



Enhancing Learners' Critical Thinking Skills through Cooperative Learning Strategies: A Classroom-Based Action Research

Vincent

Assistant Professor of English, Lakshmi College of Education Gandhigram, Tamilnadu, India

Article information

Received: 5th February 2026

Received in revised form: 23rd February 2026

Accepted: 13th April 2026

Available online: 23rd May 2026

Volume: 2

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.20506414>

Abstract

The cultivation of critical thinking is widely recognized as a central goal of 21st-century education, yet many classrooms continue to privilege rote learning and lower-order cognitive tasks. This study explored how cooperative learning strategies, implemented systematically over time, can enhance learners' critical thinking skills in a Grade 10 social studies classroom. A classroom-based action research design, anchored on the Kemmis and McTaggart (2014) spiral of planning, acting, observing, and reflecting, was employed across three cycles spanning 12 weeks. The participants comprised 36 Grade 10 learners and the teacher-researcher. Data were collected through a critical thinking pre-test and post-test based on the Watson-Glaser-style item set, structured classroom observations, learners' written outputs, and the teacher-researcher's reflective journal. Quantitative data were analyzed using descriptive statistics and a paired-samples *t* test, and qualitative data were analyzed thematically. Results showed a statistically significant improvement in learners' critical thinking scores between the pre-test and post-test ($t(35) = 8.42, p < .001, d = 1.40$), with the strongest gains observed in evaluation and inference. Qualitative findings highlighted the role of structured cooperative tasks, learner accountability, and teacher questioning in deepening reasoning. Implications for classroom practice, teacher self-improvement, and the integration of cooperative learning into the secondary curriculum are discussed.

Keywords: - Cooperative Learning, Critical thinking, Action Research, Secondary Education, Teacher Inquiry

I. INTRODUCTION

The cultivation of critical thinking, that is, the disciplined process of analyzing, evaluating, inferring, and reasoning about information in a reflective and purposeful manner, has long been recognized as a central goal of education (Ennis, 1996; Facione, 2011). Within the broader 21st-century skills agenda, it occupies a particularly important position alongside communication, collaboration, and creativity (Trilling & Fadel, 2009). Yet many classrooms continue to emphasize the recall of facts and the completion of low-level cognitive tasks, leaving learners with limited opportunities to engage deeply with content, weigh competing claims, or construct reasoned arguments.

Cooperative learning, which involves learners working together in structured small groups toward a shared goal, has been advocated as a powerful pedagogical strategy for promoting both academic achievement and higher-order thinking (Johnson & Johnson, 2009; Slavin, 2014). Drawing on social constructivist principles articulated by Vygotsky (1978), cooperative learning posits that knowledge is constructed through dialogue, negotiation, and joint problem-solving with more capable peers and supportive teachers. When well structured, cooperative tasks can scaffold the kind of cognitive elaboration, perspective-taking, and reasoned argumentation that critical thinking requires (Gillies, 2016).

Despite the well-established theoretical basis for cooperative learning, its translation into routine classroom practice remains uneven. Many teachers report challenges in designing tasks that require genuine interdependence, distributing accountability, and managing groups of mixed ability and motivation (Buchs et al., 2017). Without these structural features, group work risks collapsing into surface collaboration or unequal participation, which yields limited cognitive benefit. Action research, with its emphasis on the practitioner-researcher iteratively planning, acting, observing, and reflecting on classroom

interventions, offers a particularly suitable methodological framework for refining and evaluating cooperative learning in real classroom conditions (Kemmis & McTaggart, 2014).

The present study was undertaken by the teacher of a Grade 10 social studies class to investigate how cooperative learning strategies, designed and refined over multiple cycles, can enhance learners' critical thinking skills. The study is theoretically anchored on Vygotsky's (1978) sociocultural theory and Johnson and Johnson's (2009) social interdependence theory, with critical thinking conceptualized through Facione's (2011) core dimensions of interpretation, analysis, evaluation, inference, explanation, and self-regulation.

