent with that of Qolbi et al. (2022), who discovered that the majority of high school pupils still comprehend sequences and series at a low to moderate level. Poor learning results are also a result of conceptual obstacles to applying geometric series and formulas (Silm Juman et al., 2022).

Students' achievement in sequences and series is also greatly influenced by the media and instructional strategies used by teachers. According to student interviews, learning becomes tedious and demotivating when traditional methods are used. On the other hand, it has been demonstrated that using digital media and presenting contextual problems greatly enhances students' comprehension. Interactive digital media can enhance learning outcomes on sequences and series, according to Bhadri & Patil (2022). In a similar vein, Uyen et al (2022) highlighted how experiential learning can boost students' enthusiasm and comprehension of geometry and arithmetic concepts, particularly sequential patterns.

Students' motivation is essential to their success in comprehending mathematics, in addition to strategies and media. Internal factors, such as low intrinsic motivation and a propensity to remember formulas without comprehending the concepts, have a significant impact on the discrepancy between ideal and actual learning results for sequences and series. According to Matindike & Makonye (2023), students frequently make mistakes when choosing formulas and resolving contextual issues due to a lack of conceptual knowledge. According to Maula et al. (2024), pupils' capacity to generalize patterns is also hampered by conceptual obstacles in arithmetic and geometric series.

A combination between internal and external elements supports optimal learning motivation. Learning becomes more meaningful and long-lasting when students who are intrinsically driven actively seek out the meaning of each idea instead of just remembering it (Marantika, 2021). Innovative teaching strategies, interactive learning materials, and collaborative learning environments are examples of external elements that support students' self-assurance and active participation. It has been demonstrated that real-world learning experiences boost academic performance and interest (Xiao & Hew, 2024).



Picture 1. ARCS Motivation Model  
Source: Keller (1987, in Mengyao et al., 2024)

Four components make up the model of student learning motivation depicted in Figure 1: Relevance (the material's relevance to students' needs), Confidence (self-confidence in facing learning), Attention (focus through curiosity and active participation), and Satisfaction (satisfaction from results and rewards). Together, these four provide learning motivation that inspires students to engage in more meaningful and active learning.

A gallery walk-based cooperative learning approach was selected in response to learning objectives and motivational issues since it encourages active student participation. According to Fan et al. (2025), switching groups, debating, and reacting to peers' work helps students grasp ideas from various angles, improves conceptual comprehension, and develops critical thinking abilities. In terms of motivation, this approach promotes a sense of ownership over the learning process while offering an enjoyable and interactive learning experience (Subrata et al., 2025).

According to the description, learning strategies that can enhance student motivation and learning outcomes in sequences and series content are desperately needed. This study attempts to ascertain the efficacy of the gallery walk-based cooperative learning approach in enhancing learning outcomes and motivation of class X-9 students at SMAN 1 Indramayu by taking into account the gap between ideal and reality. It is anticipated that determining this goal will serve as the foundation for a more engaged, relevant, and contextual learning approach.

## METHOD

This study employed Classroom Action Research (CAR) using a mixed-methods approach that integrates qualitative and quantitative data to systematically examine instructional improvement. The research design was based on the Kemmis and McTaggart cyclical model, consisting of four stages: planning, action, observation, and reflection. The study was conducted in two cycles, each implementing Gallery Walk-based cooperative learning activities aimed at improving students' learning motivation and achievement.

During the planning stage, instructional materials, learning scenarios, and research instruments were prepared. The action stage involved the implementation of Gallery Walk-based cooperative learning in classroom instruction. Observations were conducted concurrently to document students' learning behaviors, engagement, and collaboration. The reflection stage was used to evaluate the outcomes of each cycle and to inform revisions for subsequent instructional actions.

Data were collected using achievement tests to measure learning outcomes, motivation questionnaires to assess students' learning motivation, and observation sheets to capture qualitative aspects of classroom interaction. Quantitative data from tests and questionnaires were analyzed descriptively to identify changes across cycles, while qualitative observation data were analyzed thematically to support and explain quantitative findings. The integration of qualitative and quantitative data was achieved through triangulation, allowing for a comprehensive evaluation of the effectiveness of the Gallery Walk-based cooperative learning model.

Picture 2. Research Action Flow

45 students from SMAN 1 Indramayu's class X-9 served as the study's subjects; they were specifically chosen since they were enrolled in the Sequence and Series course this semester. All educational activities were conducted in the classroom, which served as the research site. Learning outcome exams in the form of multiple-choice and essay questions, student motivation questionnaires, observation sheets of student participation and activities during the Gallery Walk process, and documentation in the form of activity notes and images were among the research tools employed. To verify the reliability of the results and assess the effectiveness of the measures implemented, data from these several instruments were triangulated.

