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Effect of Learners' Accountability in Cooperative Learning on Preschoolers' English Language Achievement in Tharaka-Nithi County, Kenya

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Abstract

This study assessed the impact of learner accountability within cooperative learning on preschoolers' achievement in English language activities in Tharaka Nithi County, Kenya. Despite the emphasis of early childhood education frameworks and the Constitution of Kenya (2010) on foundational competencies, low English language skills among pre-primary learners remain a concern, partly due to teacher-centred instruction. Guided by Vygotsky's Sociocultural Theory of Cognitive Development and Social Interdependence Theory, the study conceptualised learner accountability through individual task completion, quality of work, responsiveness to feedback, and dependability. The study adopted a quasi-experimental, non-equivalent control-group pre-test–post-test design. The study involved 48 learners from 24 public pre-primary schools. Data were collected using pre- and post-tests, observation checklists, teacher questionnaires, and documentary analysis, and analysed using descriptive statistics, independent-samples *t*-tests, effect sizes, and ANCOVA. The treatment group recorded a higher mean accountability score ($M = 18.58$) than the control group ($M = 14.63$). ANCOVA revealed significant group effects on English language skills ($F = 183.951$, $p < .001$, $R^2 = .757$) and activity outcomes ($F = 60.545$, $p < .001$, $R^2 = .482$). Accountability also differed significantly between groups ($t = 9.944$, $df = 46$, $p < .001$), with a large effect size (Cohen's $d = 1.38$). The findings indicate that structured learner accountability within cooperative learning enhances learner accountability and English language outcomes. This study recommends integrating learner accountability into early childhood education, strengthening teacher professional development, and incorporating cooperative learning and peer scaffolding into pre-primary teacher training. The study findings provide evidence to inform teaching practices, teacher training, and future curriculum development.

Key words: Accountability, achievement, cooperative learning, instructional model.



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INTRODUCTION

This study aimed to assess the impact of learner accountability within cooperative learning on preschoolers' achievement in English language activities in Tharaka Nithi County. Early childhood is a crucial period for building basic language skills that support further learning, communication, and participation in the school environment. The use of English language activities in pre-primary education is significant in Kenya, as children are expected to have basic listening, speaking, vocabulary, and phonological awareness skills before they start primary school. These outcomes are effective only if the teacher teaches well and students participate actively. Learner-centred and cooperative approaches are becoming more significant, as they give children opportunities to interact, communicate, share learning activities, and get support from peers and teachers. According to the research on cooperative learning, structured interaction can improve the engagement and achievement of the learners; on the other hand, looking after individual responsibilities can motivate the learners to take part in the learning process and not only to rely on other members of the group (Bećirović et al., 2022; Zhou & Colomer, 2024).

Interdependence of learners is also crucial in cooperative learning because, in successful group learning, learners must rely on each other while also being responsible for their own contribution. Individual accountability, active participation and mutual support prevent unequal participation and social loafing, and motivate learners to participate in assigned tasks. Bećirović et al. (2022) identified individual responsibility as an important factor in motivation for learning English as a foreign language. Likewise, Zhou and Colomer (2024), in a systematic review, consider individual accountability as an essential element in cooperative learning. However, the literature mostly focuses on learners; there is limited information on the working and operational principles of structured learner interdependence among pre-primary children, especially in Africa and Kenyan settings.

This context is particularly relevant in Kenya. The early childhood education approach in the country is learner-centred and activity-based; however, it is not always implemented in classrooms because teachers still use teacher-centred approaches. The emphasis has also shifted from teacher-led to child-led learning, as evidenced by pre-schools in Kenya, where a child-centred, activity-based approach has been linked to better

learning outcomes (Andiema, 2016). Young learners especially need opportunities to speak, listen, practise words, respond to peers, and engage in shared play and activities as they build foundational English skills. Cooperative learning can provide these opportunities when group activities are designed to ensure each learner has a meaningful role and responsibility. This is especially relevant in Tharaka-Nithi County, where pre-primary is held in an environment where children are expected to acquire basic language skills before entering primary school. This study thus concentrated on public pre-primary schools within the county to investigate whether structured learner interdependence could be a more participatory approach than the traditional teacher-directed approach in pre-primary schools. Early development of competence in listening, speaking, vocabulary, and related language skills is critical because it serves as a basis for future classroom listening, speaking, and learning.