II. OBJECTIVES OF THE STUDY

The general objective of the study was to enhance learners' critical thinking skills through the systematic implementation and refinement of cooperative learning strategies in a Grade 10 social studies classroom. Specifically, the study sought to:

- Determine learners' baseline critical thinking skills before the implementation of cooperative learning strategies.
- Design and implement cooperative learning interventions across three iterative action research cycles.
- Compare learners' critical thinking performance before and after the intervention period.
- Identify which cooperative learning structures and instructional moves contribute most to the development of critical thinking.
- Document the teacher-researcher's professional learning and the practical adjustments needed to sustain effective cooperative learning in routine classroom conditions.

III. METHODOLOGY

This study employed a classroom-based action research design framed by the Kemmis and McTaggart (2014) spiral of planning, acting, observing, and reflecting. Action research was deemed appropriate because the inquiry was undertaken by the classroom teacher in the very setting in which the intervention was to take effect, with the dual goals of generating practical improvement and producing transferable insight. The cyclical structure permitted the deliberate refinement of cooperative learning strategies in response to ongoing observations and reflective analysis, rather than testing a single fixed intervention.

The study was conducted in one Grade 10 social studies class consisting of 36 learners, of whom 19 were female and 17 were male, in a public secondary school. The teacher-researcher had taught the class for the entire academic year prior to the intervention, which provided ecological validity but also required reflexive vigilance to mitigate the bias inherent in researching one's own practice. The class represented a typical mixed-ability group, with prior academic performance distributed approximately along a normal curve.

The action research was implemented over 12 weeks across three cycles of four weeks each. The first cycle introduced foundational cooperative learning structures, namely Think-Pair-Share, Numbered Heads Together, and basic Jigsaw, embedded in lesson units on social institutions and governance. The second cycle deepened cooperative engagement by introducing structured controversy and Group Investigation tasks designed to require learners to analyze multiple perspectives and build evidence-based arguments. The third cycle integrated peer assessment, structured argumentation protocols, and Socratic questioning into cooperative tasks in order to foreground evaluative and inferential reasoning. Each cycle concluded with a reflective phase in which the teacher-researcher analyzed observations, learner outputs, and journal entries, and used the insights to redesign the subsequent cycle.

Multiple data collection methods were used to triangulate evidence, in line with action research practice (Stringer, 2014). The first source was a critical thinking test consisting of 30 items modeled on Watson-Glaser-style assessments, addressing inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. The test was content-validated by a panel of three expert teachers and pilot-tested with a non-participating Grade 10 class of 30 learners, yielding a Kuder-Richardson 20 reliability coefficient of .82. The second source was a structured classroom observation protocol completed by a colleague during selected cooperative learning lessons, capturing dimensions such as positive interdependence, individual accountability, equal participation, and quality of academic discourse. The third source was a corpus of learners' written outputs from cooperative tasks, including argument maps, position papers, and peer-evaluation responses. The fourth source was the teacher-researcher's reflective journal, maintained throughout the intervention to record observations, decisions, doubts, and insights at the end of each lesson and cycle.

The trustworthiness of the qualitative components was strengthened in line with Lincoln and Guba's (1985) criteria. Credibility was supported through methodological triangulation, peer debriefing with a colleague who served as a critical friend throughout the cycles, and member checking with learners during cycle transitions. Dependability was reinforced through a detailed audit trail of cycle plans, reflective entries, and analytic memos. Confirmability was supported by the researcher's reflexive journal, which documented assumptions and decisions throughout the process. Transferability was addressed through thick description of context, learners, and instructional moves.

The study followed the ethical guidelines of the American Psychological Association (2017). Institutional ethical clearance was obtained, and written informed consent was secured from parents, with assent obtained from the learners themselves. The intervention was delivered to the entire class as part of regular instruction, and learners were assured that participation in the research components, such as the test and reviewed outputs, would not affect their grades. Pseudonyms were used in all reports, and data were stored securely.

