International Research Journal of Multidisciplinary Scope (IRJMS), 2026; 7(2): 652-664 IRJMS

Original Article | ISSN (O): 2582-631X DOI: 10.47857/irjms.2026.v07i02.010147

Improving Grade 6 Pupils' Interest, Behavior and Classroom Engagement Through Structured Values-integrated Collaborative Learning Activities

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Abstract

This action research examined the effectiveness of structured values-integrated collaborative learning activities in improving Grade 6 pupils' learning interest, classroom behavior and classroom engagement in science at Mindanao State University–Integrated Laboratory School. Sixty pupils participated in a two-week intervention comprising daily 45-minute sessions that embedded values such as respect, responsibility and cooperation through structured group activities. A pre-test–post-test design was employed using a validated 30-item Likert-scale questionnaire measuring learning interest, classroom behavior and classroom engagement. Descriptive statistics (mean and standard deviation) were used to analyze quantitative data, supported by pupils' written reflections. Pre-test results indicated moderate levels of interest, behavior and engagement, with most responses falling within the Neutral to Agree range. Post-test findings showed substantial improvements across all three domains, with most indicators shifting to Agree and Strongly Agree levels. Pupils reported increased motivation, improved rule-following and self-regulation, reduced boredom and disruptive behavior and more active participation in collaborative tasks. The findings suggest that explicitly integrating values into structured collaborative learning activities can simultaneously enhance academic engagement and positive classroom behavior among elementary learners. The study highlights the practical value of classroom-based action research in addressing real instructional challenges and supports the integration of values education within collaborative science instruction.

Keywords: Classroom Behavior, Classroom Engagement, Collaborative Learning, Elementary Science Education, Values-integrated Instruction.

Introduction

Collaborative learning has been widely recognized as a practical instructional approach for improving academic achievement, promoting social interaction and enhancing student engagement across educational levels (1, 2). In elementary science classrooms, collaborative activities provide learners with opportunities to actively construct knowledge, exchange ideas and develop communication skills through shared problem-solving. Contemporary research emphasizes that structured peer interaction supports both cognitive development and socio-emotional growth, particularly when learning tasks are intentionally designed to promote participation and accountability (3, 4). However, despite the documented benefits of collaborative instruction, many elementary teachers continue to report persistent classroom concerns such as low learning interest, disruptive behaviors, inconsistent participation in group work and declining engagement during lessons (5, 6).

Student engagement is commonly conceptualized as a multidimensional construct comprising behavioral, emotional and cognitive components (7, 8). Behavioral engagement refers to observable participation in academic tasks, emotional engagement involves interest and affective responses toward learning and cognitive engagement reflects investment in understanding complex ideas. Recent scholarship highlights that engagement is strongly influenced by classroom climate, instructional design, peer relationships and teacher support (9). When learners exhibit low behavioral engagement—such as inattentiveness, avoidance of tasks, or disruptive conduct—academic outcomes and classroom harmony are

(Received 16th January 2026; Accepted 06th March 2026; Published 09th April 2026)

negatively affected (10). Moreover, increased exposure to digital media and external social influences has been associated with reduced concentration, diminished intrinsic motivation and challenges in values formation among school-aged children (11, 12). These realities underscore the need for classroom-based interventions that simultaneously address academic engagement and behavioral development.

Empirical studies demonstrate that collaborative learning strategies can improve participation and academic performance when implemented with clear structure, defined roles and guided facilitation (4, 13). Structured cooperative learning models have been shown to increase task completion rates, enhance peer interaction quality and reduce disruptive behaviors through accountability mechanisms (14). Additionally, supportive feedback and well-managed classroom environments contribute significantly to students' behavioral engagement and school identification (15). While these findings affirm the benefits of collaborative instruction, much of the existing literature has concentrated on secondary or higher education contexts or has primarily emphasized academic achievement outcomes rather than socio-behavioral development (16).

Parallel research in character and moral education suggests that embedding values within instructional processes strengthens discipline, responsibility and ethical conduct among learners (17, 18). Studies on discipline and responsibility culture in elementary settings further demonstrate that explicit values integration supports behavioral regulation and positive social interaction (19). However, limited empirical work has examined how explicit values integration operates within structured collaborative science learning at the upper elementary level. Existing studies often treat academic engagement and character education as separate instructional domains rather than examining their combined influence within a unified classroom intervention.

