

Quality of Sociology Learning Through Reflection-Embedded STAD Cooperative Learning: An Indonesian Senior High School

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ABSTRACT

Sociology education in secondary schools is expected to develop critical thinking and sociological reasoning, yet instruction often remains teacher-centred and weakly participatory, limiting both the quality of the learning process and the depth of conceptual understanding. This study examined whether embedding a structured cooperative-reflection phase within the Student Teams–Achievement Divisions (STAD) model could improve the process and outcome quality of sociology learning. Using a two-cycle classroom action research design based on the Kemmis and McTaggart model, the intervention was implemented with 40 Grade XI students at a public senior high school in Wajo, Indonesia. Process quality was monitored through structured observation of individual and group engagement, and learning outcomes were assessed through validated end-of-cycle tests; data were analysed using qualitative thematic coding and descriptive statistics, with classical mastery set at 85% as the success criterion. Classical mastery rose from 92.5% in Cycle I to 100% in Cycle II, and the proportion of students reaching the highest achievement band increased from 85% to 97.5%. More notably, observed engagement indicators—question-asking, volunteering, and contributing to peer groups—were initially low in Cycle I and improved after reflection-informed adjustments such as group rotation and stronger scaffolding in Cycle II. The findings suggest that the gains were driven less by raising bare pass rates, which were already high, than by deepening engagement and consolidating understanding through structured reflection. The study contributes a transferable, reflection-embedded variant of STAD for sociology teaching while acknowledging the limits of single-class action research.

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1. INTRODUCTION

Education in the twenty-first century calls for a shift from conventional, teacher-centred instruction toward participatory frameworks that foster critical thinking, social empathy, and analytical literacy (Kartika et al., 2025). In secondary education,

sociology is a pivotal discipline because it equips students to interpret complex social phenomena and structural change (Trinidad, 2024). Developing a genuine sociological imagination, however, requires a learning environment that moves beyond the rote memorization of theoretical concepts. Students must actively contextualize social realities, engage dialectically with peers, and develop a shared awareness of social inclusion and diversity (Sharan, 2010).

Despite this role, the pedagogical reality of sociology classrooms is frequently characterized by passive, weakly participatory instruction. When students are positioned as passive recipients of information, their reflective capacity diminishes and learning outcomes risk becoming superficial and disconnected from the socio-cultural dynamics that sociology seeks to explain (Normaningsih, 2022). Improving the quality of sociology learning, therefore, depends not only on raising test scores but also on enriching the quality of classroom participation, dialogue, and conceptual consolidation (Afiah et al., 2025; Damanik & Muhammad, 2025).

Cooperative learning has been widely advocated as a response to this problem (Arifin, 2022). Grounded in social interdependence theory, cooperative learning posits that positive interdependence among learners promotes both achievement and the quality of peer relationships (Shimizu et al., 2022; Zhou & Colomer, 2024). Meta-analytic and review evidence consistently associates cooperative methods with improved achievement, attitudes, and knowledge retention across subjects and educational levels (Gillies, 2016; Kyndt et al., 2013; Tran, 2014). Among the structured cooperative models, Student Teams–Achievement Divisions (STAD) is one of the most extensively studied. Through heterogeneous grouping, shared responsibility, structured quizzes, and team recognition, STAD redistributes classroom participation and has repeatedly been linked to gains in academic achievement (Odutayo & Fonseca, 2024; Rahawarin et al., 2026; Tetiwar et al., 2026; Upa et al., 2025), including in science and sociology teaching (Arnudia & Wita, 2025; Motwani et al., 2022).

Nonetheless, a recurring limitation of standard STAD implementation is its tendency to emphasize the mechanical features of group work—task completion, quizzes, and rewards—while underplaying the cognitive and affective integration that follows collaboration (Shafiee Rad et al., 2023). When there is no structured mechanism for learners to articulate how and why particular social phenomena occur, collaborative tasks can become compliance exercises that fail to cultivate the deep, transformative understanding sociology requires. Research on feedback and formative assessment indicates that learning is consolidated when students deliberately review their own thinking and reconstruct meaning, rather than simply receiving an outcome (Nicol & Macfarlane-Dick, 2006; Solis Trujillo et al., 2025). Reflective practice has been shown to strengthen conceptual engagement in sociology classrooms (Welsh, 2024).