Although growing evidence supports the effectiveness of cooperative learning, an important empirical gap remains. Existing research has shown relationships between cooperative learning, accountability, engagement, and achievement in secondary, tertiary, or special educational environments, but not in pre-primary classrooms. For instance, Agwu and Nmadu (2023) explored cooperative learning among senior secondary chemistry students in Nigeria, and Jeppu et al. (2023) studied cooperative learning in medical education specifically in Nigeria. Kebede et al. (2025) also investigated a cooperative learning intervention using a jigsaw model in secondary school biology in Ethiopia. The studies reveal the potential for structured cooperation and accountability; however, their level of education, subject area, and context constrain their direct applicability to pre-primary English language learning in Kenya.

The question of whether cooperative learning increases achievement is not the only question that must be addressed; rather, it is whether deliberate, structured interdependence among learners can enhance English language achievement in pre-primary classrooms in Kenya. However, empirical studies on the organisation of individual responsibility, participation, mutual support, and shared responsibility in cooperative English language activities for preschool learners in Tharaka-Nithi County, in particular, remain scarce. This is critical because young children need developmentally appropriate

strategies that involve socialisation as well as individual responsibility rather than group efforts. In this context, the present study investigated the impact of learner interdependence in the cooperative learning approach on the achievement of pre-school children in English language activities in public pre-school schools in Tharaka-Nithi County, Kenya. In particular, the study aimed to determine whether structured learner interdependence would increase participation and results in English language activities among pre-primary learners.

Theoretical Framework

This study was grounded in Vygotsky's Sociocultural Theory of cognitive development. The theory of learning was developed by Lev Vygotsky, who studied how the world affects individual learning, and that learning is primarily social – learning is a process through which the development of a person is driven by a more knowledgeable or skilful person (Cherry, 2022; McLeod, 2022). The theory is based on the idea that cultural artefacts, activities, and concepts mediate human mental activities. Human consciousness is not of biological origin but social (Lantolf et al., 2015).

The theory rests on several fundamental principles about learning and cognitive development. First, learning is a cultural and social phenomenon; it involves gaining knowledge, beliefs, and problem-solving strategies through interactions with what Vygotsky called "more knowledgeable others" (MKOs) (McLeod, 2022). Social learning therefore precedes individual learning, and psychological tools like language and literacy mediate human activity (Lantolf et al., 2015). Second, the theory emphasises the Zone of Proximal Development (ZPD), which accounts for the learner's capacity to move beyond their pre-given capacity by engaging with the people around them. It is the gap between what a learner can do on their own and what they can learn with the support and guidance of MKOs (which may be teachers, caregivers, or peers) through structured cooperative learning opportunities and scaffolding (McLeod, 2022). Third, developmental processes occur within culturally, linguistically, and historically constructed contexts like classrooms, where instructional environments can be purposefully structured based on theory to facilitate development through internalisation and regulation (Lantolf et al., 2015).

Vygotsky's Sociocultural Theory has been applied and discussed in much educational literature. Researchers stress that collaborative learning opportunities are essential in this model; within the ZPD, it is important to have groups of students with heterogeneous ability levels (McLeod, 2022). Moreover, today's sociocultural approaches focus on praxis-oriented research that involves intervening and designing conditions for development in instructional contexts to align ideals with classroom realities (Lantolf et al., 2015).

This study uses Vygotsky's Sociocultural Theory of Cognitive Development as its anchor theory, which explains the relationship between teachers' implementation of learner accountability in a cooperative learning strategy and pre-primary learners' achievement in English language activities. The theory provides the foundation for implementing cooperative pedagogy and structured responsibility systems (e.g., task completion, participation, progress monitoring, and group assessment) to improve early childhood literacy in public pre-schools. The theory introduces key concepts such as social mediation; language as a means of cognitive development; the interaction process between peers and teachers that creates opportunities for cognitive growth within the ZPD; and the process of moving from social interaction to individual internalisation of basic English language skills. The theory's focus on structured instructional environments justifies the research's shift from teacher-centred instruction to interactive, cooperative instructional arrangements that foster cognitive learning and achievement among young children.