Another limitation in prior studies lies in their methodological orientation. Many investigations employ quasi-experimental or large-scale survey designs that measure outcomes without documenting how teachers implement and refine interventions within authentic classroom contexts. Few studies provide detailed practitioner-led, classroom-based accounts that integrate planning, implementation, observation and reflection to address specific behavioral and engagement concerns. Action research, as a reflective and systematic inquiry approach, offers a valuable framework for examining instructional improvements within real educational settings (20). However, empirical documentation of values-integrated collaborative learning through action research in elementary science remains limited.

Given these limitations, there remains insufficient empirical evidence on how structured values-integrated collaborative learning influences Grade 6 pupils' learning interest, classroom behavior and classroom engagement within a science context. In particular, few studies have examined the combined effect of embedding explicit values—such as respect, responsibility and cooperation—within structured group tasks designed to promote both academic participation and positive conduct simultaneously. Addressing this gap is essential for elementary schools seeking holistic instructional strategies that support cognitive, emotional and behavioral development in alignment with contemporary educational demands.

The present study addresses this need by examining the effectiveness of structured, values-integrated collaborative learning activities implemented in a Grade 6 science classroom. The overarching aim of this action research is to determine whether embedding explicit values within structured collaborative activities improves pupils' interest in learning, classroom behavior and classroom engagement. Specifically, the study seeks to: (a) determine the pre-test levels of learning interest, classroom behavior and classroom engagement among Grade 6 pupils; (b) determine the post-test levels of these variables following the intervention; and (c) examine observable changes in these domains after the implementation of structured values-integrated collaborative learning activities.

The novelty of this study lies in its integrated instructional design and practitioner-led methodology. Unlike prior research that isolates academic engagement from character development, this study intentionally aligns collaborative science tasks with explicit values education, thereby addressing both cognitive engagement and behavioral formation within a unified framework. Furthermore, by employing a classroom-based action research design, the study

generates context-specific evidence demonstrating that short-term, structured interventions can produce measurable improvements in both engagement and behavior. Through this integrated approach, the study contributes practical and empirical insights for teachers and school administrators seeking sustainable strategies to improve classroom climate, learner motivation and positive behavioral development in elementary science education.

Methodology

Research Design

This study employed a practitioner-led classroom action research design to address concerns about low learning interest, undesirable classroom behavior and limited engagement among Grade 6 pupils in science. Action research was selected because the primary purpose of the study was to improve instructional practice within an authentic classroom setting rather than to test causal relationships under controlled conditions. Unlike experimental or survey-based designs, action research allows teachers to implement context-specific interventions while systematically observing and reflecting on their effects, making it particularly suitable for addressing dynamic and socially embedded classroom challenges such as engagement and behavior (9, 20)

Guided by the Plan–Act–Observe–Reflect (PAOR) framework, the study followed a structured inquiry cycle that ensured methodological rigor while maintaining instructional flexibility. The planning phase involved identifying classroom concerns and designing structured values-integrated collaborative learning activities, followed by implementation during regular science lessons. Observable changes in pupils' learning interest, classroom behavior and engagement were documented through pre- and post-test measures and reflective observation and the reflection phase enabled systematic evaluation of the intervention's effectiveness. This approach aligns with the integrated nature of the study, as action research supports simultaneous pedagogical implementation and reflective analysis, allowing values education and collaborative learning to be examined holistically within real classroom conditions.

Conceptual/Theoretical Framework

This study is conceptually grounded in the integration of collaborative learning theory, student engagement theory and character education principles. Collaborative learning theory posits that structured peer interaction enhances cognitive processing, accountability and social interdependence, thereby improving participation and learning outcomes (3, 4). When learners work within clearly defined roles and shared goals, positive interdependence and individual responsibility foster active involvement and task engagement (13). However, the effectiveness of collaborative learning depends largely on structure, guidance and behavioral expectations.

Student engagement theory conceptualizes engagement as a multidimensional construct comprising behavioral, emotional and cognitive components (21, 22). Behavioral engagement reflects observable participation and rule adherence, emotional engagement includes interest and motivation and cognitive engagement represents effortful investment in understanding. Research indicates that classroom practices emphasizing interaction, autonomy and supportive peer relationships significantly enhance engagement levels (23, 24). Therefore, instructional strategies that combine structured interaction with motivational support are expected to influence both interest and participation positively.

In parallel, character and values education literature emphasizes that explicitly embedding values such as respect, responsibility and cooperation within instructional processes strengthens behavioral regulation and social conduct (25-27). Values integration promotes the internalization of norms and supports self-regulation, both of which are critical for maintaining positive classroom behavior (19). When values are reinforced within collaborative tasks, learners are guided not only to complete academic activities but also to practice ethical interaction and accountability.