## FINDINGS AND DISCUSSION

### Findings

On Thursday, October 23, 2025, from 10:30 to 11:50 WIB, Cycle I was implemented utilizing Arithmetic Series in contextual issues. The instructor created modules, observation sheets, motivation surveys, post-test questions, and student groups during the planning phase. The Gallery Walk-based Cooperative Learning approach was used during the implementation stage, where students observed the work of other groups, participated in discussions, put results on posters, and shared feedback. Obstacles such as limiting media use, interaction, and time management were observed. Enhancing student motivation, instructor mobilization, formula explanation clarity, attending to struggling students, and offering more activities were all recommended during the reflection stage. The average learning outcome was 64.93, completeness was 52.78%, and motivation was 48.89%, indicating that further progress was required for the subsequent cycle.

Cycle II, which covered the nth term, ratio, and sum of the first n terms in contextual applications, was conducted on Thursday, October 30, 2025, from 10:30 to 11:50 WIB using Geometric Sequences material. The instructor created modules, worksheets, observation sheets, and implemented Cycle I enhancements throughout the planning phase. Students debated, displayed posters, gave criticism, and made revisions to their work using the Gallery Walk methodology once more. While some students remained distracted throughout presentations, student participation increased under observation. Enhancing teacher mobilization, classroom management, and concept reinforcement were all recommended by reflection. With 88.89% completeness and 77.78% motivation, the average score increased significantly to 80.40. Compared to Cycle I, students demonstrated stronger conceptual comprehension, were more engaged in

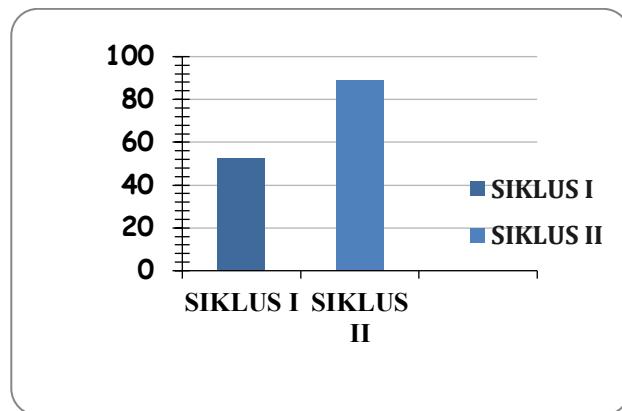
discussions, and were more receptive to peer criticism.

**Tabel 1. Cognitive and affective average**

No	Description	Cycle	
		I	II
1	Average Mathematics Learning Outcome Score	64,93	80,40
2	Number of Students Who Achieved Mastery	19	32
3	Percentage of Students Who Achieved Mastery	52,78%	88,89%
4	Average Student Learning Motivation Score	73,40	74,40
5	Number of Motivated Students in Learning	22	28
6	Percentage of Motivated Students in Learning	48,89%	77,78%

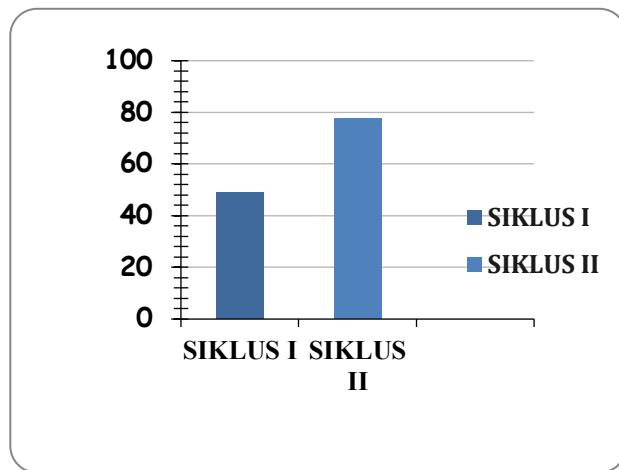
From Cycle I to Cycle II, students' learning outcomes in mathematics and their motivation to learn improved significantly, according to the statistics in the table. Between Cycle I and Cycle II, the average mathematics learning outcome score rose from 64.93 to 80.40. Additionally, there was a significant increase in overall learning achievement as the number of students who met the minimal mastery criteria increased from 19 students (52.78%) to 32 students (88.89%).

