Peer Collaboration and Students' Learning Activities in Secondary Schools in Kole District, Uganda

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Octobert, 2026

Declaration

I, **Humphreys Caesarinous Okellolirra**, hereby declare that this research dissertation entitled *"Peer Collaboration and Students' Learning Activities in Secondary Schools in Kole District, Uganda"* is my original work. I further declare that it has not been submitted, either in whole or in part, to any other institution of higher learning for the award of any academic qualification.

Signature: .....

Date: 20.10.2026

Approval

This research dissertation entitled *"Peer Collaboration and Students' Learning Activities in Secondary Schools in Kole District, Uganda"*, authored by **Humphreys Caesarinous Okellolirra** has been prepared under my supervision and is hereby approved for submission to the Directorate of Research and Graduate Training, Gulu University, for review and examination.

Supervisor's Signature: .....

Date: 20/10/2026

Rev. Fr. Dr. Ronald Reagan Okello (PhD)

Supervisor

Dedication

This dissertation is lovingly dedicated to my dear parents, Mr. John Caesarinous and Mrs. Jeroline Ocen Okullu, whose unwavering support, selfless sacrifices, encouragement, and prayers have been the foundation of my academic journey and personal growth. Your commitment to my education, coupled with your dedication to instilling in me the values of discipline, perseverance, integrity, diligence, and determination, has continually inspired me to pursue excellence and remain focused throughout this challenging yet rewarding journey. Every milestone I have achieved reflects, in part, the countless sacrifices you have made towards my education and future.

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List of Acronyms

CBC:	Competence-Based Curriculum.
CSCL:	Computer Supported Collaborative Learning
CVI:	Content Validity Index.
FICH:	Foundation for Inclusive Community Help.
GER:	Gross Enrolment Rate.
ICT:	Information and Communication Technology.
MoES:	Ministry of Education and Sports.
NER:	Net Enrolment Rate.
OECD:	Organization for Economic Cooperation and Development
PLTL:	Peer-Led Team Learning.
STEM:	Science, Technology, Engineering and Mathematic.
UACE:	Uganda Advanced Certificate of Education.
UNBS:	Uganda National Bureau of Statistics.
UPE:	Universal Primary Education.
USE:	Universal Secondary Education.
ZPD:	Zone of Proximal Development.

Abstract

The study examined the relationship between peer collaboration and students' learning outcomes in secondary schools in Kole District, Uganda. Specifically, the study sought to establish the level of peer collaboration, assess the status of students' learning outcomes in relation to subject tests and examinations, continuous assessment records, practical assessments, and project-based assessments, and determine the relationship between peer collaboration and students' learning outcomes. The study adopted a convergent mixed-methods design within a cross-sectional survey. The study population comprised learners, teachers, and headteachers from selected government-aided secondary schools in Kole District. Three secondary schools were purposively selected. From a population of 1,393 individuals, comprising 1,300 learners, 90 teachers, and three headteachers, a sample of 373 respondents was determined using the Krejcie and Morgan sample-size table. Simple random sampling was used to select 297 learners and 73 teachers, while the three headteachers were purposively selected as key informants. Quantitative data were collected from learners and teachers using structured questionnaires, while qualitative data were obtained through interviews with headteachers and analysed thematically. The findings indicated that peer collaboration was positively associated with learning activities, particularly through student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation. Role allocation and participation recorded the strongest positive relationship with learning activities ($(r = .701,\ p < .001)$), followed by peer tutoring and scaffolding ($(r = .662,\ p < .001)$), group problem-solving ($(r = .595,\ p < .001)$), and student-to-student interaction ($(r = .344,\ p = .004)$). Qualitative findings indicated that teachers facilitated collaboration through group discussions, guided problem-solving, peer assistance, and the assignment and rotation of group responsibilities. However, participation was not always equitable, as some learners were less involved while others relied on more active classmates. Learners and teachers also reported generally favourable experiences concerning classroom engagement, cognitive skill development, perceived academic performance, and reflective learning. Nevertheless, the reported quantitative results did not directly establish students' performance in subject tests and examinations, continuous assessment records, practical assessments, or project-based assessments. Consequently, the study concludes that peer collaboration was positively and significantly associated with learning activities, but its relationship with the specified learning outcomes requires direct assessment evidence and further statistical analysis. The study recommends strengthening structured peer collaboration, promoting equitable participation, and integrating appropriate assessment records and performance-based measures into school-level monitoring of students' learning outcomes.

Keywords: Peer collaboration; students' learning outcomes; subject tests and examinations; continuous assessment; practical assessment; project-based assessment; secondary education.

Chapter One

Introduction

1.0 Overview

Students' learning activities are essential to effective teaching and learning because they promote active participation, knowledge construction, critical thinking and problem-solving. Globally, education systems increasingly emphasise learner-centred approaches that engage students in discussions, group tasks, practical exercises and other interactive experiences (OECD, 2023). Peer collaboration is an important instructional approach through which students exchange ideas, share responsibilities and work together to accomplish learning tasks. When effectively organised, it can promote student engagement, communication, teamwork and problem-solving (Fung & Lui, 2016; Abramczyk & Jurkowski, 2024). Collaborative interactions may also enhance students' participation and knowledge construction during learning activities (Webb et al., 2021; Zhao & Li, 2021). However, the extent to which peer collaboration relates to students' engagement in learning activities requires examination within specific educational contexts. Therefore, this study examined the relationship between peer collaboration and students' learning activities in secondary schools in Kole District, Uganda.

This chapter presents the background to the study, statement of the problem, purpose of the study, specific objectives, research questions, scope of the study, significance of the study and conceptual framework.

1.1 Background of the Study

1.1.1 Historical Background

Historically, students' learning activities have been shaped by changing conceptions of knowledge, the purposes of education and the roles of teachers and learners in the teaching and learning process. In many formal schooling systems in Europe during the early modern period, learning was predominantly organised around memorisation, recitation, religious instruction and the reproduction of established knowledge. Students were generally expected to listen to teachers, memorise prescribed content and demonstrate their understanding through oral recitation or written examinations. Although these approaches provided structured means of transmitting knowledge, they often offered limited opportunities for students to investigate problems independently, engage in practical tasks or participate actively in constructing knowledge (Rury & Tamura, 2019). Over time, however, educational reformers began to question the adequacy of passive learning and advocated approaches that would enable students

to acquire knowledge through observation, experience, practical engagement and interaction with others.

The eighteenth and nineteenth centuries witnessed significant developments in educational thought that challenged the dominance of rote learning. Educational reformers such as Johann Heinrich Pestalozzi and Friedrich Froebel advocated learning experiences that connected abstract knowledge with students' immediate environments, practical activities and developmental needs. Pestalozzi emphasised learning through observation and experience, while Froebel promoted purposeful play and activity-based learning, particularly in early childhood education. Their ideas contributed to a broader educational movement that recognised the importance of engaging learners in activities through which they could explore objects, develop skills and make connections between knowledge and experience. These developments represented an important historical shift in the understanding of students' learning activities, from predominantly receiving and reproducing information towards participating in experiences that supported understanding and development (Rury & Tamura, 2019).

During the late nineteenth and early twentieth centuries, the progressive education movement further strengthened the emphasis on students' active participation in learning. John Dewey was particularly influential in arguing that education should be connected to experience, reflective thinking and the practical problems learners encounter in their social environments. In *Democracy and Education*, Dewey (1916) conceptualised education as an active process through which learners develop understanding by engaging with their environment and participating in meaningful social experiences. His educational philosophy challenged the separation of classroom knowledge from everyday life and encouraged the use of activities such as experimentation, discussion, investigation and problem-solving. From this perspective, students' learning activities were not merely supplementary exercises intended to reinforce information already presented by teachers; rather, they constituted important processes through which knowledge could be acquired, examined and applied. Nevertheless, the educational value of such activities depended on their purposeful organisation and connection to clearly defined learning objectives.

The development of social constructivist perspectives during the twentieth century provided further theoretical explanations for the importance of students' participation in learning activities. Vygotsky (1978) argued that cognitive development is mediated by social interaction, language and culturally situated experiences. His concept of the Zone of Proximal Development highlighted the importance of appropriately guided interaction in enabling learners to accomplish tasks that they might not yet manage independently. This perspective

suggests that activities such as peer discussion, group problem-solving, joint investigations and peer tutoring can provide opportunities for students to exchange ideas, clarify misunderstandings and develop more sophisticated understandings. Similarly, Dewey's emphasis on experience and reflective inquiry and Vygotsky's account of socially mediated learning established influential foundations for approaches that position students as active participants in the construction of knowledge. However, these perspectives do not imply that all student activities automatically produce meaningful learning; the nature of the task, the quality of interaction and the guidance provided by teachers remain important considerations.

By the mid-to-late twentieth century, educational research increasingly examined the relationship between the organisation of classroom activities and students' academic and social development. Cooperative learning, peer tutoring, problem-based learning, project work and inquiry-oriented approaches became more prominent in educational research and practice. Research by Johnson and Johnson (1999) and Slavin (1991) contributed to understanding how structured group activities, individual accountability and shared learning goals could influence students' participation and achievement. Gillies (2016) further examined the role of teacher-structured cooperative learning in supporting students' interactions, reasoning and engagement with academic tasks. These developments broadened the understanding of students' learning activities beyond individual exercises and teacher-led classroom discussions to include collaborative investigations, presentations, practical assignments and other tasks requiring learners to contribute to shared outcomes. Importantly, this historical development also drew attention to the distinction between simply organising students into groups and designing activities that require meaningful intellectual engagement, individual responsibility and constructive interaction.

Towards the end of the twentieth century and into the twenty-first century, the expansion of information and communication technologies introduced additional opportunities for organising students' learning activities. Digital platforms, multimedia resources, online research and computer-supported collaborative learning enabled students to access information, communicate ideas, investigate questions and produce learning materials through both face-to-face and technology-mediated interactions. These developments expanded the range of activities through which students could engage with knowledge, including digital presentations, online discussions, collaborative document preparation and independent information searches. Nevertheless, the availability of technology did not necessarily guarantee active or meaningful learning. The educational contribution of digital activities continued to depend on students' access to appropriate resources, their digital competencies and the extent to which teachers integrated technology into purposeful learning tasks.

The historical development of students' learning activities in Africa must also be understood in relation to indigenous educational practices that existed before the establishment of colonial formal schooling. Across many African societies, knowledge and skills were transmitted through observation, imitation, storytelling, oral discussion, apprenticeship, participation in productive work and engagement in community responsibilities. Children and young people learned by observing experienced members of their communities, practising acquired skills and participating in activities associated with agriculture, craftsmanship, environmental management and social life. Such practices connected learning with the practical demands of everyday existence and enabled learners to develop knowledge, values and competencies through participation. Ezeanya-Esiobu (2019) discusses the significance of indigenous knowledge systems and their potential contribution to education that responds to local realities. These historical practices demonstrate that active participation, experiential learning and socially situated activities have long been important means of learning in African contexts, although their forms and purposes differed across communities.

The introduction and expansion of colonial formal schooling substantially transformed educational arrangements in many African societies. Missionary and colonial institutions established formal curricula, classroom routines, assessment systems and teacher–student relationships that were influenced by European educational traditions. In many contexts, classroom learning placed considerable emphasis on literacy, numeracy, religious instruction, memorisation and the reproduction of prescribed knowledge. Colonial education was also shaped by religious, administrative and economic priorities, which influenced the content and organisation of learning opportunities available to different groups of learners (Whitehead, 2021; Beck, 2019). Consequently, some forms of indigenous practical and community-based learning became separated from the formal school curriculum or received less recognition than academic knowledge transmitted through classroom instruction. However, the experience of colonial education varied across places and institutions; it would therefore be inaccurate to suggest that every colonial classroom relied exclusively on passive learning or that participatory activities disappeared entirely.

In East Africa, the development of formal schooling under colonial rule was similarly influenced by missionary education, administrative requirements and the preparation of learners for particular economic and social roles. Classroom activities were commonly organised around prescribed syllabuses, teacher explanations, written exercises and examinations, although practical and vocational activities were also included in some educational institutions. Following independence, education reforms increasingly sought to make schooling more relevant to national development, local environments and the changing needs of society. The 1961 Addis Ababa Conference on the Development of Education in

Africa, organised under the auspices of UNESCO, contributed to regional discussions on expanding educational access and improving the relevance of African education systems (UNESCO, 1961). Subsequent educational debates increasingly emphasised the need for curricula and learning experiences that would enable students to apply knowledge, develop practical competencies and participate productively in their communities. This historical trajectory is significant because it demonstrates the continuing tension between the transmission of prescribed academic content and the provision of learning activities that promote independent thinking, practical engagement and the application of knowledge.

In Uganda, the evolution of students' learning activities has been influenced by colonial educational arrangements, post-independence reforms and continuing efforts to improve the relevance and quality of formal education. For much of the post-independence period, secondary education remained substantially organised around subject-based syllabuses, teacher-directed instruction and high-stakes examinations. Under such arrangements, students' activities often included listening to teacher explanations, taking notes, reading prescribed texts, completing written exercises and preparing for examinations. These activities remain important for acquiring foundational knowledge; however, their predominance may restrict opportunities for sustained inquiry, practical investigation, independent research and collaborative problem-solving when they are not complemented by other forms of engagement. The historical challenge for Ugandan secondary education has therefore involved not simply increasing the number of classroom activities but ensuring that students engage in varied, purposeful and intellectually demanding tasks that support both knowledge acquisition and its application.