Based on these theoretical foundations, the present study proposes that structured values-integrated collaborative learning activities serve as the independent instructional intervention influencing three interrelated outcomes: learning interest, classroom behavior and classroom engagement. The integration of explicit values

within collaborative structures is expected to enhance emotional engagement (interest and motivation), strengthen behavioral regulation (discipline and responsibility) and increase active participation in group tasks. Improved classroom behavior is expected to further reinforce engagement by creating a supportive and orderly learning environment.

Accordingly, the conceptual expectation of this study is that structured values-integrated collaborative learning will produce measurable improvements in Grade 6 pupils' learning interest, classroom behavior and classroom engagement. These relationships form the guiding framework for the study's design, intervention and analysis.

Participants of the Study

The participants in this study were 60 Grade 6 science learners officially enrolled at Mindanao State University–Integrated Laboratory School (approximate GPS coordinates: 8.0000° N, 124.2600° E) during the implementation period. Purposive sampling was employed because the selected class exhibited observable concerns, including low learning interest, inconsistent classroom behavior and limited engagement during collaborative activities. The selection was therefore criterion-based rather than random, aligning with the problem-focused nature of classroom action research.

Inclusion criteria required that pupils: (a) be officially enrolled in the Grade 6 science class during the intervention period; (b) regularly attend science sessions throughout the two-week implementation; and (c) complete both the pre-test and post-test questionnaires. These criteria ensured that only learners with full exposure to the structured values-integrated collaborative learning activities were included in the analysis.

Exclusion criteria involved pupils who: (a) had prolonged absences during the intervention period; (b) failed to complete either the pre-test or post-test instrument; or (c) were not consistently present during collaborative sessions. Excluding incomplete data ensured the reliability and comparability of pre- and post-intervention measures. No participants met exclusion criteria after final data screening; therefore, all 60 pupils were included in the final analysis.

Action Research Intervention

The action research intervention implemented in this study was Structured Values-Integrated Collaborative Learning Activities, designed to enhance Grade 6 pupils' learning interest, classroom behavior and engagement through purposeful group interaction and explicit values integration. The intervention aimed to increase pupils' motivation to learn, promote positive classroom behavior and improve active participation in group work and reporting by embedding values such as respect, responsibility and cooperation into daily learning tasks. The intervention was conducted over two weeks, with 45-minute sessions each day, following a consistent structure that included a brief values-oriented discussion, guided instruction, collaborative group activities and group reporting. Instructional strategies used during the sessions combined short teacher-led lectures to introduce concepts and expectations with hands-on collaborative activities, allowing pupils to apply learned concepts while practicing positive behaviors and teamwork actively.

Action Research Procedure

The planning phase began with the identification of classroom concerns related to low learning interest, undesirable behavior and poor engagement among Grade 6 pupils, followed by an informal needs assessment through classroom observations, attendance monitoring and review of participation patterns, which informed the development of the structured values-integrated collaborative learning intervention and the preparation of lesson materials and data-gathering instruments. During the action phase, the intervention was implemented through seminar–workshop–style classroom sessions embedded in regular science classes conducted from January 14 to 16, consisting of brief values-focused lectures, guided discussions and hands-on collaborative group activities delivered within 45-minute daily sessions. The observation phase involved the systematic collection of data throughout implementation using field notes, observation checklists, anecdotal records, attendance logs and pre- and post-tests to document changes in pupils' interest, behavior, punctuality and engagement. Finally, in the reflection phase, the teacher-researcher evaluated the intervention's outcomes by analyzing observed improvements and assessment results, reflecting on the effectiveness of the strategies employed and identifying challenges and areas for refinement to inform

future instructional practice and potential subsequent action research cycles.

Research Instruments

The primary research instrument used in this study was a researcher-developed Likert-scale questionnaire administered as a pre-test and post-test to assess changes in pupils' learning interest, classroom behavior and classroom engagement before and after the intervention. The questionnaire measured three key variables aligned with the study's objectives: learning interest, classroom behavior and classroom engagement. Each dimension consisted of 10 statements, yielding a total of 30 items. Responses were rated using a five-point Likert scale, ranging from 5 – Strongly Agree to 1 – Strongly Disagree, allowing pupils to indicate the extent to which each statement reflected their classroom experiences. The instrument was developed by the researcher based on existing literature on student engagement, behavior and collaborative learning. It was contextualized to suit Grade 6 learners and the MSU-ILS classroom setting. Prior to administration, the questionnaire underwent content validation by experienced educators and internal consistency reliability was established through pilot testing, ensuring that the instrument was appropriate, understandable and reliable for measuring the intended variables in the present action research.