Additionally, students' motivation to learn improved. The number of students classified as motivated in the learning process increased from 22 students (48.89%) in Cycle I to 28 students (77.78%) in Cycle II, and the average motivation score increased slightly from 73.40 in Cycle I to 74.40 in Cycle II. These findings indicate that the learning actions used in Cycle II were more successful in raising student achievement and motivation.



Picture 3. Bar chart of learning outcomes es

There was a noticeable improvement from Cycle I to Cycle II, according to Figure 3, which displays the bar chart of students' learning outcomes. With an average score of about 55 in Cycle I, many students had not yet reached the anticipated level of mastery. The average score rose considerably to about 85 following the implementation of improvements in Cycle II, such as improved classroom interaction, active student participation, and the use of a more effective learning model. This indicates that students' comprehension and academic performance were positively impacted by the learning intervention. Additionally, it demonstrates that students improved their comprehension of the subject matter and increased their level of engagement. Thus, compared to Cycle I, learning in Cycle II was more successful in raising total student achievement.



Picture 4. Bar diagram of student motivation

There is a noticeable increase between Cycle I and Cycle II, according to Figure 4, which displays a bar chart of student learning motivation. The majority of students in Cycle I still had moderate learning motivation and were not fully engaged in the learning process, as evidenced by the student motivation level of about 45. Student learning motivation rose to about 75 after modifications were made in Cycle II by implementing a more interactive, collaborative learning approach and giving students the chance to voice their thoughts and see the outcomes of other groups. This suggests that Gallery Walk-based instruction might stimulate students' engagement, curiosity, and zeal for more active and significant learning activities.

Tabel 2. Increased observation by observer 1

No	Statement	Cycle	
		I	II
1	The teacher conditioned the class by greeting the students	Excellent	Excellent
2	The teacher checked student attendance and asked about their condition	Fair	Excellent
3	The teacher provided motivation by relating the material to daily lifei	Fair	Excellent
4	The teacher conducted an apperception by asking questions connected to prior knowledge	Good	Good
5	The teacher stated the learning objectives	Fair	Excellent
6	The teacher explained the scope of the material to be learned	Fair	Excellent
7	The teacher explained the material	Good	Excellent
8	The teacher and students engaged in a Q&A session about the material	Fair	Excellent
9	The teacher formed groups and distributed group assignments	Good	Excellent
10	The teacher supervised each group's discussion	Good	Good
11	The teacher gave students the opportunity to present their group discussion results	Good	Excellent

No	Statement	Cycle	
		I	II
12	The teacher explained the purpose and mechanism of the Gallery Walk activity (group rotation, observation time, and assessment format)	Fair	Excellent
13	The teacher arranged the outputs of each group (posters or analysis sheets) so they were easy to observe by others	Good	Excellent
14	Students took turns visiting other groups' work, observing, and giving written feedback (sticky notes or comment format)	Good	Excellent
15	Two members of each group acted as spokespersons to explain their group's work to visitors	Good	Excellent
16	The teacher monitored the Gallery Walk process, provided reinforcement, and assessed group participation and communication skills	Good	Good
17	The teacher administered an assessment sheet (posttest) at the end of the cycle	Good	Excellent
18	The teacher and students drew conclusions from the learning activities	Fair	Excellent
19	The teacher encouraged students to reflect on the learning process through a Google Form in Google Classroom	Good	Excellent
20	The teacher provided reinforcement on the material learned	Good	Excellent
21	The teacher gave students the opportunity to ask questions about concepts they did not understand	Good	Good
22	The teacher concluded the learning activity and informed the next topic	Fair	Excellent

Tabel 3. Increased observation by observer 2

No	Pernyataan	Siklus	
		I	II
1	The teacher conditioned the class by greeting the students	Good	Excellent
2	The teacher checked student attendance and asked about their condition	Good	Excellent
3	The teacher provided motivation by relating the material to daily life	Good	Excellent
4	The teacher conducted an apperception by asking questions connected to prior knowledge	Good	Excellent
5	The teacher stated the learning objectives	Good	Excellent
6	The teacher explained the scope of the material to be learned	Good	Excellent
7	The teacher explained the material	Good	Excellent
8	The teacher and students engaged in a Q&A session about the material	Fair	Excellent
9	The teacher formed groups and distributed group assignments	Good	Excellent
10	The teacher supervised each group's discussion	Fair	Good