Conceptual framework

The study assumes that co-operative learning's learning accountability is an independent variable that determines the learning achievement in English language activities for pre-school students. The study also breaks down learner accountability into individual task completion, quality of work, learning responsiveness, and learner dependability, which, when planned appropriately, may improve learning of the underpinning competencies in English language activities (e.g., vocabulary mastery, listening comprehension, phonological awareness). Vygotsky's Sociocultural Theory of Cognitive Development and Social Interdependence Theory reinforce this conceptual link by emphasising the importance of cooperative group functioning, positive mutual accountability, and structured interaction as direct

results of intentional instructional architecture. That is, when educators actively support the sharing of goals among peers, implement role-delineation procedures, and equitably allocate instructional materials, pre-primary classrooms meet the conditions necessary to provide an

active, collaborative, high-performance learning environment.

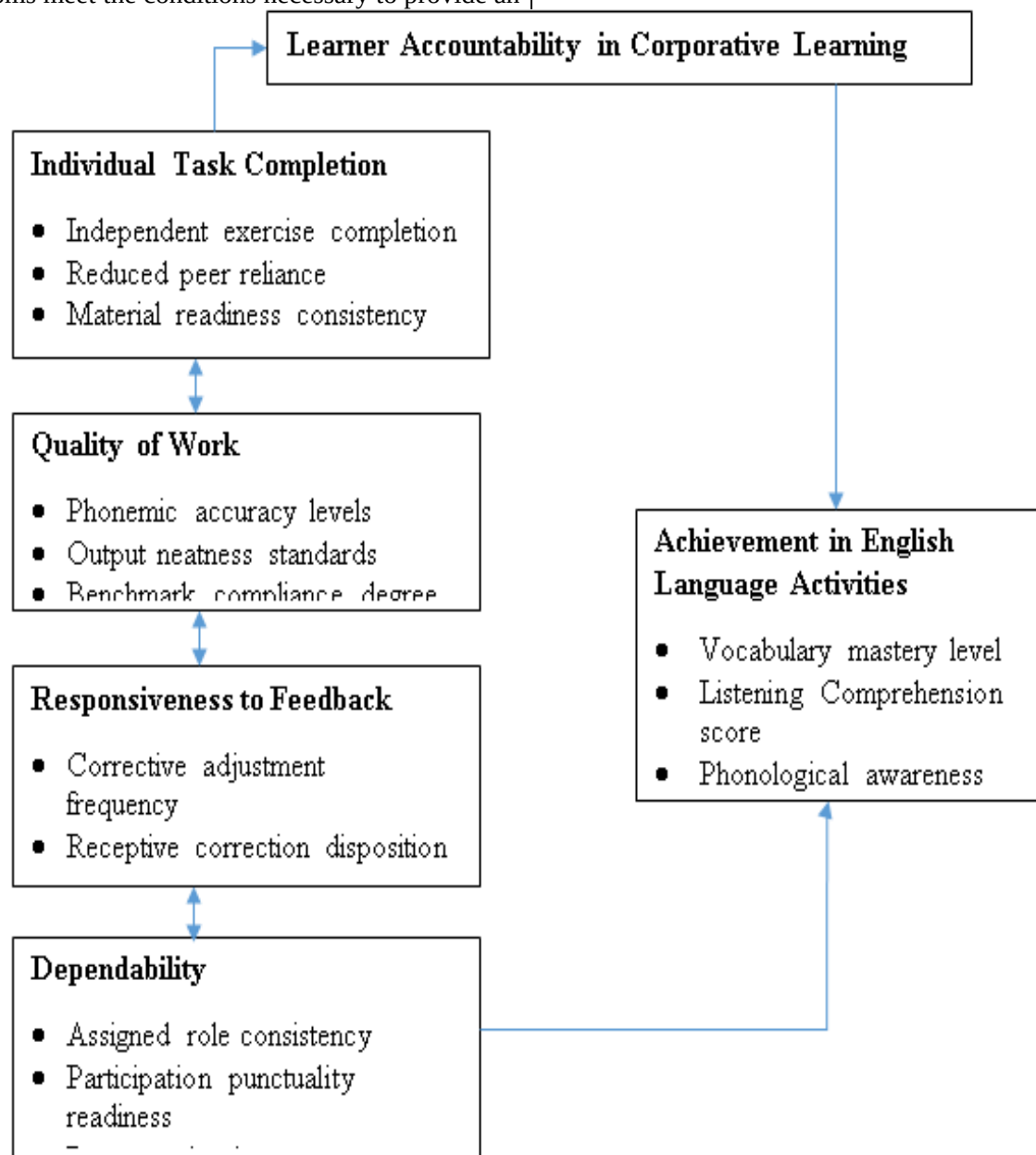


Figure 1: Conceptual Framework

METHODOLOGY

This study adopted a pragmatic paradigm, which was appropriate because it allowed the use of methods best suited to addressing the research problem and generating evidence relevant to practice. Although the study collected supplementary qualitative data through

classroom observations and teacher responses, it was predominantly quantitative. The qualitative information was used only to contextualise the quantitative findings and was not treated as an equal methodological strand in a formal mixed-methods design.