A significant development in this trajectory was the introduction of Uganda's Lower Secondary Curriculum in 2020, which strengthened the policy emphasis on competency-based teaching, learning and assessment. The curriculum seeks to move beyond an exclusive focus on the acquisition and reproduction of subject content towards the development and application of knowledge, skills, attitudes and values. The National Curriculum Development Centre (NCDC, 2019) provides the curricular framework for this orientation, while subsequent curriculum implementation guidance elaborates expectations for classroom teaching, learning activities and assessment. Within this framework, students are expected to participate in activities such as discussion, investigation, project work, practical exercises, presentations, research and problem-solving. These activities are intended to create opportunities for learners to demonstrate their understanding, work with others, think critically and apply what they learn to real-life situations. The introduction of the competency-based curriculum therefore represents an important policy shift in the expected organisation of students' learning activities in Ugandan secondary schools.

Under the competency-based curriculum, peer collaboration constitutes one important dimension of students' learning activities. Through structured group discussions, joint projects, peer assessment, shared investigations and collaborative problem-solving, students can contribute ideas, explain their reasoning, respond to alternative perspectives and develop shared understandings. Such activities may also provide opportunities for students to practise communication, cooperation, negotiation and responsibility. Nevertheless, the presence of group work in a lesson does not necessarily demonstrate meaningful peer collaboration. Some students may dominate discussions while others remain passive, and groups may complete assigned tasks without substantial exchange of ideas or shared responsibility. Gillies (2016) and Johnson and Johnson (2019) emphasise the importance of structuring cooperative learning experiences so that interaction contributes to learning. Accordingly, examining students' learning activities requires attention not only to whether students work together but also to how they participate, contribute to tasks, exchange knowledge and engage with the subject matter.

The implementation of the competency-based curriculum also places demands on teachers to plan and facilitate activities that align with intended learning outcomes. Teachers are expected to create opportunities for students to investigate questions, solve problems, conduct practical tasks, communicate findings and reflect on their learning. The extent to which these activities occur may depend on several contextual conditions, including class size, availability of instructional materials, classroom space, lesson duration, access to digital resources, teacher preparedness and school-level support. Where these conditions are inadequate, teachers may experience difficulties in organising practical and collaborative activities, even when such approaches are encouraged by curriculum policy. Conversely, appropriate resources, effective lesson planning and constructive teacher guidance may enable students to participate more actively in learning. Thus, the historical and policy movement towards learner-centred education should be distinguished from its actual enactment in everyday classroom practice.

The foregoing historical account demonstrates that students' learning activities have evolved from predominantly teacher-directed practices towards increasingly diverse forms of active, experiential, inquiry-oriented and collaborative engagement. This development has been shaped by changing educational philosophies, social and cultural traditions, curriculum reforms and advances in technology. In Uganda, the introduction of the competency-based Lower Secondary Curriculum provides a policy basis for expanding students' participation in meaningful learning activities, including peer collaboration. However, curriculum expectations alone do not establish the extent to which such activities are implemented in particular school contexts or whether students participate in them meaningfully.

It is against this historical background that the present study examines peer collaboration and students' learning activities in secondary schools in Kole District, Uganda. The study is concerned with understanding how peer collaboration relates to students' engagement in classroom and other curriculum-related learning activities. By focusing on students' participation, interaction, contribution to shared tasks and engagement with learning experiences, the study seeks to situate peer collaboration within the broader process of teaching and learning rather than treating group work as an end in itself. The historical development of educational practice therefore provides the foundation for investigating the relationship between collaborative interaction and the learning activities through which secondary school students acquire, develop and apply knowledge and skills in the context of contemporary Ugandan education.

1.1.2 Theoretical Background

This study was guided by the Social Constructivism Theory developed by Vygotsky (1978). The theory posits that learning is a social process through which learners actively construct knowledge by interacting with peers, teachers, and their surrounding environment rather than receiving information passively. Unlike behaviorist theories that emphasize stimulus-response relationships or cognitivist theories that focus primarily on internal mental processes, social constructivism argues that knowledge is co-constructed through collaboration, dialogue, and shared experiences. Consequently, meaningful learning occurs when learners engage in interactive activities that allow them to exchange ideas, challenge existing understanding, and jointly solve problems (Vygotsky, 1978). The theory is founded on several key principles. First, learning is socially mediated, meaning that cognitive development begins through social interaction (inter-psychological level) before being internalized by the individual learner (intra-psychological level). This implies that peer interaction, group discussions, and collaborative problem-solving play a central role in enhancing learning. Second, the theory introduces the concept of the Zone of Proximal Development (ZPD), which refers to the range of tasks learners can accomplish with the support of more knowledgeable peers or teachers but are unable to perform independently (Vygotsky, 1978). Through peer collaboration, learners provide mutual support, explain concepts, and guide one another, thereby extending each other's learning capabilities. Third, the theory emphasizes scaffolding, whereby temporary support provided by teachers or peers enables learners to accomplish challenging tasks until they become capable of performing them independently. Finally, social constructivism recognizes that learning is shaped by learners' social, cultural, and historical contexts; therefore, effective learning activities should acknowledge learners' backgrounds, experiences, and social environments (Rogoff, 1990).

The Social Constructivism Theory is directly relevant to this study because it provides a theoretical explanation of how peer collaboration may be associated with students' learning activities in secondary schools. The independent variable, peer collaboration, is reflected in student-to-student interaction, group problem-solving, role allocation and participation, peer tutoring, shared responsibility, and cooperative learning. These activities involve learners working together, exchanging ideas, providing feedback, explaining concepts, and supporting one another during learning. From a social constructivist perspective, knowledge is constructed through interaction with others, particularly when learners engage in activities that allow them to work within their Zone of Proximal Development (ZPD). Such collaborative processes may be associated with learning activities such as participation in classroom discussions, engagement in instructional tasks, knowledge sharing, problem-solving, and active involvement in lessons.

The theory is appropriate for the study because it views learning as an interactive process in which learners construct and refine knowledge through communication and collaboration. In a secondary school mathematics classroom, for example, students may work together to solve a problem, explain their reasoning to classmates, compare different approaches, and provide feedback to one another. Through these processes, learners may develop opportunities for communication, teamwork, negotiation, critical thinking, and problem-solving (Brundage et al., 2023). The teacher is viewed mainly as a facilitator who provides guidance and creates learning situations in which students can interact and construct understanding. This perspective corresponds with the study's focus on peer collaboration and learning activities because the study examines specific collaborative practices through which learners participate in classroom learning.

However, Social Constructivism has limitations that require consideration in interpreting the findings of this study (Taylor, 2021). First, the theory places considerable emphasis on social interaction, which may give insufficient attention to individual differences in learners' cognitive abilities, motivation, prior knowledge, learning preferences, and biological factors that can also shape learning. Two students participating in the same group activity may therefore experience different learning outcomes because of differences in their individual characteristics and prior experiences. Second, the theory gives considerable attention to knowledge construction through interaction but provides less explanation of biological and cognitive processes that occur within the individual learner during learning. Third, learning outcomes are not always easy to attribute to social interaction because changes in learning activities may also arise from teaching methods, availability of learning materials, classroom conditions, learner motivation, or previous knowledge. There is also a potential risk of

overdependence on the teacher or facilitator, particularly where learners require guidance to participate meaningfully in collaborative activities (Silva, Farias, & Mesquita, 2021).

These limitations are addressed in the present study by not treating Social Constructivism as an explanation of all factors affecting learning activities. The theory is used specifically to explain the social and collaborative dimension of learning, which corresponds to the independent variable of peer collaboration. The study operationalizes peer collaboration into measurable dimensions, namely student-to-student interaction, group problem-solving, peer tutoring/scaffolding, and role allocation and participation. Learning activities are also assessed through specific observable and reportable aspects of learner engagement rather than assuming that collaboration automatically produces improved academic achievement. In interpreting the findings, the study therefore avoids claiming that peer collaboration alone causes changes in learning activities. Instead, the findings are understood in relation to the particular collaborative practices examined and the perceptions and experiences reported by respondents. This approach recognises that other cognitive, individual, instructional, and school-related factors may also shape students' learning activities.

Therefore, Social Constructivism provides a suitable theoretical lens for this study while its limitations are acknowledged. It explains how interaction among learners may facilitate participation, knowledge sharing, problem-solving, and engagement, but it does not imply that social interaction is the only condition necessary for learning. By combining the theory with clearly defined study variables and cautious interpretation of the empirical findings, the study addresses the limitations associated with excessive emphasis on social interaction, insufficient attention to individual cognitive and biological factors, difficulties in attributing learning outcomes to collaboration, and possible dependence on teacher facilitation. The theory consequently provides a focused rather than exclusive explanation of the relationship between peer collaboration and learning activities among secondary school students in Kole District.

1.1.3 Conceptual Background

Peer collaboration refers to a structured learning process in which students work together to achieve shared academic goals while contributing individually to group learning. It involves purposeful interaction among learners in which they exchange ideas, explain concepts, solve problems and support one another's learning. Unlike informal interaction, peer collaboration is organized around learning tasks and requires students to assume responsibility for both their individual contributions and the achievement of group objectives (Slavin, 2015; Gillies, 2016). Thus, the effectiveness of peer collaboration depends not simply on students working in groups, but on the quality and purpose of their interaction.

Peer collaboration can be understood through four related dimensions. First, student-to-student interaction involves learners communicating ideas, asking questions, explaining concepts and responding to the contributions of their peers. Such interaction creates opportunities for learners to clarify their thinking and encounter alternative explanations. Second, group problem-solving involves students working collectively to identify problems, generate possible solutions, evaluate ideas and reach conclusions. This dimension shifts learning from individual completion of tasks towards shared construction of understanding. Third, peer tutoring and scaffolding occurs when learners support one another by explaining concepts, demonstrating procedures, giving feedback or providing assistance to peers who experience difficulties. Such support can enable learners to perform tasks that they may not accomplish independently (Gillies, 2016). Fourth, role allocation and participation concern the distribution of responsibilities within the group and the extent to which members contribute to the learning task. Clear roles can reduce unequal participation and provide opportunities for learners to take responsibility for specific aspects of group work.

Slavin (2015) conceptualizes collaborative learning around cooperation, shared goals and individual accountability. From this perspective, collaboration is effective when students recognise that their learning is connected to the learning of others while remaining accountable for their own contribution. Similarly, Gillies (2016) argues that productive collaborative learning requires meaningful dialogue, joint problem-solving and active contribution from group members. These perspectives suggest that peer collaboration should be assessed according to the nature of students' interactions and the learning support they provide to one another rather than by general measures of participation or engagement.

In this study, peer collaboration is defined as structured student interaction in which learners work together to exchange ideas, solve learning problems, provide peer support and undertake assigned roles in pursuit of shared learning goals. The independent variable will therefore be measured using four dimensions: student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation. These dimensions distinguish peer collaboration from students' learning activities, which constitute the dependent variable in this study.

Students' learning activities refer to the structured tasks through which learners engage with knowledge, develop skills and demonstrate their understanding of the subject matter. Such activities may involve practical work, discussions, exercises, problem-solving, application of concepts, reflection and completion of assigned tasks. Effective learning activities require learners to do more than receive information; they provide opportunities to apply knowledge,

sustain effort and demonstrate what has been learned (Coker et al., 2017; Schunk & DiBenedetto, 2020).

The nature of learning activities influences how learners engage with and apply what they learn. Experiential perspectives suggest that learning is strengthened when students have opportunities to interact with content through concrete experiences as well as more abstract forms such as reading, observing and listening (Dale, 1969). However, the value of an activity depends not only on its form but also on the extent to which it requires learners to actively engage with learning tasks and use knowledge and skills in meaningful contexts. Therefore, learning activities in this study are considered in terms of what learners do with the tasks assigned to them rather than in terms of the collaborative structures through which those tasks may be completed.

Students' learning activities can be examined through five dimensions. First, active participation in learning tasks refers to the extent to which learners take part in assigned academic activities rather than remaining passive recipients of instruction. Second, task engagement and persistence concerns learners' attention, effort and willingness to continue working on learning activities, including when tasks are challenging. Third, application of knowledge and skills refers to learners' ability to use concepts, procedures and skills acquired during instruction to address questions, solve problems or perform practical tasks. Fourth, reflection and feedback involve learners considering what they have learned, identifying areas of difficulty and using feedback to improve subsequent performance. Fifth, completion of assigned learning activities concerns whether learners complete the tasks provided by the teacher within the expected time and requirements.

Slavin (2015) observes that learning activities can be deliberately structured to promote learning through clearly defined tasks, objectives and opportunities for students to apply what they know. Similarly, Gillies (2020) indicates that well-designed learning activities can provide opportunities for learners to engage with content, exchange ideas and develop understanding. These perspectives indicate that the outcome of peer collaboration should not be measured using the same dimensions used to describe the collaborative process. Instead, students' learning activities should focus on the extent to which learners participate in, persist with, apply knowledge to, reflect on and complete their assigned learning tasks.

In this study, students' learning activities are defined as the academic tasks and engagements through which learners actively participate, persist in learning, apply acquired knowledge and skills, reflect on their learning and complete assigned activities. The dependent variable will therefore be measured using five dimensions: active participation in learning tasks, task engagement and persistence, application of knowledge and skills, reflection and feedback, and

completion of assigned learning activities. This conceptualization separates the independent variable, peer collaboration, from the dependent variable, students' learning activities, and provides distinct dimensions for examining the relationship between the two variables.

1.1.4. Contextual Background

Education in Uganda has expanded significantly over the past decades, yet challenges in access, retention, and quality remain pervasive (Uganda Bureau of Statistics, 2024). The national Gross Enrolment Rate (GER) for secondary education is approximately 34%, while the Net Enrolment Rate (NER) is about 23%, indicating that a large proportion of secondary-school-age youth remain out of school (Uganda Bureau of Statistics, 2024). The cost of secondary schooling continues to affect access, with families spending on average UGX 2,254,695 per learner per year in rural areas, covering fees, materials, uniforms, and transport (Oketch, 2025).