No	Pernyataan	Siklus	
		I	II
11	The teacher gave students the opportunity to present their group discussion results	Good	Excellent
12	The teacher explained the purpose and mechanism of the Gallery Walk activity (group rotation, observation time, and assessment format)	Good	Excellent
13	The teacher arranged the outputs of each group (posters or analysis sheets) so they were easy to observe by others	Good	Excellent
14	Students took turns visiting other groups' work, observing, and giving written feedback (sticky notes or comment format)	Good	Excellent
15	Two members of each group acted as spokespersons to explain their group's work to visitors	Good	Excellent
16	The teacher monitored the Gallery Walk process, provided reinforcement, and assessed group participation and communication skills	Good	Excellent
17	The teacher administered an assessment sheet (posttest) at the end of the cycle	Good	Good
18	The teacher and students drew conclusions from the learning activities	Fair	Good
19	The teacher encouraged students to reflect on the learning process through a Google Form in Google Classroom	Fair	Excellent
20	The teacher provided reinforcement on the material learned	Good	Excellent
21	The teacher gave students the opportunity to ask questions about concepts they did not understand	Fair	Good
22	The teacher concluded the learning activity and informed the next topic	Good	Excellent

## Results of observation and reflection

Picture 5. Observer 1 Cycle I

## SIKLUS II

No.	MASALAH	SOLUSI
1.	Mobilisasi diri belum lagi jelas	1. Pada saat mengajar mahasiswa (sisil) ke arah yg ditarget ribut.
2.	Pengelitian siswa kurang jelas	2. Beri tugas siswa secara halus agar penelitian di papan tulis tersebut tidak terlihat
3.	Masih ada beberapa hasil fokus	1. Berikan pertimbangan (sisil) untuk siswa yg kurang fokus sampaikan pertimbangan, ketika pengajaran penelitian

Picture 6. Observer 1 Cycle II

Observer 1 offered a number of recommendations for enhancement based on the reflection in Cycle I. The instructor must better match the learning procedures with the Gallery Walk-based Cooperative Learning model, particularly when it comes to inspiring students by

outlining the material's value. Additionally, the observer pointed out a formula usage error: the problem utilized  $U_n$ , but the solution used  $S_n$ . The teacher should explain these discrepancies. The instructor should also focus on struggling students, highlight the differences between capital and lowercase symbols, split the whiteboard for organization, establish clear group rules, minimize student talk, and provide at least two question types to avoid answer sharing.

Although the Cycle II reflection shown progress, Observer 1 continued to offer recommendations for improving educational activities. In order to better supervise pupils and help them stay focused during group discussions, teachers were urged to boost mobilization to areas deemed rowdy. Additionally, the observer recommended that teachers gently urge pupils to read any unclear writing on the board. In order to sustain active involvement, teachers also required to give less focused students additional attention, such as by calling their names or reiterating concepts. It was anticipated that this approach would equally increase student comprehension and involvement. It was anticipated that these enhancements would make learning more efficient, favorable, and enhance the caliber of student engagement and comprehension.

SIKLUS I		
No.	MASALAH	SOLUSI
1.	Manajemen Waktu	① Untuk pembuatan Media tifur tiap kelompok bisa dilakukan di rumah, jadi tidak saat pelaksanaan hanya berputar tifur tifur saja. ② Bisa berbanting lagi tiap kelompok atau menegur anak yang main hp atau mengantuk di harian belajar
2.	Interaksi dengan peserta didik	③ Bisa diperbarui soal latihan dalam 1 Serinya
3.	Soal Latihan	④ Bisa diperbesar lagi font nya
4.	Tulisan pada PPT	

Picture 7. Observer 2 Cycle I

SIKLUS II		
No.	MASALAH	SOLUSI
①	Manajemen Waktu	Sudah lebih baik dari SIKlus I. Cuma ketika presentasi kelompok, anak-anak masih banyak yang malah mainan. Kurang fokus, tapi secara keseluruhan sudah lebih bagus. Sudah lebih tegas te anak-anak

Picture 8. Observer 2 Cycle II

Observer 2 offered a number of recommendations for improvement based on the reflection in Cycle I. In order to concentrate class time on discussion and Gallery Walk activities, teachers were recommended to have students prepare group teaching materials at home. Additionally, teachers were urged to move between groups more frequently and tell students especially those sat in the back to stay engaged if they were talking, using their phones, or nodding off. In order to provide students more chances to comprehend and apply topics, the observer also recommended raising the quantity of practice questions. In order to guarantee that every student could see the questions and explanations written on the board, teachers were also urged to adopt larger font sizes. These advancements were anticipated to improve instruction clarity, student participation and overall learning effectiveness.