Data Collection and Extraction Procedures

Data were collected at two points: prior to the intervention (pre-test) and after the intervention (post-test). Responses from the 30-item Likert-scale questionnaire were exported from Google Forms into a spreadsheet format for cleaning and verification. Data screening procedures included checking for incomplete submissions, duplicate entries and missing responses. Only fully completed paired pre-test and post-test responses were included for statistical processing to ensure data integrity.

Each questionnaire item was coded numerically using a five-point scale (1 = Strongly Disagree to 5 = Strongly Agree). Negatively worded items were reverse-coded prior to analysis to maintain consistency in score direction. Data were then organized according to the three measured constructs: learning interest, classroom behavior and classroom engagement.

Data Synthesis and Analysis

Quantitative data were synthesized using descriptive statistical procedures, specifically the computation of mean scores and standard deviations for each item and for each construct domain. Domain-level means were derived by averaging the item scores within each variable category (10 items per construct). Pre-test and post-test means were compared descriptively to determine observable changes following the intervention.

Interpretation of results was based on predefined Likert scale ranges corresponding to descriptive categories (Strongly Disagree to Strongly Agree). Patterns of score shifts were examined to identify improvements in interest, behavior and engagement.

In addition to numerical analysis, pupils' written reflections included in the post-test instrument were reviewed and categorized through simple thematic grouping. Recurring expressions related to motivation, cooperation, discipline and participation were identified to contextualize and support the quantitative findings. This process enabled descriptive triangulation between statistical trends and observed classroom experiences, thereby enhancing interpretive credibility within the action research framework.

Ethical Considerations

Ethical considerations were carefully observed throughout the conduct of the study to protect the rights and welfare of the participants. Informed consent was obtained through formal permission from the school authorities and pupils were informed of the study's purpose in an age-appropriate manner, with participation voluntary and free of coercion. The confidentiality and anonymity of participants were strictly maintained by ensuring that no names or identifying information were collected or reported and all data were used solely for research purposes. Furthermore, the study was conducted with prior approval from the School Head of Mindanao State University–Integrated Laboratory School and the Executive Committee for Research, ensuring that all procedures complied with institutional and ethical research standards.

Results

Table 1 presents the pre-test and post-test results of Grade 6 pupils' learning interest before and after the implementation of the structured values-integrated collaborative learning activities. The pre-test results indicate that pupils' learning interest ranged from Neutral to Agree, suggesting moderate interest at the beginning of the study. Several items, such as enjoying classroom discussions (M = 3.45, SD = 0.88), paying attention during teacher explanations (M = 3.56, SD = 0.83) and valuing learning in school (M = 3.68, SD = 0.81), were interpreted as Agree. In contrast, other indicators such as trying to understand difficult lessons (M = 3.38, SD = 0.94) and interest in new science topics (M = 3.31, SD = 0.97) were rated Neutral. The item on boredom during class discussions had a mean of 2.74 (SD = 1.02), indicating a tendency toward neutrality but suggesting disengagement among some pupils.

In contrast, the post-test results reveal a marked improvement in pupils' learning interest, with most items reaching the Strongly Agree level. Pupils reported significantly higher excitement toward science lessons (M = 4.21, SD = 0.669), greater effort in understanding difficult lessons (M = 4.46, SD = 0.635), increased interest in new science topics (M = 4.41, SD = 0.610) and stronger motivation to complete schoolwork (M = 4.29, SD = 0.715). Notably, the item on boredom during class discussions decreased to a mean of 2.56 (SD = 0.926), interpreted as Disagree, indicating a reduction in feelings of boredom after the intervention.