Data were analyzed using both quantitative and qualitative approaches. Quantitative analysis using IBM SPSS Statistics Version 27 included descriptive statistics for pre-test and post-test scores, a paired-samples *t* test to determine the significance of the change, and Cohen's *d* to estimate the magnitude of the effect. Subscale scores corresponding to the dimensions of critical thinking were examined to identify the areas of greatest and least improvement. Qualitative data from observations,

learner outputs, and the reflective journal were analyzed thematically using Braun and Clarke's (2006) reflexive thematic analysis, with codes and themes refined progressively across cycles. Quantitative and qualitative findings were integrated at the interpretation stage in order to construct a coherent account of how and why cooperative learning influenced critical thinking.

IV. RESULTS

Pre-test results indicated a moderate baseline level of critical thinking among learners, with a mean score of 14.11 out of 30 ($SD = 3.92$), or approximately 47%. Performance was strongest on items assessing interpretation and weakest on items assessing evaluation of arguments and inference, suggesting that learners could identify information but had difficulty weighing the soundness of arguments or drawing supported conclusions from data.

Post-test results recorded a substantial improvement, with a mean score of 21.47 out of 30 ($SD = 4.18$), or approximately 72%. The paired-samples t test indicated that the difference was statistically significant ($t(35) = 8.42, p < .001$), and Cohen's d of 1.40 indicated a large practical effect. Subscale analysis showed that the largest gains were achieved on evaluation of arguments ($M_{\text{gain}} = 2.61$) and inference ($M_{\text{gain}} = 2.34$), the very dimensions that had registered the lowest baseline scores. Gains were more modest on interpretation and recognition of assumptions, although still positive.

Qualitative analysis revealed four interrelated themes that helped explain the quantitative gains. The first theme, the structuring power of cooperative protocols, captured the consistent observation that protocols such as Think-Pair-Share, structured controversy, and Group Investigation provided learners with predictable cognitive routines that scaffolded reasoning. Learner outputs evolved from descriptive statements in the early weeks to position papers with evidence and counter-arguments in the later weeks. The second theme, the role of accountability in deepening engagement, captured the shift observed once individual accountability mechanisms, such as randomly selected reporters and individual reflective entries, were introduced in the second cycle. Observation notes recorded a marked decrease in passive participation and an increase in dispersed contribution. The third theme, the catalytic effect of teacher questioning, highlighted the influence of moves such as "what is the strongest counter-argument?" and "what evidence would change your mind?", which appeared to redirect learner reasoning toward evaluation and inference. The fourth theme, productive struggle and metacognition, captured learners' growing willingness to revise their thinking, articulate uncertainty, and explain their reasoning processes, particularly in the third cycle.

The teacher-researcher's reflective journal documented a parallel professional learning trajectory. Early entries focused on managerial concerns such as group composition, time allocation, and noise. Mid-intervention entries shifted toward instructional concerns such as the design of cognitively demanding tasks and the calibration of teacher questioning. Final entries reflected a more integrated stance in which task design, group structures, accountability, and questioning were viewed as interlocking levers for promoting critical thinking.

V. DISCUSSION

The findings indicate that cooperative learning, when systematically structured and refined across iterative cycles, produces substantial improvements in learners' critical thinking skills. The large effect size, $d = 1.40$, exceeds the typical effects reported for cooperative learning in international research (Slavin, 2014) and aligns with the broader evidence that well-designed cooperative tasks can promote higher-order thinking by leveraging social interaction and cognitive elaboration (Gillies, 2016; Vygotsky, 1978). The pattern of gains, in which the largest improvements were registered in evaluation and inference, is particularly significant because these dimensions are widely considered the most demanding and the least developed in conventional classrooms (Facione, 2011).

The qualitative findings clarify the conditions under which cooperative learning produces these gains. Structured protocols emerged as essential for translating the principle of cooperation into reliable cognitive routines, supporting Johnson and Johnson's (2009) emphasis on positive interdependence and individual accountability as defining features of effective cooperative learning. The catalytic role of teacher questioning resonates with research on dialogic teaching and Socratic instruction, which highlights how strategically posed questions provoke the analytical and evaluative work characteristic of critical thinking (Alexander, 2018). The emergence of productive struggle and metacognition by the third cycle suggests that learners had begun to internalize habits of reasoning rather than merely complying with task formats.