It employed a quasi-experimental, non-equivalent control-group pre-test–post-test design. The design was appropriate because learners were already organised in existing public pre-primary schools, making individual random assignment impractical. Researchers selected 24 public pre-primary schools through stratified sampling based on education zones and randomly assigned them to 12 experimental and 12 control schools. Experimental schools implemented structured learner accountability within cooperative learning, while control schools continued traditional teaching methods. Pre-tests established baseline English language performance, while post-tests measured performance after the intervention. ANCOVA was subsequently used to control for baseline differences between the groups.

The study was conducted in public pre-primary schools in Tharaka Nithi County, Kenya. The target population comprised approximately 24,000 PP2 learners, 508 pre-primary teachers, and 411 headteachers. The study selected 24 schools, representing approximately 10 per cent of public pre-primary schools in the county. Teachers and headteachers were purposively included because of their knowledge of classroom and school-level implementation, while learners participated directly in the intervention and assessment. For the principal quantitative analysis, the analytical sample comprised 48 learners, with 24 from the experimental group and 24 from the control group. Thus, schools served as the sampling and intervention units, while the 48 learners constituted the learner-level analytical sample. Teachers and headteachers provided supplementary implementation information. Data were collected using pre-test and post-test assessments, classroom observation checklists, teacher questionnaires, and documentary analysis of learner performance records. The assessments measured English language performance, while observation checklists captured learner accountability, participation, and engagement during cooperative

learning activities. Teacher questionnaires and documentary evidence provided supplementary information on implementation and learner engagement.

The instruments were pilot-tested in five pre-primary schools that were excluded from the main study. We assessed content, construct, and face validity, and established reliability using the test-retest procedure and Cronbach's alpha for relevant scales. We considered a coefficient of 0.70 or above acceptable. After ethical and administrative clearance, pre-test data were collected before implementing the intervention. The experimental schools then incorporated structured learner accountability into cooperative learning activities, while control schools maintained traditional instruction. Classroom observations were conducted throughout implementation, supplemented by teacher questionnaires and available learner performance records. The same assessment procedures were used to administer the post-test.

Quantitative data constituted the primary evidence for addressing the study objective and testing the null hypothesis. We used frequencies, percentages, means, and standard deviations for descriptive analysis. Independent-samples t-tests compared experimental and control groups, while paired-samples t-tests were used, where appropriate, to examine within-group changes. Analysis of Covariance (ANCOVA) was the main inferential procedure for comparing post-test performance while controlling for pre-test scores. Statistical significance was assessed at $p < 0.05$, and effect sizes were calculated to establish the practical significance of observed differences. Qualitative data from classroom observations and teacher responses were analysed thematically and used only to provide contextual explanations for the quantitative findings.

Analytical Model

The Analytical Model was aligned with the Study Objective and Hypothesis As Follows:

Objective	Null Hypothesis	Statistical Tests	Decision Rule
To establish the effect of learner accountability in cooperative learning on preschoolers' achievement in English language activities	H₀₁: There is no statistically significant effect of learner accountability in cooperative learning on preschoolers' achievement in English language activities.	Independent-samples t-test; paired-samples t-test; ANCOVA; effect-size analysis	Reject H ₀₁ when $p < 0.05$; otherwise, fail to reject H ₀₁ . ANCOVA was used to compare post-test outcomes while controlling for pre-test scores.

The analytical model was specified to determine whether differences in learner outcomes between the experimental and control groups could be attributed to the instructional approach incorporating learner accountability after

accounting for baseline performance. Effect-size estimates complemented significance testing by indicating the practical magnitude of the observed differences.

Ethical Considerations

The researchers followed ethical guidelines for research involving young children throughout the study. The researchers obtained the necessary research authorisation and permits from NACOSTI, the relevant county education authorities and participating school administrators. The researchers completed the informed consent process and respected confidentiality and anonymity during data collection, analysis, and reporting. Special care was taken to ensure that child-safe, age-appropriate and developmentally appropriate

instructional intervention and assessment procedures were used.