In Northern Uganda, including the Lango sub-region where Kole District is located, the legacy of civil conflict, poverty, and weak infrastructure has negatively impacted school outcomes (Rukundo, 2021). A baseline study conducted by the Foundation for Inclusive Community Help (FICH) across 32 government-aided schools in Northern Uganda found that 29% of pupils in Primary 3–5 were non-readers, and by Primary 5 only 11.4% could comprehend a story in their local language (FICH, 2025). Early learning insufficiencies often persists into later stages of schooling associated with poor academic achievement, overcrowded classrooms, and increased absenteeism among both teachers and learners. These challenges reduce the quality of instruction and limit learners' opportunities for active participation and academic success (Weatherholt et al., 2019; Nassaazi & Okee, 2024). These early deficits often carry into secondary schooling, contributing to low achievement, overcrowded classrooms, and high absenteeism among both teachers and learners (Rukundo, 2012).

Kole District faces similar challenges: teacher shortages, large class sizes, poor parental engagement, and high dropout rates especially among girls due to poverty, early marriages, and child labor (Kole District Education Office, 2024). Even in "Universal Secondary Education" (USE) schools, parents may still be required to contribute about UGX 1.2 million per learner per year in fees and in-kind support (Uganda Bureau of Statistics, 2024). Despite these challenges, some schools in Kole show pockets of excellence; for example, Wisdom High School in Akalo Town Council ranked 22nd nationally in the 2024 Uganda Advanced Certificate of Education (UACE), topping Northern Uganda (Oketch, 2025).

Peer collaboration has been shown to improve student learning outcomes in Uganda. In Bukwo District, students whose peer-group members had strong prior achievement performed better academically (Chebet, 2018). Similarly, a study in Rhino Camp refugee settlement found a positive correlation ($r = 0.543$, $p < 0.01$) between a favorable peerlearning environment and

student performance (Nantamu, 2018). These findings suggest that in resource-constrained areas like Kole District, structured peer collaboration could serve as an effective strategy to enhance learning activities, support engagement, and mitigate some of the systemic challenges in secondary education (Chebet, 2018; Nantamu, 2018).

1.2 Problem Statement

Effective learning in secondary schools should enable students to acquire knowledge, develop skills, demonstrate understanding, solve problems and apply what they learn to real-life situations. Achieving these outcomes requires learning experiences that encourage active participation, critical thinking, sustained engagement and meaningful interaction among learners. Peer collaboration can support these processes by enabling students to exchange ideas, explain concepts to one another, engage in joint problem-solving and provide mutual academic support. When appropriately structured, collaborative learning may enhance students' understanding, skills development and academic performance (Slavin, 2015; Gillies, 2016).

Despite the growing recognition of learner-centred approaches, classroom practices in some Ugandan secondary schools remain predominantly teacher-centred, with limited opportunities for students to engage in discussions, independent inquiry and collaborative problem-solving (Rukundo, 2012). Such practices may restrict learners' opportunities to develop deeper understanding, apply knowledge and demonstrate the competencies expected of secondary education. In Kole District, the implementation of effective learning approaches is reportedly constrained by large class sizes, teacher shortages and inadequate instructional materials (Kole District Education Office, 2024). These challenges may limit teachers' capacity to organise meaningful collaborative learning experiences and provide individualised support. Furthermore, concerns regarding students' engagement and comprehension have been reported in the district (Oketch, 2025), raising questions about the effectiveness of existing classroom practices in supporting students' learning outcomes.

Although peer collaboration has been widely recognised as a potentially beneficial instructional approach, its effectiveness cannot be assumed across all educational contexts. The presence of group work does not necessarily guarantee improved learning, particularly when participation is unequal, tasks are poorly structured or students receive inadequate guidance. Moreover, the extent to which different dimensions of peer collaboration contribute to students' learning outcomes in secondary schools in Kole District remains insufficiently established. In particular, there is limited contextual evidence on the relationship between student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation, on the one hand, and students' knowledge acquisition, understanding, skills development and academic performance, on the other.

Consequently, this study seeks to examine the relationship between peer collaboration and students' learning outcomes in secondary schools in Kole District, Uganda. The findings are expected to provide context-specific evidence to inform classroom practices and support improvements in students' learning outcomes.

1.3 Purpose of the Study

The purpose of the study was to examine the relationship between peer collaboration and students' learning activities in secondary schools in Kole District, Uganda.

1.4 Specific Objectives

The study was guided by the following specific objectives:

i. To assess the level of peer collaboration in secondary schools in Kole District.

ii. To examine the status of students' learning activities in secondary schools in Kole District.

iii. To explore how peer collaboration influences students' learning activities in secondary schools in Kole district

Research question

1.5 Research Questions

The study sought to answer the following research questions:

i. What is the level of peer collaboration in secondary schools in Kole District?

ii. What is the status of students' learning activities in secondary schools in Kole District?

iii. How does peer collaboration influence students' learning activities in secondary schools in Kole district?

1.5.1 Research Hypotheses

H_0 (Null hypothesis): There is no statistically significant relationship between peer collaboration and students' learning activities in secondary schools in Kole District.

H_1 (Alternative hypothesis): There is a statistically significant relationship between peer collaboration and students' learning activities in secondary schools in Kole District.

1.6 Scope of the Study

1.6.1 Geographical Scope

The study was geographically confined to Kole District, located in the Lango sub-region of Northern Uganda. Kole District lies approximately 35 kilometers west of Lira City, and it is bordered by Kwania and Apac Districts to the south, Oyam District to the north, and Lira District/ City to the east. The district covers an area of about 1,903 square kilometers, predominantly rural, with peasant farming as the main economic activity. Kole District comprises six sub-counties and five town councils, several parishes and many villages. The district is characterized by limited educational infrastructure, with most secondary schools being government-aided, a few private schools, and several Universal Secondary Education (USE) schools aimed at providing affordable secondary education. The majority of school's face challenges such as large class sizes, inadequate teaching and learning materials, and teacher shortages, which directly affect students' engagement in learning activities.

1.6.2 Content Scope

The study focused on examining the role of peer collaboration in enhancing learning activities among secondary school students. Specifically, it investigated how structured interactions among peers' influence students' engagement, understanding, and performance in learning tasks. The study emphasized key dimensions of both constructs: Peer Collaboration: The research explored aspects such as student-to-student interaction, group discussions, cooperative problem-solving, peer tutoring, and mutual scaffolding. It considered how these collaborative processes facilitate knowledge construction, critical thinking, and skill acquisition. Learning Activities: The study examined classroom-based tasks designed to promote active engagement, such as group projects, debates, experiments, role plays, research assignments, and problem-solving exercises. It focused on how these activities were implemented, the level of student participation, and their impact on academic performance. Relationship between Peer Collaboration and Learning Activities: The study investigated how peer collaboration enhanced the effectiveness of learning activities, fostered motivation, supported weaker students, and promoted social and cognitive development. It also considered potential challenges, including group dynamics, unequal participation, and teacher facilitation practices.

The content scope was limited to secondary school students in selected schools within Kole District. While the study acknowledged broader factors affecting learning (such as curriculum, teacher quality, and school infrastructure), it specifically concentrated on the interaction between peer collaboration and learning activities, ensuring a focused analysis of these two variables.

1.6.3 Time Scope

The study focused on learning activities and peer collaboration among secondary school students over the 2024–2025 academic period. This timeframe was chosen because it captured the most recent and relevant teaching practices, student engagement patterns, and academic outcomes in the selected schools in Kole District. Limiting the study to this period ensured that the data reflected current classroom practices, curriculum implementation, and peer interaction dynamics, particularly in light of recent education reforms in Uganda, such as the ongoing implementation of the Competence-Based Curriculum (CBC) and initiatives promoting active and collaborative learning. The time scope also allowed for the collection of empirical data on both theoretical and practical aspects of peer collaboration within learning activities during a complete academic cycle, including term-based assessments, project work, group assignments, and teacher facilitated classroom interactions

1.7. Significance of the Study

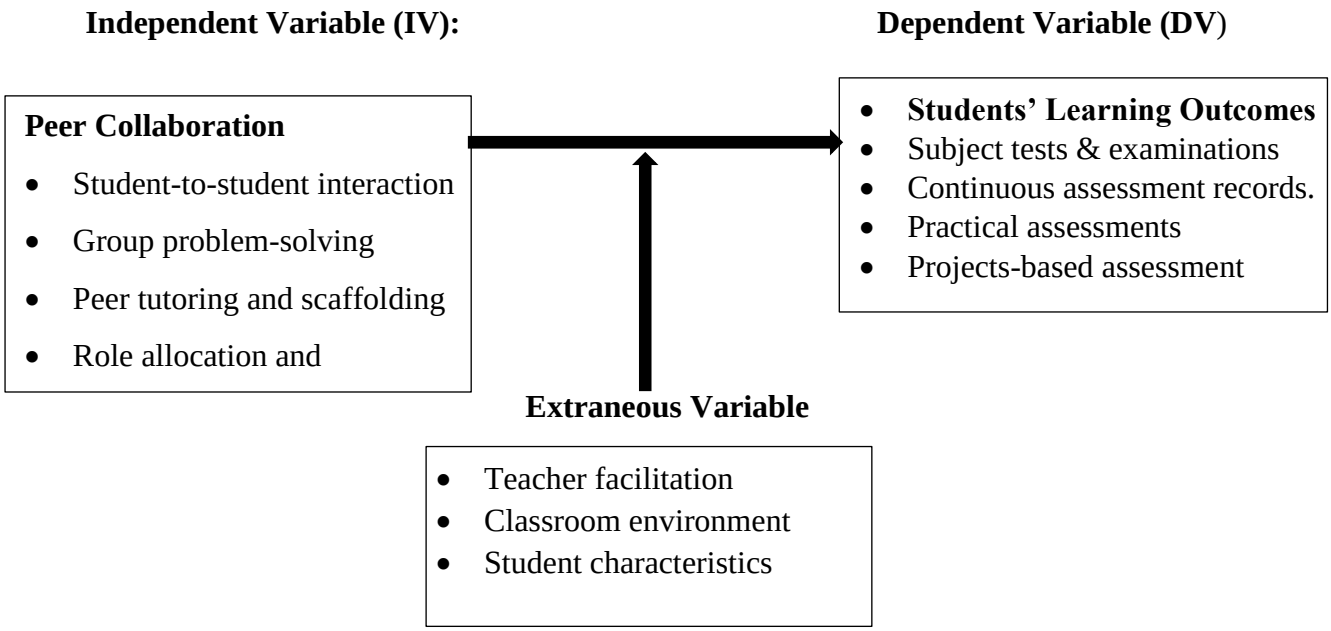
The study is significant to secondary school students as it highlights the role of peer collaboration in enhancing learning activities, engagement, and academic performance. By identifying effective peer collaboration strategies, students can develop better critical thinking, problem-solving, and communication skills, which are essential for both academic success and lifelong learning. Furthermore, understanding how collaborative learning improves participation can empower students to take more responsibility for their own learning and support their peers, fostering a positive and inclusive learning environment.

For teachers and school administrators, the study provides empirical evidence on the effectiveness of peer collaboration in improving the quality of learning activities. The findings can guide teachers in designing collaborative tasks, monitoring group interactions, and implementing active learning strategies that enhance students' understanding of content. School administrators can also use the insights to train teachers, allocate resources effectively, and adopt policies that encourage peer-supported learning, thereby improving overall school performance and reducing academic disparities.

At the policy and Ministry of Education level, the study contributes to the national discourse on quality and inclusive education. The findings can inform education policymakers and curriculum developers in Uganda, particularly in Northern Uganda and rural districts like Kole, on the importance of embedding peer collaboration into classroom practices. This aligns with ongoing initiatives under the Competence-Based Curriculum (CBC) and other government strategies aimed at promoting active, student-centered learning and equitable access to quality education for all learners.

Finally, for future researchers and academicians, the study serves as a foundation for further investigations into the relationship between peer collaboration and other educational variables, such as learning outcomes, motivation, and social skills. It provides context-specific insights from Kole District, a rural Northern Uganda setting, thereby contributing to the limited body of empirical research on collaborative learning in secondary schools within similar socio-economic and cultural contexts. This can help in replicating studies, comparing results across regions, and developing interventions that enhance the effectiveness of learning activities nationwide.

Figure 1.1: Conceptual Framework Showing the Assumed Relationship between Peer Collaboration and Students' Learning Outcomes



Source: Author, 2026

The conceptual framework assumes that peer collaboration, the independent variable, is associated with students' learning outcomes, the dependent variable, in secondary schools in Kole District, Uganda. Peer collaboration is conceptualised in terms of student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation. These dimensions are expected to facilitate knowledge sharing, conceptual understanding, joint problem-solving and active participation in learning, potentially contributing to improved learning outcomes. Students' learning outcomes will be assessed using subject tests and examinations, continuous assessment records, practical assessments and project-based assessments. However, the relationship between peer collaboration and learning outcomes may also be influenced by extraneous variables, namely teacher facilitation, classroom environment and student characteristics. Teacher facilitation, through guidance, task

organisation, monitoring and feedback, may shape the effectiveness of collaborative activities, while classroom conditions, including class size, availability of learning materials and classroom space, may enable or constrain meaningful collaboration. Similarly, students' prior knowledge, motivation, confidence, abilities and interpersonal skills may influence both their participation in collaborative learning and their academic performance. Accordingly, the framework proposes a potential positive relationship between peer collaboration and students' learning outcomes while recognising that contextual and individual factors may also contribute to variations in learning outcomes. Since the study examines a relationship, the framework does not, in itself, establish a causal effect of peer collaboration on students' learning outcomes.