This study addresses that limitation by embedding a structured cooperative-reflection technique within the STAD cycle. Rather than ending each collaborative episode at task completion, students engage in a dedicated reflective phase in which groups review their collective reasoning, surface misconceptions, and reconstruct sociological meaning together. This hybrid design connects structured group work with higher-order

metacognitive processing, a combination that remains under-explored in secondary sociology education. While the integration of reflection with cooperative learning has been examined in other subjects, its systematic application to the quality of sociology learning at the senior high school level, and within an Indonesian regional context, has received limited empirical attention (Cañabate et al., 2021; Iraola et al., 2024; Karmina et al., 2021).

The intervention was situated in Grade XI at a public senior high school in Wajo, Indonesia, where preliminary assessment indicated low classroom participation, limited reflective dialogue, and uneven conceptual retention. Given the specific socio-cultural setting of the school, a context-sensitive intervention that leverages structured group engagement and reflection is pedagogically strategic. To capture the evolving nature of the intervention, the study uses a classroom action research (CAR) design executed across two cycles, each comprising planning, action, observation, and reflection. Unlike static experimental designs, CAR allows the teacher-researcher to monitor real-time shifts in engagement and achievement and to refine the intervention iteratively.

Accordingly, this study is guided by two questions: (1) Does reflection-embedded STAD improve the quality of the sociology learning process, as evidenced by individual and group engagement? and (2) Does it improve learning outcomes, as evidenced by classical mastery and the distribution of achievement? The contribution is twofold. Practically, the study offers sociology teachers a transferable, reflection-focused variant of STAD. Theoretically, it extends the cooperative-learning literature by showing how structured group reflection can support a higher-quality and more inclusive learning environment—while remaining explicit about the boundaries of what single-class action research can establish.

2. METHOD

This study employed a classroom action research design following the iterative, cycle-based model of Kemmis and McTaggart. The research was carried out in two consecutive cycles, each comprising four interconnected phases: planning, action, observation, and reflection. This mixed qualitative–quantitative paradigm enabled the teacher-researcher to intervene directly in the classroom while systematically monitoring behavioural and academic change. The reflective evaluation at the end of each cycle was used to refine the intervention in the subsequent cycle.

The study was conducted with one intact Grade XI class of 40 students at SMA Negeri 11 Wajo during the academic term. The class presented a heterogeneous mix of academic backgrounds, socioeconomic statuses, and prior attainment, and was selected purposively because preliminary lessons had revealed low conceptual retention and passive engagement. Informed consent was obtained from the school administration and the participating students, and the intervention was aligned with institutional guidelines so as not to disrupt the school's core educational mandate.

The intervention integrated the STAD cooperative model with a dedicated cooperative-reflection technique. Each instructional sequence followed the STAD syntax—communicating objectives, presenting information, organising students into

heterogeneous teams, guiding group work, and awarding team recognition—and was then extended with a structured reflective phase in which groups peer-reviewed their collective understanding and identified cognitive gaps. In Cycle I, teams reviewed sociological concepts and reflected collaboratively on their reasoning. Drawing on the reflective evaluation and observation data from Cycle I, targeted adjustments were introduced in Cycle II, including rotating group membership to balance team composition, refining scaffolding, restructuring the reflective prompts, and strengthening classroom management, guidance, and motivation. Each cycle comprised four meetings: three for instruction and one for the end-of-cycle test.

Data were collected using a dual-instrument approach addressing both process and product dimensions. The quality of the learning process was monitored with structured observation sheets that recorded indicators such as collaborative engagement, active verbal participation, and adherence to the reflection guidelines; student behaviour was sampled at five-minute intervals throughout each meeting, supplemented by open-ended observation notes for critical reflection. Learning outcomes were measured with end-of-cycle achievement tests scored out of 20. The tests underwent content-validity review and internal-consistency reliability checks before deployment to ensure that they captured students' mastery of core sociology concepts.