Table 1: Pre-Test and Post-Test of Grade 6 Pupils' Interest

Item	Learning Interest Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
(i)	I feel excited when the science lesson begins.	3.42	0.910	Agree	4.21	0.669	Strongly Agree
(ii)	I try my best to understand the lesson even when it is difficult.	3.38	0.940	Neutral	4.46	0.635	Strongly Agree
(iii)	I enjoy participating in classroom discussions.	3.45	0.880	Agree	4.19	0.797	Agree
(iv)	I am interested in learning new topics in science.	3.31	0.970	Neutral	4.41	0.610	Strongly Agree
(v)	I pay attention when the teacher explains the lesson.	3.56	0.830	Agree	4.33	0.632	Strongly Agree
(vi)	I feel motivated to complete my schoolwork.	3.40	0.920	Neutral	4.29	0.715	Strongly Agree
(vii)	I enjoy activities that allow me to think and explore ideas.	3.48	0.890	Agree	4.31	0.739	Strongly Agree
(viii)	I feel bored during class discussions.	2.74	1.020	Neutral	2.56	0.926	Disagree
(ix)	I am willing to ask questions when I do not understand the lesson.	3.52	0.860	Agree	3.56	0.992	Agree
(x)	I feel that learning in school is important to me.	3.68	0.810	Agree	4.65	0.576	Strongly Agree

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Table 2 presents the pre-test and post-test results for Grade 6 pupils' classroom behavior before and after the implementation of structured, values-integrated collaborative learning activities. The pre-test findings show that pupils' classroom behavior was generally rated from Neutral to Agree, indicating moderate levels of discipline and self-regulation at the outset of the study. Several indicators, such as following classroom rules (M = 3.36, SD = 0.98), coming to class on time (M = 3.22, SD = 1.05) and controlling actions when bored or tired (M = 3.18, SD = 1.09), were interpreted as Neutral, suggesting inconsistencies in behavior. Meanwhile, positive behaviors such as listening when others are speaking (M = 3.44, SD = 0.90), showing respect (M = 3.58, SD = 0.87), behaving properly during group activities (M = 3.47, SD = 0.93) and taking responsibility for one's actions (M = 3.51, SD = 0.89) were rated Agree, reflecting acceptable but still improvable classroom conduct.

In contrast, the post-test results demonstrate a substantial improvement in classroom behavior, with most items reaching the Strongly Agree level. Pupils reported greater adherence to classroom rules (M = 4.51, SD = 0.616), improved listening behavior (M = 4.51, SD = 0.595), increased punctuality (M = 4.25, SD = 0.834) and stronger self-control even when bored or tired (M = 4.29, SD = 0.783). Respect toward teachers and classmates showed the most significant improvement (M =

4.75, SD = 0.464), indicating a powerful positive behavioral shift. Notably, the negatively worded item "I easily get into trouble during class" decreased from a Neutral pre-test rating (M = 2.61, SD = 1.18) to Disagree in the post-test (M = 2.60, SD = 1.132), suggesting a reduction in problematic behaviors.

Table 2: Pre-Test and Post-Test of Grade 6 Pupils' Behavior

Item	Classroom Behavior Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
(i)	I follow classroom rules during lessons.	3.36	0.980	Neutral	4.51	0.616	Strongly Agree
(ii)	I listen when my teacher or classmates are speaking.	3.44	0.900	Agree	4.51	0.595	Strongly Agree
(iii)	I avoid distracting my classmates during class.	3.29	1.010	Neutral	4.16	0.849	Agree
(iv)	I come to class on time.	3.22	1.050	Neutral	4.25	0.834	Strongly Agree
(v)	I show respect to my teacher and classmates.	3.58	0.870	Agree	4.75	0.464	Strongly Agree
(vi)	I control my actions even when I feel bored or tired.	3.18	1.090	Neutral	4.29	0.783	Strongly Agree
(vii)	I avoid using my phone or watching inappropriate videos during school time.	3.05	1.120	Neutral	4.60	0.894	Strongly Agree
(viii)	I behave properly during group activities.	3.47	0.930	Agree	4.39	0.606	Strongly Agree
(ix)	I easily get into trouble during class.	2.61	1.180	Neutral	2.60	1.132	Disagree
(x)	I take responsibility for my actions in the classroom.	3.51	0.890	Agree	4.29	0.697	Strongly Agree

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Table 3 presents the pre-test and post-test results for Grade 6 pupils' classroom engagement before and after the implementation of structured, values-integrated collaborative learning activities. The pre-test results indicate that pupils' engagement levels ranged from Neutral to Agree, suggesting moderate participation and involvement in collaborative learning prior to the intervention. Several items related to active participation in group activities (M = 3.33, SD = 0.96), helping the group complete tasks (M = 3.38, SD = 0.97), confidence in reporting (M = 3.19, SD = 1.08) and completing assigned roles (M = 3.28, SD = 1.02) were rated Neutral, indicating hesitancy and inconsistent engagement. In contrast, items such as sharing ideas with group members (M = 3.41, SD = 0.94), enjoying group work (M = 3.52, SD = 0.91), paying attention during group discussions (M = 3.45, SD = 0.95) and contributing positively to collaborative activities (M = 3.54, SD = 0.88) were interpreted as Agree, reflecting acceptable but improvable engagement behaviors.