Chapter Two

Literature Review

2.0 Introduction

This chapter presents literature reviews according to study specific objectives; to assess the level of peer collaboration in secondary schools, to examine the status of learning activities in secondary schools and to determine the relationship between peer collaboration and learning activities in secondary schools.

2.1 Theoretical Review

The relationship between peer collaboration and students' learning activities can be explained through theories that emphasise how learners acquire knowledge and develop skills through interaction, experience and social engagement. This study is informed by Constructivism Theory, but other related theories also provide useful perspectives for understanding the relationship between peer collaboration and learning activities. The theoretical review therefore considers Social Interdependence Theory, Vygotsky's Social Constructivist Theory and Constructivism Theory, with attention to their relevance and limitations in explaining the variables under investigation.

2.1.1 Social Interdependence Theory

Social Interdependence Theory was initially developed from the work of Kurt Lewin and later advanced by Morton Deutsch and David W. Johnson and Roger T. Johnson (Lewin, 1948; Deutsch, 1949; Johnson & Johnson, 1989). The theory proposes that the way goals are structured determines how individuals interact and the outcomes they achieve. When learners perceive that their success is connected to the success of their peers, positive interdependence is created, encouraging cooperation, mutual assistance and shared responsibility (Johnson & Johnson, 2009). In classroom settings, this perspective suggests that learners are more likely to exchange ideas, assist one another and participate in shared learning tasks when they recognise that their individual progress is connected to group achievement.

The theory identifies positive interdependence, individual accountability, promotive interaction, social skills and group processing as important conditions for effective cooperation. Positive interdependence links individual and group success, while individual accountability ensures that each learner remains responsible for his or her contribution (Johnson & Johnson, 2005; Johnson, Johnson, & Holubec, 2013). Promotive interaction involves learners encouraging one another, explaining concepts, exchanging ideas and providing assistance (Gillies, 2007). Group processing allows learners to assess their collaborative performance and identify ways of improving future group activities (Slavin, 2014). These concepts are relevant

to peer collaboration because student-to-student interaction, group problem-solving, peer support and role allocation require learners to work towards shared goals while maintaining individual responsibility.

However, Social Interdependence Theory focuses primarily on the conditions that make cooperation effective and the relationships among group members. It provides less direct explanation of how learners construct and reorganise knowledge through their experiences during learning activities. Thus, while the theory helps explain why peer collaboration may encourage participation and engagement, it does not fully account for the cognitive processes through which learners develop understanding from collaborative experiences. This limitation makes it necessary to consider theories that place knowledge construction and learning processes at the centre of explanation.

2.1.2 Social Constructivist Theory

Social Constructivist Theory, associated particularly with Vygotsky, views learning as a process through which learners construct knowledge through social interaction and engagement with more knowledgeable others. Vygotsky (1978) argued that learning occurs through interaction with teachers, peers and other members of the social environment before knowledge becomes internalised by the individual learner. The theory gives particular attention to the Zone of Proximal Development (ZPD), which refers to the difference between what a learner can accomplish independently and what the learner can accomplish with appropriate assistance. Through guidance, explanation and interaction, learners can perform tasks beyond their current level of independent competence.

This perspective is relevant to peer collaboration because learners can provide one another with explanations, demonstrations, questions and feedback during learning activities. More knowledgeable peers may provide temporary support that enables other learners to understand concepts or complete tasks that they would find difficult individually. As learners gain competence, such assistance can be reduced, allowing them to perform similar tasks independently. Consequently, peer tutoring, scaffolding and group problem-solving can create opportunities for learners to construct knowledge through interaction.

Nevertheless, Social Constructivist Theory gives considerable attention to the social processes through which individual cognitive development occurs, particularly the role of language, mediation and the Zone of Proximal Development. While this provides a strong explanation of peer support and knowledge construction, it does not encompass all aspects of students' learning activities, such as persistence in completing tasks, application of acquired skills, reflection and completion of assigned activities. The theory is therefore useful for explaining the learning processes that may occur during peer collaboration, but another broader

perspective is required to account for learning as an active process of constructing meaning from experience.

2.1.3 Constructivism Theory

Constructivism Theory provides a broader explanation of learning by viewing learners as active participants in the construction of knowledge rather than passive recipients of information. Piaget (1972) argued that learners construct understanding by interacting with their environment and reorganising existing knowledge in response to new experiences. Similarly, Bruner (1966) emphasised active discovery and the importance of learners engaging with learning materials and problems in ways that enable them to develop their own understanding. From this perspective, learning activities become meaningful when students are actively involved in exploring, interpreting, applying and reflecting on knowledge.

Constructivism is particularly relevant to this study because peer collaboration provides a context in which learners can actively construct understanding through interaction with peers while engaging in learning tasks. When students discuss ideas, solve problems together, explain concepts and apply knowledge, they have opportunities to connect new information with their existing understanding. Learning activities such as problem-solving, practical tasks, discussion and reflection therefore provide experiences through which learners can develop and modify their understanding. The theory also supports the view that learning is strengthened when students participate actively in meaningful tasks rather than merely receiving information from the teacher.

Unlike Social Interdependence Theory, which mainly explains how relationships among learner's influence cooperation, and Social Constructivist Theory, which places greater emphasis on social interaction and cognitive development, Constructivism provides a broader basis for understanding how learners actively construct knowledge through learning experiences. It therefore offers a suitable theoretical foundation for examining how peer collaboration may be associated with students' learning activities. In this study, Constructivism Theory is adopted as the underpinning theory because it explains how students actively construct knowledge through engagement with learning tasks, interaction with others, application of knowledge and reflection on their learning experiences. The theory consequently provides the basis for examining the relationship between peer collaboration, as the independent variable, and students' learning activities, as the dependent variable, in secondary schools in Kole District.

2.2 Level of Peer Collaboration in Secondary Schools

The level of peer collaboration in secondary schools can be examined through the extent to which learners interact with one another, solve learning problems collectively, support one

another through peer tutoring and scaffolding, and assume clearly defined roles and responsibilities during learning activities. Although existing literature generally associates collaborative learning with improved learner participation and engagement, evidence suggests that the presence of group work does not necessarily imply effective peer collaboration. The quality, organisation and distribution of participation within collaborative activities are therefore important considerations when determining the level of peer collaboration.

2.2.1 Student-to-Student Interaction

Student-to-student interaction is an important dimension of peer collaboration because meaningful collaboration requires learners to communicate, exchange ideas, explain concepts, ask questions and respond to the contributions of others. Ramírez et al. (2023) argue that collaborative learning becomes more productive when learners participate actively in discussions and assume collective responsibility for completing academic tasks. Similarly, Liang and Xie (2023) and Zach and Shulruf (2023) indicate that productive classroom collaboration involves learners engaging in dialogue and sharing ideas rather than merely sitting together in groups. These findings suggest that the quality of interaction, rather than the physical organisation of learners into groups, is a more useful indicator of peer collaboration.

However, evidence indicates that student-to-student interaction is not always equally distributed. Liang and Xie (2023) found that academically stronger learners often dominate group discussions while less confident learners contribute minimally. Ramírez et al. (2023) similarly reported that differences in learner ability and inadequate collaboration skills can constrain balanced participation. Whereas these findings suggest that group activities can provide opportunities for interaction, they also demonstrate that interaction may remain superficial or concentrated among a few learners unless collaborative activities are deliberately structured. Thus, simply assigning students to groups may not be sufficient to achieve meaningful student-to-student interaction.

In contrast, Wambua (2022) found that assigning learners specific roles encouraged more equal participation and improved interaction among group members. Zach and Shulruf (2023) similarly observed that carefully organised cooperative activities tend to produce stronger learner engagement than collaboration that develops without clear guidance. Linking these arguments suggests that effective student-to-student interaction depends not only on learners' willingness to communicate but also on the structure within which interaction occurs. Therefore, examining the level of peer collaboration requires attention to whether learners consistently exchange ideas, ask and answer questions, explain concepts and respond to one another during learning activities.

2.2.2 Group Problem-Solving

Group problem-solving represents another important dimension of peer collaboration because it requires learners to work collectively to understand problems, generate possible solutions, evaluate ideas and reach conclusions. Through such activities, learners can encounter different approaches to a problem and reconsider their own understanding. Ramírez et al. (2023) reported that collaborative learning becomes more productive when learners actively participate in shared academic tasks, while Zach and Shulruf (2023) found that organised cooperative activities can strengthen learners' engagement in classroom work. These findings indicate that collaborative problem-solving can provide learners with opportunities to learn through the exchange and evaluation of different ideas.

Nevertheless, the existence of group problem-solving activities does not necessarily mean that all learners engage meaningfully in the process. Chim (2019) observed that group work in many secondary schools is frequently organised primarily for task completion rather than meaningful exchange of ideas. Similarly, Jony (2020) found that although cooperative learning improved academic achievement, many learner groups demonstrated only moderate interaction because peer support was inconsistent throughout classroom activities. Whereas these studies demonstrate the potential of group problem-solving, they also raise concerns about whether learners actually work collectively or simply divide tasks among themselves and combine the results.

This distinction is important because genuine collaborative problem-solving requires learners to reason together rather than independently complete separate portions of an assignment. Wambua (2022) found that teacher monitoring and allocation of responsibilities improved learners' involvement in group activities. Ramírez et al. (2023) likewise reported that teacher guidance encouraged learners to exchange ideas and support one another during collaborative tasks. Therefore, the level of peer collaboration can be better understood by examining whether students jointly discuss problems, propose and evaluate solutions, explain their reasoning and reach conclusions through collective effort rather than merely working alongside one another.

2.2.3 Peer Tutoring and Scaffolding

Peer tutoring and scaffolding provide learners with opportunities to support one another by explaining concepts, demonstrating procedures, asking questions, providing feedback and assisting peers who experience difficulties. Such practices can strengthen collaborative learning because learners become both recipients and providers of academic support. Ramírez et al. (2023) observed that collaborative learning is strengthened when learners support one another during academic tasks, while Liang and Xie (2023) emphasised the importance of active participation in creating opportunities for shared learning. These findings suggest that

peer support is an important feature of meaningful collaboration rather than an incidental outcome of group work.

However, the availability of peer support may vary considerably across groups. Liang and Xie (2023) found that differences in learner ability can result in academically stronger learners dominating discussions, while less confident learners contribute less. Ramírez et al. (2023) similarly identified inadequate collaboration skills as a factor that can limit balanced participation. This suggests that peer tutoring does not automatically emerge whenever students are placed in groups. Without appropriate organisation and guidance, support may flow mainly from a few academically stronger learners to others, thereby limiting reciprocal learning.

Teacher facilitation appears to play an important role in strengthening peer tutoring and scaffolding. Wambua (2022) found that learners became more actively involved when teachers monitored group discussions, clarified expectations and allocated responsibilities to individual members. Ramírez et al. (2023) likewise established that continuous teacher guidance encouraged learners to exchange ideas more confidently and support one another. However, whereas these studies demonstrate the importance of teacher support, they provide limited evidence on the extent to which peer tutoring and scaffolding are actually experienced by learners in secondary schools. Consequently, there is a need to establish whether students regularly explain concepts to one another, provide assistance, give feedback and support peers during learning activities.

2.2.4 Role Allocation and Participation

Role allocation and participation concern how responsibilities are distributed among learners and the extent to which individual group members contribute to collaborative activities. Wambua (2022) found that assigning learners specific roles encourages more equal participation and improves interaction among group members. This suggests that clearly defined responsibilities can create opportunities for learners to contribute meaningfully rather than allowing a few individuals to control group activities. Similarly, Johnson and Johnson's cooperative learning perspective emphasises the importance of individual responsibility within group learning, because collaboration becomes less effective when some learners contribute little while others undertake most of the work.

However, the literature indicates that unequal participation remains a persistent challenge. Liang and Xie (2023) reported that academically stronger learners may dominate discussions, while less confident learners contribute minimally. Ramírez et al. (2023) similarly noted that differences in learner ability and inadequate collaboration skills can constrain balanced participation. Jony (2020) also found that peer support was inconsistent within groups despite the reported benefits of cooperative learning. Whereas role allocation can promote

participation, therefore, its effectiveness depends on whether learners understand their responsibilities and whether teachers monitor the implementation of those roles.

Teacher facilitation further appears to influence the distribution of participation. Wambua (2022) established that learners became more actively involved when teachers monitored group discussions, clarified expectations and assigned responsibilities to individual group members. Zach and Shulruf (2023) similarly argue that effective facilitation transforms ordinary group work into collaborative learning characterised by shared understanding and collective responsibility. However, these studies primarily explain the conditions that facilitate participation rather than establishing the overall level of role allocation and participation among secondary school learners. This creates a need to examine whether learners in the study context are given clear responsibilities and whether those responsibilities translate into consistent participation in collaborative activities.

2.2.5 Synthesis of the Literature on the Level of Peer Collaboration

The reviewed literature demonstrates that the level of peer collaboration cannot be determined merely by the presence of group work in classrooms. Rather, it should be assessed through the quality of student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation. Whereas Sánchez-Ros and Sánchez-López (2019) suggest that secondary school learners possess communication and reasoning abilities that can support productive collaboration, Chim (2019) and Jony (2020) demonstrate that such potential does not necessarily translate into meaningful collaborative practice. This contrast indicates that learner maturity may create favourable conditions for collaboration, but the organisation and facilitation of learning activities remain critical.

Furthermore, Liang and Xie (2023) and Ramírez et al. (2023) show that unequal participation, differences in learner ability and inadequate collaboration skills can weaken collaborative processes. Wambua (2022), however, demonstrates that role allocation and teacher monitoring can encourage more balanced participation, while Zach and Shulruf (2023) emphasise the importance of carefully organised cooperative activities. Linking these arguments reveals that effective peer collaboration requires more than interaction; learners need opportunities to solve problems collectively, provide and receive peer support, and undertake meaningful roles within the group.