A mixed-methods analysis was used. Qualitative observation data were transcribed, categorised, and analysed through thematic coding to evaluate shifts in classroom dynamics and reflective depth. Quantitative achievement data were analysed with descriptive statistics to calculate individual mastery and the classical (whole class) mastery percentage. Following the institution's minimum mastery criterion (KKM), the benchmark for success was set at a classical mastery rate of at least 85%; the intervention would be judged successful when at least 85% of students met or exceeded the passing grade. Achievement was also categorised into five bands to examine changes in the distribution of scores across cycles.

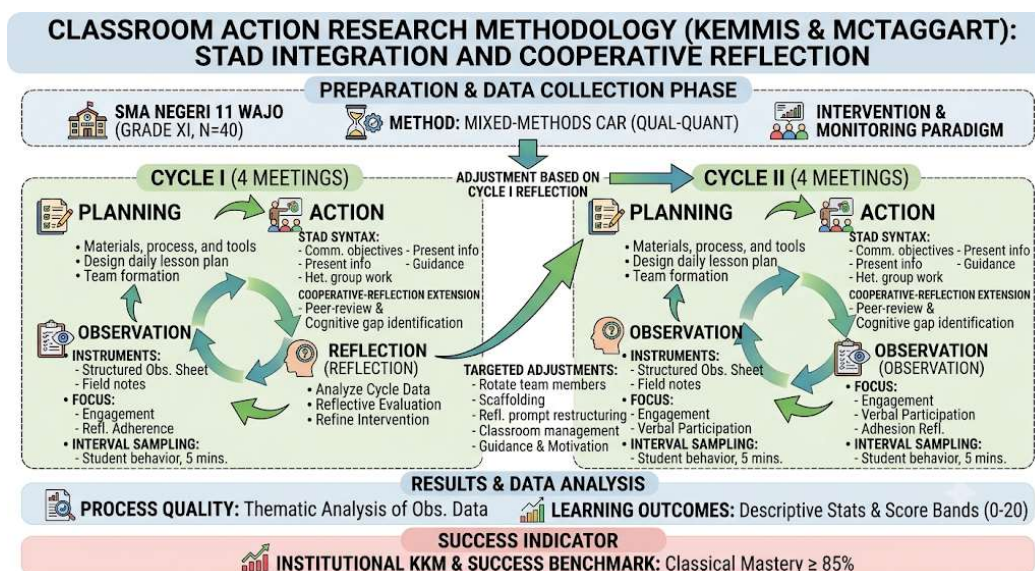


Figure 1. Research Flow

3. RESULTS AND DISCUSSION

Results

Cycle I: Learning Outcomes

Cycle I comprised four meetings, three for instruction and one for the end-of-cycle test. The achievement test administered at the end of Cycle I produced the frequency distribution shown in Table 1. Most students (85%) reached the highest band, while a small number remained in the medium and low bands.

Table 1. Distribution of sociology achievement scores at the end of Cycle I

No	Score	Category	Frequency	Percentage (%)
1	0–6	Very low	0	0
2	7–10	Low	1	2.5
3	11–12	Medium	2	5.0
4	13–16	High	3	7.5
5	17–20	Very high	34	85.0

When the same results were classified against the institutional mastery criterion (passing score ≥ 14 of 20), 37 of 40 students (92.5%) achieved mastery and 3 (7.5%) did not, as shown in Table 2. Classical mastery in Cycle I therefore already exceeded the 85% success benchmark, although three students remained below the passing grade and the quality of the learning process showed clear room for improvement.

Table 2. Learning mastery of Grade XI students in Cycle I

Score	Category	Frequency	Percentage (%)
0–13	Not mastered	3	7.5
14–20	Mastered	37	92.5

Cycle I: Quality of the Learning Process

Structured observation of individual engagement revealed consistently low participation during Cycle I. As summarised in Table 3, only a small proportion of students-initiated questions, volunteered to answer, or contributed responses to other groups. Five-minute behaviour sampling showed that attention was initially low at the start of each meeting—only 17, 13, and 18 students attended to the teacher’s explanation in the opening minutes of the first, second, and third meetings respectively—because students were occupied with unrelated activities. Attention recovered after motivational prompts and again after group work, increasing toward the later part of each meeting.