FINDINGS AND DISCUSSION

The results are presented as follows: descriptive statistics, followed by group comparisons, effect-size estimates, and inferential analyses of English language skills and activities. The presentation highlights the main findings and their statistical significance, but does not repeat values available in the tables.

Descriptive Statistics of Pre- and Post-Test Scores and Cooperative Learning Skills

The study first examined the descriptive characteristics of learners' English language skills, English language activity performance, and individual accountability in cooperative learning. Table 2 presents the means, standard deviations, ranges, skewness and kurtosis for the measured variables.

Table 2: Pre- and Post-Test Scores and Cooperative Learning Skills

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Pre-Skills Score	48	25.00	26.00	51.00	37.0417	7.16064	.134	-.343
Post-Skills Score	48	36.00	27.00	63.00	46.2500	8.03318	-.130	-.343
Pre-Activity Score	48	23.00	10.00	33.00	21.4792	6.41803	-.061	-.343
Post-Activity Score	48	30.00	10.00	40.00	27.5417	8.63432	-.260	-.343
Individual Accountability in Cooperative Learning	48	8.00	12.00	20.00	16.6042	2.42100	-.076	-.343

Source: Study data.

The results indicate an increase in mean performance from pre-test to post-test. The mean skills score increased from 37.04 (SD = 7.16) to 46.25 (SD = 8.03), while the mean activity score increased from 21.48 (SD = 6.42) to 27.54 (SD = 8.63). The mean individual accountability score was 16.60 (SD = 2.42). These descriptive results provide an initial indication of improved performance following the intervention and are examined further using inferential statistics.

Effect of Individual Accountability in Cooperative Learning on English Language Achievement

This study examined whether learners exposed to cooperative learning demonstrated different levels of individual accountability from those in the control group. Table 3 presents the group-level descriptive statistics.

Table 3: Group Statistics for Individual Accountability

Individual Accountability in Cooperative Learning	N	Mean	Std. Deviation	Std. Error Mean
Treatment	24	18.5833	1.41165	.28815
Control	24	14.6250	1.34528	.27460

Source: Study data.

Learners in the treatment group recorded a higher mean individual accountability score ($M = 18.58$, $SD = 1.41$) than learners in the control group ($M = 14.63$, $SD =$

1.35), indicating a difference of approximately 3.96 points between the groups. Table 4 presents the independent-samples t-test results comparing the two groups.

Table 4: Independent-Samples t-Test for Individual Accountability

Test	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
Equal variances assumed	.066	.798	9.944	46	<.001	3.95833	.39804	3.15711	4.75955
Equal variances not assumed	—	—	9.944	45.894	<.001	3.95833	.39804	3.15706	4.75960

Source: Study data

The difference in accountability scores between the treatment and control groups was statistically significant, $t(46) = 9.944$, $p < .001$. The 95 per cent confidence interval for the mean difference ranged from **3.16 to**

4.76. The null hypothesis of no significant difference between the groups was therefore rejected.

Table 5: Effect Size for Individual Accountability

Effect Size	Point Estimate	95% CI Lower	95% CI Upper
Cohen's d	1.37886	2.049	2.871
Hedges' correction	1.40187	2.016	2.824
Glass's delta	1.34528	1.915	2.942

Source: Study data.

The standardised mean difference was large (**Cohen's d = 1.38**), indicating a substantial difference in individual accountability between the treatment and control groups.

Effect of the Intervention on English Language Skills
The effect of the intervention on English language skills was examined using ANCOVA, accounting for pre-test scores when assessing post-test differences. Table 6 presents the results.

Table 6: Tests of Between-Subjects Effects for English Language Skills

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5664.458	3	1888.153	95.787	<.001
Intercept	166500.042	1	166500.042	8446.652	<.001
Group	3626.042	1	3626.042	183.951	<.001
Time	2035.042	1	2035.042	103.239	<.001
Group × Time	3.375	1	3.375	.171	.680
Error	1813.500	92	19.712	—	—
Total	173978.000	96	—	—	—
Corrected Total	7477.958	95	—	—	—

$R^2 = .757$; Adjusted $R^2 = .750$

Source: Study data.

The overall model was statistically significant, $F(3, 92) = 95.787$, $p < .001$, and explained 75.7 per cent of the variance in the outcome. The group effect was statistically significant, $F(1, 92) = 183.951$, $p < .001$. The time effect was also significant, $F(1, 92) = 103.239$, $p < .001$. However, the group-by-time interaction was not statistically significant, $F(1, 92) = .171$, $p = .680$.