Despite these insights, an important gap remains in the existing literature. Much of the available research has examined the benefits of collaborative learning in relation to academic achievement, learner motivation or general engagement, rather than establishing the level of peer collaboration as a multidimensional construct across the specific dimensions of student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role

allocation and participation. Moreover, Zach and Shulruf (2023) point to the relatively limited attention given to secondary school contexts, while much of the reviewed evidence originates outside Uganda. Consequently, it remains unclear whether similar patterns of peer collaboration exist among learners in Ugandan secondary schools. The present study therefore seeks to establish the level of peer collaboration in secondary schools in Kole District by examining these four dimensions and generating context-specific evidence that can inform the interpretation of the relationship between peer collaboration and students' learning activities.

2.3 Status of Learning Activities in Secondary Schools

1. Students' learning outcomes

Students' learning outcomes refer to the knowledge, skills, attitudes, values and competencies that learners acquire and demonstrate through educational experiences. In competency-based education, learning outcomes extend beyond the memorisation of subject content to include the ability to apply knowledge, solve problems, communicate effectively and respond appropriately to real-life situations. Uganda's Lower Secondary Curriculum Framework emphasises the development of generic skills, values and the application of learning to practical contexts (National Curriculum Development Centre [NCDC], 2019). This orientation reflects a broader understanding of educational achievement in which learners are expected not only to know but also to demonstrate what they can do with what they know.

Learning outcomes can be assessed through multiple approaches, including subject tests and examinations, continuous assessment records, practical assessments and project-based assessments. These approaches provide complementary evidence of learners' achievement. Written examinations can assess subject knowledge and conceptual understanding, continuous assessment can capture progress over time, practical assessments can demonstrate performance, and project-based assessments can reveal the integration of different competencies in extended tasks. Consequently, using multiple forms of assessment can provide a more comprehensive understanding of learning than relying on a single measure (Guo et al., 2020; Sokhanvar et al., 2021).

However, the validity of these measures depends on their alignment with intended learning outcomes, the appropriateness of assessment tasks and the consistency of scoring procedures. In particular, high academic achievement does not necessarily demonstrate that learners can transfer their knowledge and skills to unfamiliar situations. This distinction is important in competency-based education, where the application of learning is a central concern (NCDC, 2019). The present study therefore considers subject tests and examinations, continuous assessment records, practical assessments and project-based assessments as complementary indicators of students' learning outcomes.

2. Subject tests and examinations

Subject tests and examinations are formal assessment instruments used to determine learners' attainment of subject-specific knowledge, conceptual understanding and analytical skills. They provide structured evidence of achievement against curriculum expectations and can support comparisons across learners, subjects and assessment periods. However, their capacity to measure competencies depends on the extent to which assessment questions require understanding, interpretation and application rather than the reproduction of memorised information.

The Lower Secondary Curriculum Framework emphasises inquiry, understanding, generic skills and learning for life, rather than learning solely to pass examinations (NCDC, 2019). This orientation implies that subject examinations should include questions requiring learners to interpret information, explain relationships, evaluate evidence and apply disciplinary knowledge to practical situations. Such assessments can provide evidence of critical thinking and problem-solving when the tasks are appropriately designed.

Nevertheless, conventional examinations have limitations as comprehensive measures of learning outcomes. Timed written assessments may not adequately capture practical performance, communication, collaboration, creativity or the ability to apply knowledge in unfamiliar contexts. Furthermore, a high examination score does not necessarily establish that a learner can use the knowledge acquired at school to address challenges in the community. Consequently, examination results should be interpreted alongside other evidence of competence (Sokhanvar et al., 2021; Vlachopoulos & Makri, 2024).

For the present study, subject tests and examinations can therefore be examined as indicators of subject achievement, conceptual understanding and analytical performance. Where the focus extends to graduates' application of competencies beyond school, examination results should be complemented by evidence from their everyday experiences, further learning and livelihood activities.

3. Continuous assessment records

Continuous assessment involves the systematic collection and interpretation of evidence about learners' progress throughout the teaching and learning process. It may include classroom tests, quizzes, assignments, portfolios, teacher observations and feedback records. Unlike end-of-term examinations, continuous assessment enables teachers to identify learning difficulties, monitor progress and adjust instructional strategies in response to learners' needs.

Black and Wiliam (1998), in their influential review of classroom assessment research, demonstrated the potential of formative assessment to improve learning, particularly when assessment information is used to modify teaching and provide learners with constructive feedback. Their work established an important distinction between simply recording achievement and using assessment evidence to improve learning. More recent synthesis of research on formative assessment in school education also identifies its potential to support learning, although the effects depend on the nature and implementation of the assessment practices (Schildkamp et al., 2020).

Within Uganda's Lower Secondary Curriculum, continuous assessment is consistent with an emphasis on competency development, learner participation and the progressive attainment of intended learning outcomes (NCDC, 2019). Properly maintained records can provide evidence of learners' progress in subject understanding, communication, collaboration, independent learning and problem-solving, provided these competencies are explicitly assessed.

However, continuous assessment records have limitations. Teachers may differ in the difficulty of tasks, interpretation of marking criteria and consistency of record keeping. Recorded marks may also reflect task completion, attendance or participation rather than mastery of a particular competency. In addition, the presence of assessment records does not necessarily demonstrate that formative feedback has been provided or acted upon.

Accordingly, the present study can examine continuous assessment records for evidence of achievement over time, feedback, progression and documented competency development. The analysis should distinguish between assessment scores and evidence that teachers have used assessment information to improve learning. Where records are incomplete, findings should be interpreted cautiously and triangulated with other available sources.

4. Practical assessments

Practical assessment evaluates learners' ability to demonstrate knowledge and skills through performance, experimentation, production, investigation or the completion of applied tasks. Examples include conducting scientific experiments, interpreting geographical maps, collecting field data, constructing models and using digital tools to solve problems. Practical assessments are particularly relevant to competency-based education because they examine what learners can demonstrate rather than relying exclusively on what they can describe in writing.

Authentic assessment provides a useful conceptual basis for understanding practical assessment. It involves tasks that require learners to apply knowledge, skills and judgement in

contexts resembling those in which the competencies may be used in practice. A systematic review by Sokhanvar et al. (2021) identified potential contributions of authentic assessment to students' learning experiences and employability skills. Similarly, Vlachopoulos and Makri (2024) found that authentic assessment can support the development of critical thinking, problem-solving and collaboration, while highlighting implementation challenges such as the need for appropriate teacher preparation.

These findings are relevant to Uganda's Lower Secondary Curriculum because the framework emphasises the development and application of competencies in real-life contexts (NCDC, 2019). Practical assessment can therefore provide evidence of learners' ability to interpret information, apply procedures, use resources and solve subject-related problems. For example, a geographical fieldwork task may demonstrate whether learners can collect environmental data, interpret spatial patterns and explain relationships between human activities and the physical environment.

Despite these advantages, practical assessment may be affected by limited equipment, inadequate materials, large classes and insufficient instructional time. Performance may also be influenced by unequal access to resources or assistance from others. Furthermore, subjective judgements may reduce reliability when assessors use unclear criteria. These challenges make explicit performance rubrics, standardised procedures and multiple sources of evidence important for interpreting practical assessment results.

In the present study, practical assessments can be examined in relation to the application of knowledge, performance of relevant skills, interpretation of evidence and problem-solving. Nevertheless, successful performance on a school-based practical task should not automatically be interpreted as proof that a graduate can apply the same competency independently in community or livelihood settings. That claim requires evidence from the contexts in which the competencies are subsequently used.

5. Project-based assessment

Project-based assessment involves evaluating learners through extended tasks that require them to investigate questions, address problems, develop products, produce reports or propose solutions to meaningful challenges. Such projects may require learners to integrate subject knowledge with research, communication, collaboration, creativity and problem-solving. They can therefore provide evidence of several competencies within a single assessment activity.

Guo et al. (2020), in a review of project-based learning in higher education, found that studies assessed a range of cognitive, affective and behavioural outcomes using tests, questionnaires,

interviews, observations, reflective journals and performance rubrics. The authors also identified an underuse of project artefacts in evaluating learning, despite the importance of products and outputs in project-based learning. Their review highlights the importance of examining both the learning process and the quality of the resulting work rather than relying exclusively on learners' self-reported experiences.

Research on authentic assessment further suggests that meaningful performance tasks can support the development of critical thinking, problem-solving and collaborative skills (Vlachopoulos & Makri, 2024). These findings are relevant to competency-based education because project tasks can require learners to apply knowledge to practical problems and communicate their findings to others. For instance, a school project on waste management could involve investigating local waste-disposal practices, collecting data, working collaboratively and proposing feasible community interventions.

However, project-based assessment presents several challenges. Projects may require considerable time, materials and teacher guidance. Group products may conceal differences in individual contribution, while external assistance may influence the quality of the final output. A completed project also does not necessarily demonstrate that every learner has independently acquired all the competencies involved. Individual reflections, oral presentations, observation records and clearly defined assessment rubrics can help establish the contribution and learning of individual participants.

For the present study, project-based assessment can be examined through the quality of learners' products, investigative processes, application of subject knowledge, collaboration, problem-solving and communication. Where the research investigates graduates' application of school-acquired competencies beyond school, project records may indicate the learning opportunities they previously experienced, but cannot independently establish subsequent application in everyday life, further learning or livelihood activities.

6. Synthesis of the literature and implications for the study

The reviewed literature indicates that students' learning outcomes are multidimensional and cannot be adequately represented by a single assessment method. Subject tests and examinations provide evidence of academic achievement and conceptual understanding; continuous assessment records capture progress and feedback; practical assessments demonstrate the application of knowledge and skills; and project-based assessments reveal the integration of competencies in extended tasks (Black & Wiliam, 1998; Guo et al., 2020; NCDC, 2019).

Although these approaches are complementary, each has limitations. Examination results may not capture practical competence, continuous assessment may be affected by inconsistent marking, practical assessments may be constrained by inadequate resources, and project-based assessments may conceal differences in individual contributions. The use of multiple assessment methods, supported by clear criteria and appropriate documentation, can help address these limitations (Schildkamp et al., 2020; Sokhanvar et al., 2021).

A significant distinction emerging from the literature is the difference between demonstrating learning in school and transferring competencies to contexts beyond school. Although assessment records can establish evidence of prior achievement, they cannot independently demonstrate whether graduates apply acquired competencies in everyday life, further learning or livelihood activities. This distinction is central to the present study, which examines the relationship between competencies developed through Uganda's Lower Secondary Curriculum and their subsequent application in community settings.

Furthermore, much of the empirical literature on authentic and project-based assessment focuses on higher education or educational contexts outside Uganda. For example, Guo et al. (2020) examined project-based learning in higher education, while Sokhanvar et al. (2021) and Vlachopoulos and Makri (2024) reviewed authentic assessment in higher education. Their findings offer useful conceptual and methodological insights, but they do not directly establish how graduates of Uganda's Lower Secondary Curriculum apply acquired competencies in Gulu City. This contextual and empirical gap provides a rationale for investigating graduates' experiences using evidence from school records, interviews and other appropriate data sources.

2.5 Summary and Research Gap

Although previous studies consistently indicate that peer collaboration enhances learning activities in secondary schools, important gaps remain in the existing literature. Studies by Okoye (2023), Abdulrahman and Bello (2022), Ahmed and Musa (2021), Köhler and Richter (2023), Rahman (2020) demonstrated that collaborative learning improves learner engagement, motivation, problem-solving, and academic achievement. However, these studies were largely conducted outside Uganda, particularly in Nigeria, Germany, and Bangladesh, making it difficult to generalize their findings to the Ugandan secondary school context. Within Uganda, studies by Ahabwe (2024), Kidega et al. (2024), Oketch (2025), and Kaahwa and Muwanguzi (2023) focused primarily on curriculum implementation, instructional practices, resource availability, and learner centred teaching rather than examining peer collaboration as a determinant of learning activities. Furthermore, existing studies have tended to examine either the level of peer collaboration or the status of learning activities independently, with limited attention given to the relationship between peer collaboration and learning activities as

multidimensional constructs. Most research has also concentrated on outcomes such as academic achievement and motivation instead of investigating specific dimensions of peer collaboration, including learner interaction, role allocation, peer support, shared responsibility, and collaborative problem-solving, alongside dimensions of learning activities such as learner participation, classroom interaction, inquiry, and problem solving. In addition, few empirical studies have been conducted in Kole District, where contextual factors may differ from those in other regions. This contextual, conceptual, and geographical gap therefore justified the present study, which examined the role of peer collaboration on students' learning activities in secondary schools in Kole District, Uganda.

Chapter Three

Methodology

3.0 Introduction

This chapter presents the research orientation, research design, study population, sample size determination, sample selection, data collection methods, data collection tools, quality control, administration procedure, ethical considerations, and data analysis.