Following the intervention, the post-test findings reveal a substantial increase in classroom engagement, with most items reaching the Strongly Agree level. Pupils reported significantly higher participation in group activities (M = 4.26, SD = 0.670), greater willingness to share ideas (M = 4.39, SD = 0.703), increased responsibility in completing group tasks (M = 4.40, SD = 0.608) and stronger cooperation with classmates (M = 4.23, SD = 0.675). Confidence in reporting improved to the Agree level (M = 3.87, SD = 0.979), indicating notable progress, though it remains slightly lower than other engagement indicators. Notably, the negatively worded item "I avoid participating when group work is assigned" shifted from a Neutral pre-test rating (M = 2.69, SD = 1.14) to Disagree in the post-test, suggesting a reduction in avoidance behaviors.

Table 3*:* Pre-Test and Post-Test of Grade 6 Pupils' Classroom Engagement

Item	Classroom Engagement Statement	Pre-Test Mean	Pre-Test SD	Pre-Test Interpretation	Post-Test Mean	Post-Test SD	Post-Test Interpretation
(i)	I actively participate in group activities.	3.33	0.960	Neutral	4.26	0.670	Strongly Agree
(ii)	I am willing to share my ideas with my group members.	3.41	0.940	Agree	4.39	0.703	Strongly Agree
(iii)	I help my group complete assigned tasks.	3.38	0.970	Neutral	4.40	0.608	Strongly Agree
(iv)	I feel confident when reporting to the class.	3.19	1.080	Neutral	3.87	0.979	Agree

(v)	I enjoy working with my classmates in group activities.	3.52	0.910	Agree	4.29	0.750	Strongly Agree
(vi)	I complete my assigned role during group work.	3.28	1.020	Neutral	4.38	0.644	Strongly Agree
(vii)	I pay attention during group discussions.	3.45	0.950	Agree	4.33	0.689	Strongly Agree
(viii)	I avoid participating when group work is assigned.	2.69	1.140	Neutral	2.69	1.140	Disagree
(ix)	I feel comfortable cooperating with my classmates.	3.47	0.900	Agree	4.23	0.675	Strongly Agree
(x)	I try to contribute positively during collaborative learning activities.	3.54	0.880	Agree	4.21	0.650	Strongly Agree

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Discussion

This study examined the effectiveness of structured values-integrated collaborative learning activities in improving Grade 6 pupils' learning interest, classroom behavior and classroom engagement within an elementary science context. The findings indicate coherent, substantively meaningful improvements in learning interest, classroom behavior and classroom engagement following the implementation of structured, values-integrated collaborative learning activities. These results extend prior collaborative learning research by demonstrating that structured peer interaction, when combined with explicit values integration, can simultaneously influence cognitive, emotional and behavioral dimensions of engagement (1, 3, 5). The improvement observed across domains supports the theoretical position that engagement is multidimensional and socially constructed within classroom contexts (9, 28). By embedding values such as respect, responsibility and cooperation into collaborative tasks, the intervention appears to have created a structured, emotionally supportive learning environment conducive to both academic participation and behavioral regulation.

The observed improvement in pupils' learning interest can be attributed to the intervention's interactive and student-centered structure, which promoted active meaning-making rather than passive content reception. Collaborative learning environments foster intrinsic motivation by enhancing autonomy, peer-relatedness and task relevance factors consistently associated with emotional and cognitive engagement (8, 29). The increase in reported excitement, attentiveness and willingness to participate suggests that structured collaboration strengthened pupils' ownership of learning tasks. Furthermore, the reduction in reported boredom aligns with evidence that disengagement in upper elementary classrooms is often mitigated through participatory instructional strategies (5, 30, 31). It has also been emphasized that interest-driven and participatory pedagogies promote sustained engagement when learners perceive tasks as socially meaningful (32). In this study, values integration likely enhanced this effect by reinforcing positive group norms and mutual accountability, thereby deepening motivational investment in science learning.