Effect of the Intervention on English Language Activity Levels

The effect of the intervention on learners' English language activity levels was also examined using ANCOVA. Table 7 presents the results.

Table 7: Tests of Between-Subjects Effects for English Language Activity Levels

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3045.115	3	1015.038	28.498	<.001
Intercept	57673.010	1	57673.010	1619.200	<.001
Group	2156.510	1	2156.510	60.545	<.001
Time	882.094	1	882.094	24.765	<.001
Group × Time	6.510	1	6.510	.183	.670
Error	3276.875	92	35.618	—	—
Total	63995.000	96	—	—	—
Corrected Total	6321.990	95	—	—	—

$R^2 = .482$; Adjusted $R^2 = .465$

Source: Study data.

The overall model was statistically significant, $F(3, 92) = 28.498$, $p < .001$, explaining 48.2 per cent of the variance in activity scores. The group effect was statistically significant, $F(1, 92) = 60.545$, $p < .001$,

while the time effect was also significant, $F(1, 92) = 24.765$, $p < .001$. The group-by-time interaction was not statistically significant, $F(1, 92) = .183$, $p = .670$.

Summary of Findings

Overall, the results suggest statistically significant differences between the treatment and control groups in the subscores of individual accountability, English language skills, and activity performance. The treatment group had higher individual accountability, with a large standardised effect. The ANCOVA results also showed significant group differences in English language proficiency and activity level. However, the group-by-time interactions for both outcomes were not significant. The results provide statistical evidence to test the study hypothesis that learner accountability in cooperative learning affects preschool learners' achievement in English language activities. The next discussion section considers the implications of these findings.

Discussion

This study investigated how learner accountability in cooperative learning impacts preschoolers' achievement in English language activities in public pre-primary schools in Tharaka Nithi County, Kenya. This section discusses the findings from the reported analyses (differences in learner responsibility between the treatment and control groups and the intervention's impact on English language skills and activity levels). Therefore, the interpretation does not attribute the observed results to individual aspects of cooperative learning, such as shared goals, sharing of resources, or interdependence of tasks, since the reported statistical analyses did not test these factors individually.

Learner Accountability and Preschoolers' Achievement in English Language Activities

The descriptive findings showed improvement in English language skills and performance in the activities from the pre-test to the post-test. The mean skills score rose from 37.04 to 46.25, and the mean activity score rose from 21.48 to 27.54. While these descriptive changes suggest improvement over time, they do not necessarily mean the intervention caused the improvement; performance can change over time for other reasons. Group comparisons and inferential analyses are therefore better suited to interpreting the intervention's effect.

A significant difference in learner accountability was observed between the treatment and control groups. A mean accountability score for the treatment group was 18.58 and 14.63 for the control group. This difference was significant, $t(46) = 9.944$, $p < .001$ and the

standardised mean difference was large (Cohen's $d = 1.38$).

This result is similar to Bećirović et al. (2022), who stated that individual accountability is a key element of cooperative learning and is correlated with learners' involvement in English language learning. The evidence from the present study is important, however, because it focused on young pre-primary learners rather than older English language learners. A wide gap exists in educational attainment. Young children may be unable to take responsibility in the same way adolescents or adults can; instead, they should show responsibility through developmentally appropriate classroom routines, clear roles, teacher monitoring, and opportunities to demonstrate their contributions.

However, the substantial effect found in the present study should be taken with a grain of salt. The size of the standardised difference is not sufficient to conclude that no mechanism other than accountability spurred improved achievement. This intervention used cooperative learning, and accountability was integrated into the approach. The statistical evidence indicates that the intervention, including learner accountability, was statistically associated with the observed results. Still, the separate effect of the cooperative learning model on the results, and accountability beyond.

This distinction matters when comparing literature. Research such as Jeppu et al. (2023) has pointed to problems of unequal participation and social loafing in group learning. These concerns offer a plausible pedagogical explanation for why accountability may matter in cooperative learning. But the findings from older children and other educational contexts cannot be extrapolated to preschool children. While the present findings indicate that accountability can be successfully integrated into early childhood cooperative activities, they do not identify which specific accountability practice proved most influential.