3.1. Research Approach

The study used mixed methods approach. The mixed methods approach is a combination of both qualitative and quantitative research approaches premised on a view that a situation could not be clearly understood from one dimension (Creswell, 2014). The study justifiably adopted a mixed methods research approach because understanding the influence of peer collaboration on students learning activities requires both numerical evidences and detailed contextual explanations. The quantitative approach will enable the researcher to collect data which are measurable on the extent to which peer collaboration affects students' participation and engagement in learning activities (Creswell & Plano Clark, 2017), while the qualitative approach provides deeper insights into students' and teachers' experiences, perception and explanations regarding collaborative learning practices in secondary schools (Creswell & Plano Clark, 2017). Intergrating both approaches enhances triangulation, improves the validity of findings, and provides a more comprehensive understanding of how peer collaboration shapes students learning activities. (Creswell & Plano Clark, 2017; Schoonenboom & Johnson, 2017). This approach according to Saunders et al, (2020) is based on the assumption that combining both quantitative and qualitative approaches best provides an understanding of a research problem. Quantitative approach is the type of research approach that describes phenomena numerically and underscores objectivity in data collection and analysis (Cohen et al, 2019). Its data are expressed in numbers and analyzed using statistical methods with emphasis on facts, causations and relationships while qualitative approach is a research approach that focuses on gaining a rich and complex understanding of people's experience, beliefs and behavior (Pandey & Pandey, 2021). Data collection involves seeking for people's explanation of what they observe, do, believe or feel (Merriam and Tisdell, 2016). The purpose of using mixed method in this study therefore was to facilitate triangulation and enable comprehensive analysis of the study research objectives (Saunders et al, 2020)

3.2. Research Design

The study adopted a convergent mixed-methods research design, which was appropriate because it enabled the researcher to collect and analyse quantitative and qualitative data within

the same phase of the study and integrate the findings to obtain a comprehensive understanding of the research problem. Creswell and Creswell (2023) explain that mixed-methods research allows researchers to combine quantitative and qualitative approaches where both numerical evidence and contextual explanations are required, while Creswell and Plano Clark (2025) indicate that a convergent design involves collecting quantitative and qualitative data during the same general period, analysing the two strands separately, and integrating the findings during interpretation. In this study, questionnaires were administered to the respondents selected for quantitative data collection, while interviews were conducted with the participants selected for qualitative data collection. The quantitative data provided measurable evidence on peer collaboration and students' learning activities, whereas the qualitative data provided contextual explanations of participants' experiences and perceptions regarding peer collaboration and learning activities. The two sets of findings were subsequently compared and integrated to identify areas of convergence, complementarity and divergence. The study also employed a cross-sectional approach because data were collected from the selected participants at a single point in time, enabling the researcher to establish the level of peer collaboration and the status of students' learning activities in secondary schools in Kole District as they existed during the period of the study.

3.3. Study Population

The study population for this study consisted of the head teachers, selected teachers and students from selected government-aided secondary schools in Kole District.

3.4 Sample size Determination

The sample size was determined using Krejcie and Morgan, (1970) table of sample size determination. Based on an estimated target population, sample size of 376 participants was considered sufficient for both representativeness and manageability.

Table 3.1: Sampling Frame

Category	**Population**	**Sample Size**	**Sampling Procedure**
Schools	3	3	Purposive
Learners	1300	297	Simple random
Teachers	90	73	Simple random
Head teacher	3	3	Purposive
Total	**1396**	**376**	

Source: Primary Data from the headteachers' offices, and Morgan and Krejcie (1970).

The sample size allowed for capturing perspective while remaining feasible given time and resource constraints: This sample size is adequate for achieving data saturation where no themes are expected to emerge from additional data collection (Guest, Namey & Chen, 2020).

3.5 Sampling Techniques

The study employed both probability and non-probability sampling techniques to select participants for the mixed-methods study. For the probability sampling component, simple random sampling using the lottery method was employed to select teachers and students. This technique gives each eligible member of the population an equal and independent chance of being selected, thereby reducing selection bias and improving the representativeness of the sample (Creswell & Creswell, 2023). In the lottery procedure, eligible participants were assigned identification codes, which were written on separate pieces of paper and placed in a container. The papers were thoroughly mixed, after which the researcher selected one code at a time without replacement until the required sample size was obtained. The technique was appropriate for selecting teachers and students because it provided each eligible participant with an equal opportunity of inclusion in the study. Consequently, the approach enhanced the likelihood that the selected sample would adequately represent the characteristics of the study population. For the qualitative component, purposive sampling was used to select head teachers because they occupied administrative positions and were considered capable of providing information relevant to the implementation of teaching and learning activities and peer collaboration in their respective schools. Purposive sampling enables researchers to deliberately select information-rich participants who possess characteristics or experiences relevant to the research problem (Creswell & Creswell, 2023; Campbell et al., 2020). Its use in this study therefore enabled the researcher to obtain contextual information from participants with direct knowledge of the organisation and implementation of learning activities in secondary schools.

3.6. Data Collection Methods

Data were collected from primary and secondary sources. Primary data were collected using questionnaires and key informant interviews, while secondary data were collected through document analysis.

3.6.1 Questionnaire Survey/Questionnaires

Quantitative data were collected using a questionnaire survey. A closed-ended, self-administered questionnaire was administered to 297 learners and 73 teachers, giving a total of 370 questionnaires. All the 297 learners and 73 teachers returned the completed questionnaires, representing a 100% response rate. The questionnaire collected quantitative data on peer

collaboration and students' learning activities in secondary schools. The items were measured using a five-point Likert scale ranging from Strongly Disagree (1), Disagree (2), Not Sure (3), Agree (4), to Strongly Agree (5). The use of a self-administered questionnaire enabled the researcher to obtain standardised responses from teachers and learners on the variables under investigation.

3.6.2 Interview/Interview Guide

Qualitative data were collected through semi-structured interviews with the head teachers of the selected secondary schools. The head teachers were interviewed because they were directly involved in supervising school activities and had knowledge of peer collaboration and students' learning activities. An interview guide containing open-ended and probing questions was used to obtain information on how learners interacted, solved learning problems, supported one another and participated in learning activities. All head teachers from the selected schools were interviewed, covering the entire targeted category of respondents.

3.7 Quality Control

The instruments were piloted to determine their validity and reliability. Data collection instruments were pre-tested among randomly selected respondents before they were used in the field. The questions in the interviews were discussed at the peer review level.

Quality control involved adjusting and modifying each item after returning from the prefield study in order to improve the validity and reliability coefficients.

Validity

3.7.1 Validity of Quantitative Instruments

Validity refers to the extent to which a research instrument adequately measures the construct it is intended to measure. For this study, evidence of content validity was established for the self-administered questionnaires and interview guide because the instruments were developed to measure the specific dimensions of peer collaboration and students' learning activities identified in the conceptual framework. Content validity is strengthened when experts examine whether the items adequately represent the relevant content domain and whether the items are appropriate for the intended research purpose (Zamanzadeh et al., 2015; Polit & Beck, 2021).

The researcher therefore subjected the researcher-developed questionnaire and interview guide to expert review before the final administration. The experts examined the relevance, clarity, adequacy and appropriateness of the items in relation to the study objectives and constructs. Their comments were used to revise, remove or clarify items that were considered ambiguous, repetitive or insufficiently representative of the variables. In addition, the instruments were pre-tested in one secondary school in Kole District that was not included in the final study sample.

The pre-test involved students and enabled the researcher to identify unclear wording, ambiguous items and difficulties in responding to the questionnaire, after which the necessary modifications were made before the instruments were finally administered. The Content Validity Index (CVI) was subsequently computed from the expert ratings. The results showed that Expert 1 rated the instrument at 0.93, Expert 2 at 0.97, while the overall average CVI was 0.92. The obtained overall CVI of 0.92 indicated strong evidence that the items adequately represented the content of the constructs under investigation. This assessment strengthened the appropriateness of the questionnaire and interview guide before their use in the main study.

Table 3.2 Validity test

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EXPERT	COMPUTATION	CVI
Expert 1	$\frac{39}{45}$	0.87
Expert 2	$\frac{42}{45}$	0.93
Expert 3	$\frac{44}{45}$	0.97
Average		**0.92**

3.7.2 Trustworthiness of Qualitative Data

The trustworthiness of qualitative data was ensured through credibility, transferability, dependability and confirmability, which are widely used criteria for establishing rigour in qualitative research (Nassaji, 2020; Stenfors et al., 2020). Credibility was strengthened by using a semi-structured interview guide developed from the study objectives, asking probing questions to obtain detailed responses, and interviewing all head teachers of the selected secondary schools. The researcher also compared interview findings with quantitative questionnaire results to establish consistency across data sources. Transferability was enhanced by providing clear descriptions of the study setting, participants, sampling procedures and data collection processes so that readers could assess the applicability of the findings to similar settings. Dependability was addressed through systematic documentation of participant selection, interview procedures, transcription, coding and thematic analysis, allowing the research process to be followed and reviewed. Confirmability was maintained by grounding themes and interpretations in the actual responses of the head teachers and maintaining a clear link between the interview data, codes and emerging themes, thereby reducing the influence of the researcher's personal views (Nassaji, 2020; Stenfors et al., 2020).

Reliability

Reliability refers to the extent to which a data collection instrument consistently measures a given concept (Neuman, 2014). An instrument with high reliability will produce the same results whenever it measures a specific concept (Cohen et al., 2018). Usually, reliability is expressed numerically using a reliability coefficient. A high reliability coefficient means that the results would be consistently the same if the study was conducted again. This was attributed to respondents assigning the same meaning to the question items in the data collection tool, which made them answer in the same way within a given setting. Therefore, a Cronbach's alpha estimate of 0.70 and above was considered acceptable for educational research (Amin, 2006).

Table 3.3: Reliability test

Objective/Variable	Cronbach's Alpha	No. of Items	Comment
Peer Collaboration	0.871	20	Acceptable reliability
Learning Activities	0.864	20	Acceptable reliability

Reliability of the qualitative

Reliability of the qualitative data was ensured through the use of a semi-structured interview guide that contained questions aligned with the study objectives and variables. The same interview guide was used with all head teachers to ensure consistency in the information collected across participants. The researcher also used probing questions to clarify responses and obtain detailed explanations while maintaining the focus of each interview. In addition, the interview procedures were consistently followed, including recording responses, transcription and systematic coding of the data. The researcher maintained clear records of the data collection and analysis processes to ensure that the findings could be traced back to participants' original responses. These procedures enhanced the consistency, dependability and credibility of the qualitative data.

3.8. Ethical Consideration

The study complied with established ethical requirements for research involving human participants. The research proposal was submitted to GUREC for ethical review and approval before data collection commenced. Permission to conduct the study was also obtained from the relevant education authorities and school administrators. Participation was voluntary, and participants were informed about the purpose of the study, the procedures involved, their expected involvement, and their right to decline participation or withdraw at any stage without

penalty. For learners below the age of consent, appropriate parental or guardian consent and learner assent were obtained before participation. For adult participants, informed consent was obtained directly after providing adequate information about the study.

Confidentiality was ensured by avoiding the use of participants' names on questionnaires, interview records and research reports. Instead, identification codes were used to distinguish responses during data processing and analysis. Completed questionnaires, interview records and electronic data were securely stored and were accessible only to the researcher and authorised research personnel. During interviews, participants were informed that their individual responses would not be disclosed to school administrators, teachers, other learners or unauthorised persons. In reporting the findings, responses were presented in a manner that prevented individual participants from being identified, particularly where quotations from head teachers were used.

The study also sought to minimise any potential harm or discomfort to participants by conducting data collection at appropriate times and in settings that protected participants' privacy. Participants were informed that they were free to omit any question they were uncomfortable answering and could withdraw from the study without negative consequences. The researcher maintained professional conduct throughout data collection and used the information obtained strictly for academic research purposes. These measures ensured that participation was based on informed choice, protected participants' privacy and rights, and maintained the ethical integrity of the study.

3.9. Administration Procedure

After ascertaining the suitability of the instrument, the researcher developed a programme of activities and obtained a letter of introduction from Gulu University Faculty of Education and Humanities introducing him to the study sites in Kole District. The researcher then made pre-visits to the selected secondary schools to secure permission and explained the background, purpose, and significance of the study.

A one-day orientation training was organized and conducted for two selected research assistants at an appropriate place and time to orient them on the questionnaire administration procedure as well as the strategies for establishing rapport with the respondents during the data collection exercise. The orientation meeting aimed at ensuring minimum errors in the data collected, maximizing response rates, and minimizing time wastage. After the orientation meeting, the research assistants embarked on the administration of the questionnaires and conducted the interviews, after which the completed questionnaires and interview responses were checked for completeness while still in the field.

3.10. Data Analysis

The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS version 25.0), and quantitative output was generated. Descriptive statistics output is presented in frequencies and percentages to illustrate central tendencies and dispersions (Kaur et al., 2018). Inferential statistics were used to analyze the research questions, and inferential statistics output was obtained at the univariate, bivariate, and multivariate levels. At the univariate level, item analysis was conducted using descriptive statistics, while at the bivariate level, ANOVA was used to analyze differences between two variables. At the multivariate level, for Research Questions 1 and 2, Pearson's product-moment correlation coefficient and multiple regression analysis were used to produce inferential statistics output for Research Question 3.

For qualitative data, the researcher used thematic analysis, which is used to identify, analyze, and report the patterns of an interview and to identify the main themes that emerge from the responses given by the respondents (Bryman, 2016). Upon completion, the researcher proceeded with the interpretation of the data.

3.11 Limitations and Delimitation to the Study

The issue of access to schools and participants was a limitation in this study because some schools and respondents, particularly teachers and head teachers, had busy academic and administrative schedules that affected their availability during data collection. To address this limitation, the researcher obtained the required permission, made prior appointments with the schools, and arranged data collection at times that were convenient for the respondents. Respondent bias was another possible limitation because some students and teachers might have provided responses that they considered socially acceptable. The researcher reduced this possibility by explaining the purpose of the study, assuring respondents that their information would remain confidential, and encouraging them to provide honest responses.

The limited time and financial resources available to the researcher also constrained the coverage of the study. However, these constraints were managed by following the approved sampling procedures and focusing on the selected government-aided secondary schools in Kole District. The cross-sectional design meant that data were collected during a defined study period; therefore, the findings were used to describe the relationship between peer collaboration and students' learning activities rather than to claim long-term effects. The use of questionnaires and interviews provided quantitative and qualitative evidence from students, teachers and head teachers, which strengthened the assessment of the study variables. The study therefore remained within the scope of its objectives and did not make claims beyond the data collected.