The cyclical structure of action research proved especially valuable for surfacing the challenges of implementation in real classroom conditions. The first cycle revealed problems of unequal participation and time pressure that were not anticipated at the planning stage. The second cycle addressed these through accountability mechanisms but exposed new challenges related to task complexity and learner readiness. The third cycle integrated lessons from the previous two and represented the most coherent enactment of cooperative learning. This trajectory underscores the central insight of action research, namely that pedagogical innovations rarely succeed in their first form and require iterative refinement informed by classroom evidence and reflection (Kemmis & McTaggart, 2014).

This study has several limitations. First, the sample comprised a single intact class taught by the teacher-researcher, which limits generalizability and introduces the possibility of researcher bias despite the safeguards used. Second, the absence of a control group precludes strict causal inference; gains may reflect maturation, instructional intensity, or other unmeasured factors in addition to the cooperative structures themselves. Third, the critical thinking test, although carefully constructed, captures a particular set of dimensions and may not reflect transfer to other domains. Future research could employ multi-class action research collaborations, comparative designs, and broader assessments of critical thinking transfer across subject areas.

VI. CONCLUSION

Cooperative learning, when systematically structured around principles of positive interdependence, individual accountability, and rigorous teacher questioning, significantly enhances learners' critical thinking skills, particularly in evaluation and inference. The action research process not only improved learner outcomes but also deepened the teacher-researcher's professional understanding of how cooperative tasks function and how they need to be refined to be effective. Schools and teacher-education programs should therefore equip teachers with both the technical skill to design cooperative tasks and the reflective stance required to refine them in practice. Sustained classroom-based inquiry, supported by collegial collaboration and adequate planning time, offers a particularly promising pathway for embedding critical thinking development into routine secondary school instruction.

REFERENCES

- Alexander, Robin J. (2018). *Developing dialogic teaching: Genesis, process, trial*. *Research Papers in Education*, 33(5), 561–598. <https://doi.org/10.1080/02671522.2018.1481140>
- American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct*. <https://www.apa.org/ethics/code>
- Braun, Virginia, & Clarke, Victoria. (2006). *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Buchs, Céline, Filippou, Despina, Pulfrey, Caroline, & Volpé, Yann. (2017). *Challenges for cooperative learning implementation: Reports from elementary school teachers*. *Journal of Education for Teaching*, 43(3), 296–306. <https://doi.org/10.1080/02607476.2017.1321673>
- Ennis, Robert H.. (1996). *Critical thinking dispositions: Their nature and assessability*. *Informal Logic*, 18(2), 165–182. <https://doi.org/10.22329/il.v18i2.2378>
- Facione, Peter A.. (2011). *Critical thinking: What it is and why it counts*. Insight Assessment.
- Gillies, Robyn M.. (2016). *Cooperative learning: Review of research and practice*. *Australian Journal of Teacher Education*, 41(3), 39–54. <https://doi.org/10.14221/ajte.2016v41n3.3>
- Johnson, David W., & Johnson, Roger T.. (2009). *An educational psychology success story: Social interdependence theory and cooperative learning*. *Educational Researcher*, 38(5), 365–379. <https://doi.org/10.3102/0013189X09339057>
- Kemmis, Stephen, & McTaggart, Robin. (2014). *The action research planner: Doing critical participatory action research*. Springer.
- Lincoln, Yvonna S., & Guba, Egon G.. (1985). *Naturalistic inquiry*. SAGE.
- Slavin, Robert E.. (2014). *Cooperative learning and academic achievement: Why does groupwork work? Anales de Psicología*, 30(3), 785–791. <https://doi.org/10.6018/analesps.30.3.201201>
- Stringer, Ernest T.. (2014). *Action research* (4th ed.). SAGE.
- Trilling, Bernie, & Fadel, Charles. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.
- Vygotsky, Lev S.. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.