Improvements in classroom behavior particularly in rule adherence, self-control, respectful interaction and responsible technology use underscore the regulatory impact of explicit values integration. Character education literature consistently highlights that embedding moral expectations within daily instruction strengthens behavioral self-regulation and social responsibility (14, 17). The decline in negative behaviors, such as getting into trouble during class, suggests that pupils have internalized behavioral norms reinforced through structured cooperative tasks. It is also argued that consistent reinforcement of responsibility and discipline within instructional routines cultivates habitual positive conduct (33). Moreover, collaborative structures that assign clear roles and establish shared goals reduce disruptive behavior by increasing accountability and peer monitoring (34, 35). In contexts where digital distractions and social media exposure challenge students' attention and behavioral focus (36-38), values-integrated collaborative instruction may serve as a protective and corrective mechanism, reinforcing ethical conduct and classroom discipline (39).

The significant gains in classroom engagement further support the theoretical linkage between structured collaboration and behavioral participation. Engagement theory emphasizes that

active participation emerges when learners experience belonging, competence and psychological safety within learning environments (9, 40). Increased willingness to share ideas, assume group roles and contribute positively suggests that repeated exposure to structured collaborative tasks strengthened social confidence and group cohesion. It has been noted that supportive classroom environments enhance behavioral engagement by fostering mutual respect and constructive feedback (15). Although confidence in public reporting improved more modestly than other indicators, such incremental progress is consistent with research suggesting that communication competence develops gradually, particularly among younger learners (41). Thus, the findings indicate that structured, values-integrated collaboration not only increased participation but also fostered emotional security in peer interaction contexts.

The effectiveness of the intervention can be interpreted through the alignment of collaborative learning theory and character education principles. Collaborative learning alone promotes interaction and cognitive engagement (3, 13), yet its impact may be limited when behavioral norms are not explicitly reinforced. By integrating values into task structures, this study aligned academic objectives with moral and social expectations, creating coherence between learning processes and conduct standards (42). This alignment likely strengthened internal motivation and accountability, thereby explaining the simultaneous improvements in interest, behavior and engagement. Such integration supports holistic development and responds to calls for educational models that address both cognitive growth and socio-emotional formation in basic education settings (16).

The convergence between quantitative improvements and observable classroom dynamics strengthens the interpretive credibility of the findings. Mean score increases were accompanied by visible shifts in participation patterns, cooperation quality and behavioral consistency, reflecting alignment between statistical trends and lived classroom experiences. This triangulation aligns with action research principles emphasizing contextualized, practice-based evidence (20, 24). Furthermore, the consistency of these outcomes with intervention-based studies addressing combined academic and behavioral supports reinforces the intervention's validity (43, 44). Collectively, the results suggest that structured values-integrated collaborative learning is not merely motivational but structurally transformative in shaping classroom climate.

From a practical perspective, the findings indicate that elementary teachers may adopt structured, values-integrated collaborative learning as a feasible strategy to improve engagement and behavior without extensive curricular redesign. Short, well-structured interventions embedded within existing lessons can generate measurable improvements when grounded in clear behavioral expectations and cooperative norms. For laboratory schools and similar instructional settings, the approach offers a replicable and context-sensitive model aligned with holistic educational mandates.

Despite these promising findings, several limitations must be acknowledged. The study involved a single Grade 6 class within a single institutional context, which may limit generalizability. The short duration of the intervention limits conclusions regarding the long-term sustainability of behavioral and engagement gains. Additionally, reliance on self-reported measures may introduce response bias despite triangulation efforts. These limitations warrant cautious interpretation and underscore the need for further validation.

Future research may explore longitudinal designs to assess the durability of values-integrated collaborative interventions over extended academic periods. Comparative studies across multiple schools or grade levels may enhance external validity. Incorporating mixed-method approaches, including structured classroom observations or interviews, could deepen understanding of how pupils internalize values within collaborative structures. Further investigation into potential mediating relationships among interest, behavior and engagement may also contribute to theoretical refinement in engagement research.

Conclusion

This action research investigated the effectiveness of structured values-integrated collaborative learning activities in enhancing Grade 6 pupils'

learning interest, classroom behavior and classroom engagement in an elementary science context. The findings indicate coherent, substantively meaningful improvements across the motivational, behavioral and participatory dimensions of classroom functioning following the intervention. By embedding explicit values respect, responsibility and cooperation within structured collaborative tasks, the study demonstrates that academic engagement and behavioral development can be addressed simultaneously through intentional instructional design.

The primary contribution of this study lies in its integrated pedagogical model. Unlike approaches that treat collaborative learning and character education as separate domains, this research presents empirical evidence that aligning structured peer interaction with explicit values reinforcement strengthens both engagement and classroom discipline. Furthermore, through a practitioner-led action research design, the study contributes context-sensitive evidence demonstrating how short-term, classroom-embedded interventions can produce measurable improvements in learners' interest, self-regulation and participation. This integrated framework advances current discussions in engagement research by illustrating how cognitive, emotional and behavioral dimensions can be influenced through coherent instructional alignment.