Table 3. Individual engagement indicators observed in Cycle I

Engagement indicator	Students (%)
Asked questions during learning	13
Volunteered to answer the teacher’s questions	18
Answered the teacher’s questions	15
Represented their group in answering group tasks	23
Gave opinions, suggestions, or responses to other groups	18

Group (social) engagement was somewhat stronger. In the first meeting, 21 to 28 students worked actively within their teams during the central 40–60-minute period, rising to 27–29 students in the second meeting. The remaining students were off-task—

moving around, talking, or distracting peers—and only about 18% actively contributed answers within their groups. Thematic analysis of the observation notes indicated that most difficulties arose because students were unaccustomed to cooperative learning: habituated to working individually, some struggled to collaborate, and a few resisted the assigned grouping when paired with less familiar peers. After general and individual guidance, these problems gradually eased and students became more comfortable working in teams.

The Cycle I reflection identified two priorities for improvement. First, although classical mastery was high, engagement was uneven and three students had not achieved mastery; the team noted that rotating group membership would distribute participation more evenly. Second, the teacher-researcher determined that classroom management, guidance, and motivation needed strengthening, with more frequent interaction and recognition of active students and groups to sustain engagement across the full lesson.

Cycle II: Learning Outcomes

After implementing the reflection-informed adjustments, Cycle II showed improvement in both process and outcomes. As shown in Table 4, all 40 students (100%) achieved mastery, with no student below the passing grade. Classical mastery thus increased from 92.5% in Cycle I to 100% in Cycle II, an absolute gain of 7.5 percentage points that brought the three previously unsuccessful students to mastery.

Table 4. Learning mastery of Grade XI students in Cycle II

Score	Category	Frequency	Percentage (%)
0–13	Not mastered	0	0
14–20	Mastered	40	100

The distribution of achievement also shifted upward. As shown in Table 5, the proportion of students in the highest band rose from 85% in Cycle I to 97.5% in Cycle II, while the medium and low bands were eliminated. Only one student remained in the high (rather than very high) band, and no student fell into the medium, low, or very low categories.

Table 5. Distribution of sociology achievement scores at the end of Cycle II

No	Score	Category	Frequency	Percentage (%)
1	0–6	Very low	0	0
2	7–10	Low	0	0
3	11–12	Medium	0	0
4	13–16	High	1	2.5
5	17–20	Very high	39	97.5

Cycle II: Quality of the Learning Process

Observation in Cycle II indicated improved process quality relative to Cycle I. Following the rotation of group membership and the strengthened scaffolding, guidance, and motivation, the five-minute behaviour records showed students attending to instruction and collaborating more consistently across each meeting, and off-task behaviour declined. Students who had previously resisted group work participated more

readily, and reflective discussion within teams became more substantive. Taken together, the process and outcome data indicate that the reflection-informed refinements introduced after Cycle I corresponded with both a more engaged classroom and a more concentrated, higher-achieving distribution of results.

Discussion

This study examined whether embedding a structured cooperative-reflection phase within the STAD model could improve the quality of sociology learning in a Grade XI classroom. Two patterns emerged. First, learning outcomes improved: classical mastery rose from 92.5% to 100%, and the share of students in the highest achievement band rose from 85% to 97.5%. Second, and arguably more important, the quality of the learning process improved, with observation data showing more consistent attention, fuller participation, and more substantive group reflection in Cycle II than in Cycle I.

It is important to interpret the outcome gains carefully. Because classical mastery in Cycle I was already high (92.5%), the headline increases to 100% is modest in absolute terms and reflects three students crossing the passing threshold rather than a wholesale transformation of attainment. The more meaningful change lies in the distribution of achievement and in process quality: the elimination of the medium and low bands, the concentration of students in the highest band, and the marked improvement in engagement indicators that began at low levels in Cycle I. This reading is consistent with the study's premise that the value of reflection-embedded STAD lies less in lifting bare pass rates than in deepening engagement and consolidating understanding.