Reflections on cycle II revealed gains over cycle I, especially in terms of student participation in group discussions, instructor readiness, and assertiveness. A more favorable and concentrated learning environment was produced by the teacher's more proactive direction of class activities. However, Observer 2 saw that some students ignored their classmates' explanations during group presentations because they were distracted, chatting, or playing. This shows that better classroom administration is required, particularly when it comes to controlling students as audience members to maintain their respect and focus during presentations. Even yet, learning exercises were superior to those from the prior cycle. Students showed better conceptual knowledge, participated more actively in conversations, and responded to the work of other groups. These advancements demonstrate the effectiveness of Gallery Walk-based instruction in raising student engagement and learning preparedness.

## Discussion

The Gallery Walk-based cooperative learning approach nevertheless encountered a number of challenges in Cycle I, especially with regard to time management, student interaction, and restricted media. Students' engagement was subpar even though they were split up into groups and given the chance to watch and comment on the outcomes of other groups. Additionally, teachers still need to do a better job of mobilizing students, explaining formulas clearly, and paying attention to pupils who are struggling. As a result, learning motivation was still categorized as moderate, and the average student score only reached 64.93 with a completion rate of 52.78%. This situation suggests that students' conceptual skills and enthusiasm to learn have not been fully improved by the execution of Cycle I.

Enhancing classroom management, bolstering conceptual explanations, expanding student activities, and refining the Gallery Walk approach to encourage students to participate more actively in discussing, watching, and reacting to their peers' work were all enhancements achieved in Cycle II. Additionally, teachers concentrated more on directing passive groups and fixing mistakes in the application of formulas and symbols. The average score increased to 80.40 with 88.89% completion, and learning motivation increased to 77.78%, demonstrating the considerable influence. Students' comprehension of topics improved, they participated more actively, and they were able to offer feedback and admiration for the work of other groups, all of which led to more efficient and significant learning.

The findings of this study are consistent with those of classroom action research carried out over the previous five years, such as those published in the Journal of PTK and Education at UIN Antasari by Suparni (2022) and Paris & Nufus (2021), which demonstrated that the use of group discussions and collaborative learning can enhance students' critical thinking abilities, active learning, and mathematical learning outcomes. Students can explore concepts, have discussions, and learn from mistakes and other students' efforts in collaborative learning models. These studies highlight that a teacher's ability to foster an engaging, cooperative, and reflective learning environment is just as important to students' performance as their subject-matter expertise.

Additionally, studies by Sumarni et al. (2017) and Handayani & Mahrta (2020) showed that Gallery Walk-based learning affects students' affective and social as well as cognitive development, especially when it comes to developing communication, accountability, and feedback skills. Because they are actively participating in the learning process rather than just listening, students are more motivated. This is consistent with the study's findings, which show that following implementation in Cycle II, students showed excitement, the guts to voice their viewpoints, and an enhanced capacity to explain mathematical ideas.

The findings of this study suggest that teaching mathematics should not only concentrate on imparting knowledge and solving problems, but also on creating exploratory, cooperative, and reflective activities that can foster 21st-century abilities like critical thinking, creativity, communication, and teamwork. Because it can transform students' roles from information consumers to active learners who develop understanding via interaction, discussion, and peer review, the Gallery Walk model has the potential to be a successful alternative teaching method. It is therefore anticipated of math teachers to be able to creatively incorporate this learning paradigm to enhance the quality of learning that is more comprehensive and relevant.

## CONCLUSION

The findings of this classroom action research indicate that the implementation of Gallery Walk-based cooperative learning was associated with improvements in both students' learning motivation and mathematical achievement in the topic of Sequences and Series among Class X-9 students. Specifically, the average achievement score increased from 64.93 with a mastery level of 52.78% in Cycle I to 80.40 with 88.89% mastery in Cycle II, while students' motivation progressed from a moderate to a high category. These results demonstrate that iterative instructional refinement across research cycles contributed to more effective learning processes and outcomes.

From an instructional perspective, the findings suggest that mathematics learning benefits from interactive and collaborative approaches that emphasize active student engagement and peer interaction, particularly for conceptually demanding topics. The Gallery Walk model shows

potential as an alternative instructional strategy to support the development of critical thinking, communication skills, collaboration, and reflective learning practices. However, these implications should be interpreted with caution due to several limitations of the study. The research was conducted in a single class with a limited number of participants and employed a short intervention period, which restricts the generalizability of the findings. In addition, the study relied primarily on descriptive analysis without comparative or inferential statistical testing.

Therefore, future research is recommended to involve larger and more diverse samples, extended implementation periods, and more rigorous analytical methods to further examine the effectiveness of Gallery Walk-based cooperative learning. Integrating this model with digital media, contextual learning tasks, or authentic assessment strategies may also provide deeper insights into its applicability in contemporary mathematics education.

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