From a practical standpoint, the findings suggest that elementary educators may adopt structured, values-integrated collaborative learning as a feasible, resource-efficient strategy to improve classroom climate and learner participation. Clear role assignments, explicit behavioral expectations and guided reflective components appear to enhance accountability and reduce disengagement. For laboratory schools and basic education institutions, the approach offers a replicable model that aligns academic instruction with broader educational mandates for holistic learner development.

However, several limitations should be acknowledged. The study was conducted within a single Grade 6 class in one institutional setting, which may limit generalizability. The relatively short intervention period limits conclusions about the long-term sustainability of the observed improvements. Additionally, reliance on self-reported measures may introduce response bias despite methodological safeguards. These constraints highlight the need for cautious interpretation.

Future research may explore longitudinal implementations to examine the durability of behavioral and engagement gains over extended periods. Comparative or multi-site studies may strengthen external validity, while mixed-method approaches incorporating structured observations or interviews could deepen understanding of how values are internalized within collaborative contexts. Further investigation into potential mediating relationships among interest, behavior and engagement may also contribute to theoretical refinement.

In conclusion, structured values-integrated collaborative learning represents a promising and theoretically grounded approach to improving elementary classroom engagement and behavior. By uniting collaborative pedagogy with explicit moral reinforcement, this study underscores the importance of holistic instructional design in fostering academically motivated, behaviorally responsible and actively engaged learners.

Abbreviations

ILS: Integrated Laboratory School, MSU: Mindanao State University, PAOR: Plan–Act–Observe–Reflect.

Acknowledgment

The authors would like to express their sincere gratitude to the administration of Mindanao State University–Integrated Laboratory School (MSU-ILS) for granting permission to conduct this study and for providing the necessary support throughout the research process. Special appreciation is extended to the Grade 6 pupils who willingly participated in the study and demonstrated cooperation and enthusiasm during the intervention. The authors also acknowledge the valuable assistance of fellow teachers and school personnel whose support and encouragement contributed to the successful completion of this action research. Finally, the authors are grateful to their families and colleagues for their continued motivation and understanding throughout the study.

Author Contributions

Nurhanifa S Abolais: conceptualization, study design, supervision, statistical analysis, manuscript drafting, Hamdoni K Pangandaman: implementation of the classroom intervention, data collection, qualitative analysis, initial draft of the manuscript, Yasser D Palantig: implementation of the classroom intervention, data collection, qualitative analysis, initial draft of the manuscript, Raihanna D Sarip: data gathering, classroom facilitation support, manuscript review, critical revisions, Sittie Sahanee A Dirampa: data gathering, classroom facilitation support, manuscript review, critical revisions. All authors reviewed and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. Data are not publicly available in order to protect participant confidentiality and comply with institutional research policies.

Declaration of Artificial Intelligence (AI) Assistance

Artificial intelligence tools were utilized during the classroom-based intervention as part of instructional enrichment activities; however, no artificial intelligence system was used to generate research data or fabricate findings. In preparing this manuscript, artificial intelligence-assisted technologies were used solely for language refinement, grammar checking and structural editing. The authors critically reviewed, validated and approved all content and take full responsibility for the accuracy, interpretation and integrity of the manuscript. No artificial intelligence tool replaced scholarly judgment in the development of the research design, analysis, or conclusions.

Ethics Approval

This study was conducted in accordance with institutional ethical guidelines for educational research. Formal permission was obtained from the School Head of Mindanao State University-Integrated Laboratory School and the Executive Committee for Research prior to data collection. Participation was voluntary and informed consent was secured from all participants. Confidentiality and anonymity were strictly maintained and no personally identifiable information was collected. Data were used solely for research purposes.

Funding

This research received no external funding. All expenses related to the implementation of the structured values-integrated collaborative learning intervention and the conduct of research activities were personally shouldered by the authors.

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How to Cite: Abolais NS, Pangandaman HK, Palantig YD, Sarip RD, Dirampa SSA. Improving Grade 6 Pupils' Interest, Behavior and Classroom Engagement Through Structured Values-integrated Collaborative Learning Activities. Int Res J Multidiscip Scope. 2026; 7(2): 652-664.
DOI: 10.47857/irjms.2026.v07i02.010147