The findings align with social interdependence theory, which holds that positive interdependence among learners supports both achievement and the quality of peer relationships (Rudolf & Lee, 2023; Wattanasap, 2025). They are also consistent with the broader evidence base associating cooperative learning, and STAD specifically, with improved achievement and attitudes across subjects and levels (Gillies, 2016; Kyndt et al., 2013; Rahman, 2025; Tran, 2014) and with prior work applying STAD to sociology and the social sciences (Ananda, 2022; Ramadanti et al., 2023). The early difficulties observed in Cycle I—students unaccustomed to collaboration and initially resistant to grouping—mirror well-documented transition costs when classrooms move from individualistic to cooperative structures, and the subsequent improvement after guidance reflects the same literature's emphasis on teacher facilitation and structure (Gillies, 2016).

The distinctive contribution of this study is the structured reflective phase added to STAD. Standard STAD foregrounds quizzes and team rewards but offers little structured opportunity for learners to revisit and reconstruct their reasoning. By guiding groups to review their collective understanding and surface misconceptions, the cooperative-reflection technique connects collaboration with metacognitive processing—the deliberate review of one's own thinking that feedback and formative-assessment research identify as central to durable learning (Mandouit & Hattie, 2023; McTighe & O'Connor, 2005). In a sociology classroom, where the goal is to interpret rather than merely recall social phenomena, this reflective consolidation is especially

relevant, echoing arguments for reflective practice in sociology teaching (Purcell, 2013; Welsh, 2024).

Practically, the study offers sociology teachers a transferable refinement of a familiar model: retaining the structure and motivational features of STAD while adding a brief, deliberate reflective phase and using cycle-based observation to adjust grouping, scaffolding, and classroom management. The action-research framing illustrates how teachers can diagnose and respond to engagement problems in real time rather than waiting for end-of-term results.

Several limitations qualify for these conclusions. The study used a single intact class of 40 students at one school, without a comparison group, so the design establishes change over time within one context but cannot isolate the effect of reflection-embedded STAD from maturation, testing effects, or teacher enthusiasm, nor can it support broad generalisation. The high Cycle I mastery rate also constrains the room for measurable outcome gains and may reflect characteristics of this cohort or assessment. Process measures relied on observer judgement, and although structured sheets and five-minute sampling were used, observer effects cannot be excluded; comparable quantitative engagement indicators were not available for both cycles. Finally, the achievement tests captured short-term mastery rather than long-term retention or transfer.

Future research could strengthen these findings with quasi-experimental or multi-class designs that include a comparison condition, larger and more diverse samples across schools and regions, and delayed post-tests to assess retention and transfer. Studies could also isolate the contribution of the reflective phase by comparing standard STAD with reflection-embedded STAD and could incorporate validated engagement instruments and student voice to capture the affective and metacognitive dimensions of the intervention more directly.

4. CONCLUSION

This classroom action research found that embedding a structured cooperative-reflection phase within the STAD model corresponded with improvements in both the process and outcome quality of sociology learning in a Grade XI classroom. Classical mastery rose from 92.5% in Cycle I to 100% in Cycle II, the distribution of achievement shifted upward with the highest band increasing from 85% to 97.5%, and observed engagement improved after reflection-informed adjustments such as group rotation and stronger scaffolding, guidance, and motivation. Interpreted in context, the contribution lies less in raising already-high pass rates than in deepening engagement and consolidating understanding through structured reflection.

The study contributes a transferable, reflection-embedded variant of STAD for sociology teaching and adds to the cooperative-learning literature by illustrating how structured group reflection can support a more engaged and inclusive learning environment. These conclusions should be read in light of the limits of single-class action research, and they invite confirmation through controlled, multi-context studies. For practitioners, the implication is clear: cooperative structures are most powerful for

sociology when paired with deliberate opportunities for students to reflect on, and reconstruct, their shared understanding.

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