Learner Accountability and English Language Skills

The ANCOVA results showed a significant group effect for English language skills, $F(1, 92) = 183.951$, $p < .001$. The overall model explained 75.7 per cent of the variance in the outcome ($R^2 = .757$). The significant time effect also revealed a difference between measurement occasions, $F(1, 92) = 4.591$, $p = .034$, and the group-by-

time interaction was not significant, $F(1, 92) = .171, p = .680$.

The significant group effect reflects the difference between the treatment and control conditions after excluding the factors reported in the model. This result aligns with studies indicating that cooperative learning may give learners opportunities to participate, interact, and engage in a less teacher-directed classroom. However, this result should not be taken as evidence that each element of cooperative learning helped explain the observed difference. The analysis in the study's report does not estimate the effect separately for individual accountability, shared goals, resource sharing, and task interdependence. This separation results in a more reserved reading than some earlier versions of the discussion may have had. The results in the present study showed that the intervention condition led to better English language results, although, by itself, this was not enough statistically to account for the results. The treatment also included learner accountability alongside cooperative learning so that the observed difference could be attributed to cooperative learning or to the treatment of learner accountability.

This finding also differs from evidence collected in older learners in several key ways. Studies of cooperative learning are often conducted with secondary or university students, who have more independence and advanced language ability. In contrast, pre-primary learners rely more on developmentally appropriate teacher structuring and scaffolding. For young children, the organisation of cooperative activities may be especially important, and the relatively strong group difference observed in this study may reflect this. This, however, is a local, not universal, interpretation and should be explored in other early childhood contexts.

The group-by-time interaction is not significant and deserves special attention. The group effect was statistically significant, but the interaction effect did not support a significantly different rate of change between the treatment and control groups across the two measurement times reported in the model. Therefore, it would be wrong to claim that the cooperative learning intervention led to a more significant gain than the control condition. The significant group effect and the non-significant interaction are quite distinct and should not be confused.

Learner Accountability and English Language Activity Levels

The group effect was statistically significant for the English language activity levels, $F(1, 92) = 60.545, p < .001$. The overall model explained 48.2 per cent of the variance in activity scores ($R^2 = .482$). A significant time effect was also observed, $F(1, 92) = 24.765, p < .001$, whereas the group-by-time interaction was not statistically significant, $F(1, 92) = .183, p = .670$.

The significant group effect indicated that learners in the treatment and control conditions differed in activity level in terms of activity outcomes. This is significant for early childhood education because English use in activities should be active rather than teacher-led. Cooperative learning can provide more opportunities for students to speak, listen, respond, and participate in classroom tasks. However, the present analysis does not identify the classroom behaviour responsible for the difference. It would be unwise, however, to generalise that the improvement was due to the "goal," the "sharing of resources," or the "interdependence of tasks," as these factors were not analysed separately using inferential tests.

However, the findings can be critically compared with previous research on cooperative learning. Previous studies are mostly positive, but they mostly involve older learners and subjects other than early childhood language learning. The present study thus presents context-specific evidence on how a CL intervention with accountability can be integrated into pre-school English language activities. The activity model also showed lower explanatory power ($R^2 = .482$) than the skills model ($R^2 = .757$), suggesting the intervention may not affect all dimensions of English language learning equally. Other classroom and learner factors not included in the reported model are likely to influence the likelihood of activity participation.

The analysis also found no statistically significant interaction between group and time, which warrants caution. The treatment and control groups differed significantly on the group effect, but the analysis did not show a significant difference between the groups over time. Therefore, the results do not provide definitive evidence that the intervention produced a significantly steeper improvement trajectory, but they suggest that differences may exist.

The findings are congruent with the wider literature, which suggests that cooperative learning could be an effective strategy for enhancing students' engagement and achievement in learning. Nevertheless, the present research does not simply replicate the above findings. Its contribution, among other things, is that it considers cooperative learning in the specific context of Kenyan public pre-primary schools and examines learner accountability as an observable characteristic of the intervention.

Bećirović et al. (2022), for instance, found individual accountability pertinent to learning English in older learners. Based on the present study, the principle of accountability can also be applied in the early years of schooling. Still, it must be applied differently, since preschool learners are more concrete in their involvement and need more guidance from the teacher. The evidence thus shows that the principle can be transferred, but not necessarily that the mechanisms found in older children are the same for preschool children.