To delimit the study, the researcher focused on selected government-aided secondary schools in Kole District and excluded private secondary schools and schools outside the district. The study involved students, teachers and head teachers because these participants had direct experience with peer collaboration and students' learning activities within the selected schools. Peer collaboration was examined through student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation, while students' learning activities were examined through active participation, task engagement, application of knowledge, reflection and task completion. The study adopted a cross-sectional mixed-methods design to obtain both quantitative and qualitative evidence relevant to the study objectives. These delimitations provided a clear and manageable scope for examining the relationship between peer collaboration and students' learning activities in the selected secondary schools.

Chapter Four

Data Presentation, Analysis and Interpretation of Results

4.0 Introduction

This chapter presents the analysis, presentation and interpretations of the study findings sectioned by the specific objectives of the study which were to assess the level of peer collaboration, to examine the status of learning activities and to determine the relationship between peer collaboration and learning activities in secondary schools in Kole District. The chapter also presented a descriptive overview of the demographic characteristics of the respondents in the study.

4.1 Socio-Demographic Characteristics

This section presented the demographic characteristics of teachers. The demographic profile of the respondents provides essential context for understanding the data collected in this study

Table 4.1: Demographic Characteristics of Learner Respondents (N = 297)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	156	52.5
	Female	141	47.5
	Total	**297**	**100.0**
Age group	Below 14 years	38	12.8
	14–16 years	127	42.8
	17–19 years	108	36.4
	Above 19 years	24	8.1
	Total	**297**	**100.0**
Current class level	Senior One	49	16.5
	Senior Two	51	17.2
	Senior Three	52	17.5
	Senior Four	48	16.2
	Senior Five	49	16.5
	Senior Six	48	16.2
	Total	**297**	**100.0**
Length of study in the school	Less than 1 year	43	14.5
	1–2 years	85	28.6
	3–4 years	97	32.7
	More than 4 years	72	24.2
	Total	**297**	**100.0**
Participation in group learning activities	Always	89	30.0
	Often	106	35.7
	Sometimes	67	22.6
	Rarely	25	8.4
	Never	10	3.4
	Total	**297**	**100.0**

Source: Field Data (2026).

From the Table 4.1 above, the study found that the learner respondents were fairly balanced by gender. Male learners constituted 52.5% of the respondents, while female learners accounted for 47.5%. This distribution indicates that the views collected reflected perspectives from both male and female learners with only a small difference in representation. The study found that the slight variation in gender composition reduced the likelihood of responses being dominated by one gender. The percentages also suggest that participation in the study was inclusive across both categories of learners. Such a distribution provided an opportunity to capture experiences from learners with different backgrounds. The findings therefore indicate that the responses represented both male and female learners in nearly equal proportions.

The study revealed that the majority of respondents were between 14–16 years, representing 42.8% of the sample. Learners aged 17–19 years accounted for 36.4%, while those below 14 years represented 12.8%. Those aged above 19 years formed the smallest proportion at 8.1%. The data indicated that most respondents were within the middle adolescent age group, which corresponds to the typical age range of secondary school learners. The findings suggest that responses were obtained mainly from learners who were actively engaged in regular classroom learning. The distribution also demonstrates that learners from different age categories participated in the study. This provided responses from students with varying levels of maturity and learning experiences. Data showed that respondents were distributed across all six class levels with only small differences in percentages. Senior Three had the highest representation at 17.5%, followed by Senior Two at 17.2%. Senior One and Senior Five each accounted for 16.5%, while Senior Four and Senior Six each represented 16.2% of the respondents. The findings indicate that no single class level dominated the study. The study found that learners from lower and upper secondary classes were adequately represented in the sample. Such a distribution enabled the collection of views from students at different stages of secondary education. The percentages therefore reflect broad participation across the various class levels.

Data suggested that many learners had spent 3–4 years in the school, accounting for 32.7%, followed by those who had studied for 1–2 years at 28.6% and those with more than 4 years at 24.2%. Learners who had spent less than one year in the school represented 14.5% of the respondents. The study further established that participation in group learning activities was common among the learners. Those who reported participating often formed 35.7%, while 30.0% indicated that they always participated. Another 22.6% stated that they sometimes participated, whereas 8.4% participated rarely and only 3.4% reported never participating. The findings indicate that most learners were regularly involved in group learning activities within the school. This pattern suggests that collaborative learning activities were familiar to the majority of the respondents, making them suitable participants for the study.

Table 4.2: Demographic Characteristics of Teacher Respondents (N = 73)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	45	61.6
	Female	28	38.4
	Total	**73**	**100.0**
Age group	Below 25 years	8	11.0
	25–34 years	24	32.9
	35–44 years	27	37.0
	45 years and above	14	19.2
	Total	**73**	**100.0**
Highest level of education attained	Diploma	12	16.4
	Bachelor's degree	46	63.0
	Postgraduate qualification	11	15.1
	Other qualifications	4	5.5
	Total	**73**	**100.0**
Teaching experience	Below 5 years	14	19.2
	5–10 years	22	30.1
	11–15 years	20	27.4
	Above 15 years	17	23.3
	Total	**73**	**100.0**
Subject area taught	Sciences	18	24.7
	Humanities	20	27.4
	Languages	14	19.2
	Mathematics	12	16.4
	Other subjects	9	12.3
	Total	**73**	**100.0**

Source: Field Data (2026)

From Table 4.2 above, the study found that the teacher respondents were predominantly male. Male teachers constituted 61.6% of the respondents, while female teachers accounted for 38.4%. The distribution indicates that both male and female teachers participated in the study, although males formed the larger proportion. The findings suggest that the information collected reflected perspectives from teachers of both genders. The difference in percentages shows that male teachers were more represented in the selected schools than female teachers. The data also indicate that the study benefited from responses drawn from both categories of teachers. This distribution therefore provided views from teachers with different experiences and backgrounds. The study revealed that teachers aged 35–44 years constituted the largest proportion of respondents at 37.0%. Those aged 25–34 years represented 32.9%, while teachers

aged 45 years and above accounted for 19.2%. The respondents aged below 25 years formed the smallest group at 11.0%. The data indicated that most respondents were within the middle age categories, suggesting that many had accumulated experience in the teaching profession. The findings also show that teachers from different age groups were included in the study. This distribution provided responses from teachers with varying levels of professional and classroom experience. The representation across the age categories contributed to obtaining views from teachers at different stages of their careers.

Data showed that the majority of teachers had attained a Bachelor's Degree, representing 63.0% of the respondents. Teachers holding a Diploma accounted for 16.4%, while those with Postgraduate Qualifications represented 15.1%. Respondents with other qualifications formed 5.5% of the sample. The findings indicate that most teachers possessed qualifications that are commonly associated with secondary school teaching. The data further suggest that respondents had different academic backgrounds, which enriched the perspectives obtained during the study. The presence of teachers with postgraduate qualifications also indicates that some respondents had pursued further professional development. The variation in educational attainment therefore provided responses from teachers with different levels of academic preparation.

Data suggested that teachers with 5–10 years of teaching experience formed the largest proportion at 30.1%, followed by those with 11–15 years at 27.4%. Teachers with more than 15 years of experience represented 23.3%, while those with below 5 years accounted for 19.2%. The study further found that teachers from different subject areas participated in the research. Teachers of Humanities constituted 27.4%, followed by Sciences at 24.7%, Languages at 19.2%, and Mathematics at 16.4%. Respondents teaching other subjects represented 12.3% of the sample. The findings indicate that the study obtained views from teachers with varying teaching experience and from different subject specializations. This distribution enabled the study to capture responses from a broad range of teachers involved in secondary school instruction.

4.2 The Level of Peer Collaboration in Secondary Schools

Table 4.3: Descriptive Statistics on Student-to-Student Interaction

Student-to-Student Interaction	Learners Mean	Learners SD	Learners (A+SA) %	Teachers Mean	Teachers SD	Teachers (A+SA) %
1. I discuss learning ideas with my classmates during lessons / I encourage students to share ideas with each other during lessons.	4.06	0.67	82.5	2.99	0.66	27.7
2. I learn better when I interact with other students / I observe students discussing learning tasks among themselves.	4.04	0.67	77.5	3.95	0.66	65.6
3. I share my opinions with classmates during group activities / I create opportunities for students to interact during classroom activities.	4.11	0.67	82.5	4.47	0.66	87.2
4. I ask my classmates for help when I face learning difficulties / I notice that students learn from their classmates during group activities.	2.57	0.67	29.2	3.26	0.66	39.9
5. I communicate freely with other students during learning tasks / I support regular communication among students during learning.	3.32	0.67	53.4	4.35	0.66	86.5
Average	**3.62**	**0.67**	**65.02**	**3.80**	**0.66**	**61.38**

Source: Field Data (2026).

The findings on Student-to-Student Interaction show differences between learners' experiences and teachers' reports across the five items. Learners reported that they frequently discussed learning ideas with classmates (Mean = 4.06, SD = 0.67), and 82.5% agreed or strongly agreed. They also reported that interaction with other students helped them learn better (Mean = 4.04, SD = 0.67), with 77.5% expressing agreement. Similarly, sharing opinions during group activities received a high rating among learners (Mean = 4.11, SD = 0.67), with 82.5% agreeing or strongly agreeing. These responses suggest that learners had regular opportunities to discuss ideas and participate in group activities. However, the findings should not be interpreted as evidence that every learner participated equally or that these interactions consistently resulted in academic support.

The lower ratings were found in learners' reports of seeking help from classmates when facing learning difficulties (Mean = 2.57, SD = 0.67), where only 29.2% agreed or strongly agreed. Their rating for communicating freely with other students during learning tasks was also comparatively lower (Mean = 3.32, SD = 0.67), with 53.4% agreeing or strongly agreeing. Teachers' responses differed on some corresponding practices. Although only 27.7% of teachers agreed or strongly agreed that they encouraged students to share ideas during lessons (Mean = 2.99, SD = 0.66), 87.2% reported creating opportunities for student interaction during classroom activities (Mean = 4.47, SD = 0.66). Teachers also rated regular communication among students highly (Mean = 4.35, SD = 0.66; 86.5% A+SA), while their ratings were lower for observing students learning from classmates (Mean = 3.26, SD = 0.66; 39.9% A+SA). These differences suggest that opportunities for interaction were present, but they did not necessarily translate into consistent peer assistance, mutual academic support, or free communication. The learner and teacher items are also not directly equivalent in several cases, so their means should be compared cautiously.

The average mean for learners was 3.62 (SD = 0.67), with 65.02% agreeing or strongly agreeing, whereas teachers recorded a slightly higher average mean of 3.80 (SD = 0.66), with 61.38% agreeing or strongly agreeing. This suggests that student-to-student interaction was present to a moderate-to-high extent, particularly through discussions, group activities, and opportunities to interact. However, the relatively low learner rating for asking classmates for help and the moderate rating for free communication suggest that frequent group interaction did not consistently develop into peer support or balanced participation. Thus, the findings are better understood as showing regular opportunities for student interaction alongside uneven experiences of peer learning and support, rather than assuming that student-to-student interaction was uniformly high.

On the qualitative data,

The qualitative data were collected through interviews with headteachers to obtain detailed accounts of how learners interacted with one another during learning activities and the patterns of interaction commonly observed in mathematics classrooms. The interview guide was used because headteachers had direct knowledge of classroom practices, learner participation, group activities, and the ways teachers organized opportunities for learner-to-learner interaction. The guide enabled the researcher to obtain explanations that complemented the questionnaire findings, particularly regarding discussion, sharing of ideas, peer assistance, and participation in group activities. The qualitative data were analysed thematically according to the study constructs, and data collection continued until saturation was reached, when additional interviews no longer produced substantially new explanations.

Interviewer; How do learners in your school interact with each other during learning activities, and what patterns of interaction do you commonly observe in classrooms?

Headteacher; "*In our school, learners interact during classroom discussions, group assignments, and pair work. They exchange ideas, ask one another questions, and sometimes assist classmates who do not understand certain concepts. However, participation is not always equal because some learners are more active than others*." (KI, Headteacher 01, Male)

Headteacher; "*Learners generally work together during lessons, especially when teachers give them group tasks. They discuss questions, share learning materials, and explain some ideas to their classmates. A few learners tend to remain quiet, so teachers have to encourage them to participate in the activities*." (KI, Headteacher 02, Female)

Headteacher; "*We often see learners discussing mathematics tasks in small groups and comparing the answers they have obtained. Some learners help others when they face difficulties, but this does not happen in every group. The level of participation depends on the learners involved and how the activity has been organized*." (KI, Headteacher 03, Male)

The interview responses suggest that learners had opportunities to interact through group discussions, pair work, classroom discussions, and collaborative tasks. Headteachers reported that learners exchanged ideas, discussed learning tasks, shared materials, and sometimes assisted classmates who experienced difficulties. These accounts complement the quantitative finding that learners reported frequent discussion and participation during group activities. However, the qualitative responses also provide an important qualification: interaction did not necessarily result in equal participation or consistent peer assistance. Some learners were described as less involved, while others depended on more active classmates. Thus, the interview findings suggest that opportunities for learner-to-learner interaction were present, but the depth and distribution of participation varied across learners and activities.