Similarly, the study on the benefits of cooperative learning to the teacher-centred teaching approach provides a useful theoretical basis for the present findings. Still, its findings cannot be generalised to Tharaka Nithi County. The curriculum, teacher preparation, classroom resources, language environment, and learner characteristics can vary and affect the cooperative learning process. The present study therefore adds contextual evidence, not a universal application. The results also suggest a more critical analysis of the notion that cooperative learning is always good. Cooperative learning does not automatically lead to meaningful participation/improved achievement. It depends on how the activities are organised, how learners are supported, and how individual contributions are recorded. The treatment group scored higher on accountability, indicating that the treatment was effective in achieving observable differences in accountability. However, the study could not isolate the cooperative-learning mechanisms, and the relative contribution of accountability to the other aspects of the intervention remains unknown.

Implications of the Findings

The results have implications for early childhood classroom practice. The increase in scores when children were learning in a treatment group indicates that cooperative learning activities can be designed to help

the children become more accountable for their learning contributions. Implication for teachers: not just assign students to groups, but design activities so involvement and accountability are clear and manageable. The results also have implications for teacher preparation and professional development. Pre-primary teachers may need practical ways to plan small-group activities, delegate responsibilities, track individual contributions, and provide feedback. However, this study's findings should be interpreted within the constraints of the study's design. It demonstrates the value of the implemented intervention. Still, it does not claim that any specific aspect of the accountability practice (or the cooperative-learning component) would be credited with the resulting outcomes. Findings from the policy level support a stronger commitment to participative and collaborative strategies in early childhood classrooms. However, these methods should always be accompanied by suitable teacher preparation, adaptation and monitoring of the local classroom environment, and not used as a substitute for other methods of teaching.

CONCLUSION AND RECOMMENDATIONS

Conclusion: This study concludes that structured learner accountability within cooperative learning was associated with significant differences in learner accountability, English language skills, and activity outcomes between the treatment and control groups. The findings support the potential value of incorporating individual accountability within cooperative learning to enhance English language learning among pre-primary learners. However, the conclusion is limited to the overall cooperative-learning intervention and should not be interpreted as evidence that specific components such as shared goals, resource sharing, or task interdependence independently produced the observed outcomes, as these components were not assessed separately. The study therefore extends evidence on cooperative learning to public pre-primary schools in Tharaka Nithi County, Kenya, while highlighting the need for further research to isolate the effects of individual cooperative-learning components and examine whether the observed outcomes persist over time and across diverse early childhood education contexts.

Recommendations: Based on the study findings, the study recommendations are presented as areas for consideration and further validation rather than as a basis for immediate nationwide curriculum reform.

At the county level, education authorities in Tharaka Nithi County, in collaboration with school administrators and relevant ECD stakeholders, should consider piloting structured cooperative learning activities incorporating learner accountability in selected public pre-primary schools. This recommendation is supported by the higher accountability scores and significant differences in English language skills and activity outcomes observed among learners in the intervention group. Implementation should emphasise developmentally appropriate group tasks, equitable participation, monitoring of individual contributions, group interaction, and feedback.

At the National level, the Ministry of Education and the Kenya Institute of Curriculum Development (KICD) should consider the findings as contextual evidence when reviewing learner-centred instructional approaches in early childhood education. However, the findings do not provide sufficient evidence to justify immediate nationwide adoption. Evidence from studies conducted across different counties, school types, linguistic settings, and socio-economic contexts should inform any future national policy or curriculum changes. Further piloting and evaluation are therefore recommended before wider implementation.

At the school level, headteachers and pre-primary teachers should strengthen cooperative learning activities by assigning developmentally appropriate roles and making learner participation and responsibility explicit. Schools and local education authorities should support

practical teacher development in group formation, role allocation, monitoring participation, facilitating group interaction, and providing feedback. Capacity building can be supported through demonstration lessons, peer observation, collaborative lesson planning, and teacher teams that share experiences across schools and education zones. These recommendations are specific to the study context and should not be assumed to be universally transferable across Kenya without further evidence.

Additionally, teacher-training institutions and university education departments should incorporate learner-centred, socially interactive, and cooperative approaches to early language learning into pre-primary teacher preparation. Training should emphasise social interaction, scaffolding, peer support, and learner responsibility within developmentally appropriate activities. However, the findings should not be interpreted as empirical validation of Vygotsky's Sociocultural Theory itself. The theory provided a conceptual basis for understanding how social interaction and scaffolding may support learning, while the empirical analysis tested the intervention rather than the theory. Teacher education programmes should therefore present these theoretical principles as instructional frameworks rather than as causal relationships established by the present study.

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