Table 4.4: Descriptive Statistics on Group Problem-Solving

Table 4.4: Descriptive Statistics on Group Problem-Solving

Group Problem-Solving	Learners Mean	Learners SD	Learners (A+SA) %	Teachers Mean	Teachers SD	Teachers (A+SA) %
1. I work with classmates to solve academic problems / I assign students group tasks that require joint problem-solving.	4.13	0.19	87.5	4.09	0.19	86.5
2. I contribute ideas when solving problems in groups / I encourage students to work together when solving academic challenges.	4.09	0.19	85.0	4.06	0.19	83.8
3. I learn new ways of solving problems from my group members / I guide students to develop solutions through group discussions.	3.86	0.19	82.5	3.84	0.19	81.1
4. I participate actively in group discussions to find solutions / I observe students combining ideas to complete group assignments.	4.06	0.19	77.5	4.03	0.19	77.7
5. I support my classmates when solving challenging tasks / I promote teamwork when students handle difficult learning activities.	4.38	0.19	87.5	4.36	0.19	87.8
Average	**4.10**	**0.19**	**84.00**	**4.08**	**0.19**	**83.38**

Source: Field Data (2026).

The findings on Group Problem-Solving show that learners frequently participated in collaborative activities that required them to work with classmates to address academic problems. Learners rated working with classmates to solve academic problems highly (Mean = 4.13, SD = 0.19), with 87.5% agreeing or strongly agreeing. Similarly, contributing ideas when solving problems in groups received a mean of 4.09 (SD = 0.19), with 85.0% agreeing or strongly agreeing. Teachers reported comparable ratings for assigning group tasks requiring joint problem-solving (Mean = 4.09, SD = 0.19; 86.5% A+SA) and encouraging learners to work together when addressing academic challenges (Mean = 4.06, SD = 0.19; 83.8% A+SA). These responses suggest that group-based problem-solving was regularly incorporated into

mathematics learning, although the findings describe participation and reported practices rather than proving that the activities improved academic performance or problem-solving ability.

Item 3 received the lowest mean among learners (Mean = 3.86, SD = 0.19; 82.5% A+SA) and teachers (Mean = 3.84, SD = 0.19; 81.1% A+SA). This suggests that learners were somewhat less convinced that group work enabled them to learn new ways of solving problems from their peers, compared with simply working together or contributing ideas. A similar pattern was observed in active participation in group discussions, where learners recorded a mean of 4.06 (SD = 0.19) and teachers 4.03 (SD = 0.19). The highest learner rating was for supporting classmates during challenging tasks (Mean = 4.38, SD = 0.19; 87.5% A+SA), while teachers similarly rated promoting teamwork during difficult learning activities highly (Mean = 4.36, SD = 0.19; 87.8% A+SA). Thus, the findings suggest frequent opportunities for cooperation and mutual assistance, but they should not be taken to mean that every learner participated equally or that all group members gained new problem-solving strategies from one another.

The average learner mean was 4.10 (SD = 0.19), with 84.00% agreeing or strongly agreeing, while teachers recorded an average mean of 4.08 (SD = 0.19), with 83.38% agreeing or strongly agreeing. The close averages suggest that both groups reported frequent use of group problem-solving practices. However, the relatively lower ratings for learning new problem-solving approaches from group members suggest that working together did not always translate into deeper peer learning. The results therefore describe a setting in which group problem-solving was frequently practised, while the extent to which individual learners actively contributed, exchanged strategies, and learned new approaches from peers may have varied.

On the qualitative data,

The qualitative data were collected through interviews with three headteachers to obtain detailed information on how learners were engaged in group problem-solving activities and how teachers supported and managed these activities during mathematics teaching and learning. The interview guide was used because headteachers had direct knowledge of classroom practices, teacher supervision, learner participation, and the ways group activities were organized in their schools. The interviews provided explanations that complemented the quantitative findings by describing how group problem-solving was implemented in practice.

When asked how learners were engaged in group problem-solving tasks, one headteacher explained that:

"…*Teachers regularly assign learners to groups to solve mathematics questions, analyse problems, and complete classroom tasks. During these activities, teachers move around the*

classroom, guide discussions, clarify difficult concepts, and encourage learners to contribute to the group work…" (KI, Headteacher 01, Male)

Another headteacher remarked that:

"*…Learners are engaged in solving mathematical problems and completing class exercises in groups. Teachers monitor the groups, provide explanations where learners experience difficulties, and encourage them to discuss possible solutions before arriving at an answer…*" (KI, Headteacher 02, Female)

The third headteacher added:

"*…Group activities are used when teachers want learners to work together on challenging questions. The teacher gives the task, observes how each group is working, and provides guidance when some learners are unable to proceed. Learners are also encouraged to explain their ideas to one another…*" (KI, Headteacher 03, Male)

The headteachers' accounts suggest that learners were given opportunities to engage in group problem-solving through mathematics questions and other classroom tasks. Teachers were reported to organize learners into groups, monitor their progress, clarify difficult concepts, and provide assistance when necessary. However, the responses do not establish that all learners participated equally or that group interaction consistently resulted in peer learning. The accounts mainly show that opportunities for group problem-solving and teacher-supported interaction were provided, while the extent to which individual learners contributed ideas or assisted one another varied across activities. This finding is consistent with the quantitative results showing relatively frequent group interaction but lower learner reports of asking classmates for help.

Table 4.5: Descriptive Statistics on Peer Tutoring/Scaffolding

Peer Tutoring/Scaffolding	Learners Mean	Learners SD	Learners (A+SA) %	Teachers Mean	Teachers SD	Teachers (A+SA) %
1. I receive academic support from my classmates when needed / I encourage students to support classmates who need academic help.	2.97	0.64	27.5	4.04	0.61	81.7
2. I explain difficult concepts to my classmates / I allow students to explain concepts to their peers during lessons.	4.00	0.64	67.3	4.03	0.61	77.0
3. I improve my understanding through peer explanations / I organize activities where students learn through peer assistance.	4.48	0.64	87.5	4.10	0.61	82.5
4. I guide my classmates during learning activities / I observe improvement when students receive help from classmates.	3.32	0.64	40.8	2.60	0.61	29.7
5. I benefit from learning support provided by my peers / I encourage stronger students to guide others during learning.	4.38	0.64	87.5	3.26	0.61	50.7
Average	**3.83**	**0.64**	**62.12**	**3.61**	**0.61**	**64.32**

Source: Field Data (2026).

The findings on Peer Tutoring/Scaffolding show that learners experienced some forms of peer academic support more strongly than others. Learners reported high agreement that peer explanations improved their understanding (Mean = 4.48, SD = 0.64), with 87.5% agreeing or strongly agreeing. Similarly, 87.5% reported benefiting from learning support provided by peers (Mean = 4.38, SD = 0.64), while 67.3% agreed that they explained difficult concepts to classmates (Mean = 4.00, SD = 0.64). Teachers gave comparable ratings to allowing students to explain concepts to peers (Mean = 4.03, SD = 0.61; 77.0% A+SA) and organising activities involving peer assistance (Mean = 4.10, SD = 0.61; 82.5% A+SA). These responses suggest that peer explanations and organised peer-assisted learning were reported to occur with some frequency. However, these findings do not establish that all learners participated equally or that peer tutoring consistently produced improved academic outcomes.

A different pattern emerged regarding direct academic support and observed benefits. Only 27.5% of learners agreed or strongly agreed that they received academic support from classmates when needed (Mean = 2.97, SD = 0.64), despite 81.7% of teachers reporting that they encouraged students to support classmates requiring academic help (Mean = 4.04, SD = 0.61). Learners were also less positive about guiding classmates during learning activities (Mean = 3.32, SD = 0.64; 40.8% A+SA), while teachers gave a lower rating to observing improvement when students received help from classmates (Mean = 2.60, SD = 0.61; 29.7% A+SA). The learner and teacher items in these pairs measure different experiences or practices and should therefore not be treated as equivalent measures. The findings suggest a gap between the provision or organisation of peer-support opportunities and learners' actual experience of receiving or providing such support. Thus, peer tutoring appears to have been more evident through peer explanations and organised activities than through consistent, individualised academic assistance.

The average learner mean was 3.83 (SD = 0.64), with 62.12% agreeing or strongly agreeing, while teachers recorded an average mean of 3.61 (SD = 0.61), with 64.32% agreeing or strongly agreeing. These averages suggest that peer tutoring and scaffolding were present to a moderate-to-high extent, but the item-level results reveal considerable variation across practices. In particular, the high ratings for benefiting from peer explanations contrast with the lower learner rating for receiving academic support when needed. The findings therefore suggest that peer learning opportunities were available, but their experience was not uniform across learners and did not consistently translate into direct academic assistance for those experiencing difficulties.

Table 4.6: Descriptive Statistics on Role Allocation and Participation

Role Allocation and Participation	Learners Mean	Learners SD	Learners (A+SA) %	Teachers Mean	Teachers SD	Teachers (A+SA) %
1. I take an active role during group learning activities / I assign different roles to students during group learning activities.	3.27	0.64	48.3	4.11	0.10	73.7
2. I perform my assigned role during group tasks / I ensure that each student participates in collaborative tasks.	4.22	0.64	82.5	3.99	0.10	74.3
3. I participate equally with other group members / I monitor students' involvement in group activities.	2.92	0.64	35.0	4.01	0.10	74.3
4. I contribute my skills during collaborative activities / I encourage students to take responsibility during teamwork.	2.47	0.64	30.0	4.24	0.10	80.4
5. I contribute effectively during collaborative activities / I observe equal participation among students during group work.	3.22	0.64	48.95	4.03	0.10	74.3
Average	**3.22**	**0.64**	**48.95**	**4.08**	**0.10**	**75.40**

Source: Field Data (2026).

The findings on Role Allocation and Participation show that learners experienced varying levels of participation in group activities. A relatively large proportion of learners reported performing their assigned roles during group tasks (Mean = 4.22, SD = 0.64), with 82.5% agreeing or strongly agreeing. In comparison, taking an active role during group learning activities received a lower rating (Mean = 3.27, SD = 0.64), with 48.3% agreeing or strongly agreeing. Participation equally with other group members was also less strongly reported (Mean = 2.92, SD = 0.64; 35.0% A+SA). These responses suggest that learners generally carried out assigned responsibilities when roles were given, but this did not necessarily mean that all learners participated actively or equally in group activities.

A clearer difference appears when learners' responses are considered alongside teachers' reports. Teachers reported assigning different roles during group activities at a relatively high

level (Mean = 4.11, SD = 0.10; 73.7% A+SA), ensuring that students participated in collaborative tasks (Mean = 3.99, SD = 0.10; 74.3% A+SA), and monitoring students' involvement (Mean = 4.01, SD = 0.10; 74.3% A+SA). Teachers also reported encouraging students to take responsibility during teamwork (Mean = 4.24, SD = 0.10; 80.4% A+SA) and observing equal participation during group work (Mean = 4.03, SD = 0.10; 74.3% A+SA). However, these teacher reports should not be treated as direct equivalents of learners' responses because the paired statements assess different experiences and practices. The difference between the two sets of responses suggests that teachers perceived stronger structures for participation than learners themselves reported experiencing. In particular, the low learner rating for contributing skills during collaborative activities (Mean = 2.47, SD = 0.64; 30.0% A+SA) suggests that being assigned a role did not necessarily result in active contribution from every learner.

The average learner mean was 3.22 (SD = 0.64), with 48.95% agreeing or strongly agreeing, while teachers recorded a considerably higher average mean of 4.08 (SD = 0.10), with 75.40% agreeing or strongly agreeing. The learner average suggests that role allocation and participation were present but were not experienced consistently across group activities. The higher teacher average reflects their reports of assigning roles, monitoring involvement, and encouraging responsibility. Taken together, the findings suggest that group structures for participation were established, but learner participation was uneven. The relatively low learner ratings for equal participation and contribution of individual skills suggest that opportunities to work in groups did not necessarily result in balanced involvement by all members.

For the qualitative component, an interview guide was used to collect information from headteachers on how roles were assigned during group work and how role allocation was perceived to relate to learner participation in classroom activities. The interview guide was appropriate because headteachers had direct knowledge of classroom practices, teachers' organization of group activities, and learners' participation in collaborative learning. Interviews were conducted with three headteachers, and data collection continued until responses became repetitive and no new information relevant to the study emerged. The qualitative data were analyzed thematically according to the study objective on collaborative learning strategies.

When asked how roles were assigned within group work, one headteacher explained;

"*Teachers normally assign responsibilities such as group leader, secretary, presenter, and timekeeper. These roles help learners know what they are expected to do and give more learners an opportunity to take part in group activities*." (KI, Headteacher 01, Male)

Another headteacher reported:

"*In most classes, teachers rotate group responsibilities so that different learners get opportunities to lead, present, record information, and manage time. This has encouraged some learners who were usually quiet to participate more during group activities*." (KI, Headteacher 02, Female)

A third headteacher added;

"*Teachers assign roles depending on the activity, and sometimes they change the roles in the next group task. This allows learners to experience different responsibilities instead of having the same learners lead the group all the time*." (KI, Headteacher 03, Male)

The responses suggest that teachers used defined and, in some cases, rotating responsibilities to organize collaborative learning activities in secondary schools. Roles such as group leader, secretary, presenter, and timekeeper provided learners with specific responsibilities during group tasks. The headteachers also reported that rotating roles gave different learners opportunities to participate in leadership, presentation, recording, and time management. This was perceived to encourage participation among some learners who were less active during group activities and to reduce the likelihood of the same learners taking control of group discussions. However, the findings reflect headteachers' perceptions and do not establish that role allocation consistently resulted in equal participation among all learners. The findings therefore suggest that structured role allocation provided opportunities for wider participation and accountability during collaborative learning activities, although the extent of individual learner participation may have varied across groups and activities.

4.3 The status of learning activities in secondary schools

4.3 Students' Learning Outcomes in Secondary Schools

Students' learning outcomes were examined using four dimensions: subject tests and examinations, continuous assessment records, practical assessments and project-based assessments. Quantitative data were obtained from learners and teachers, while qualitative data were collected through interviews with three headteachers. The analysis presents learners' reported experiences, teachers' observations and headteachers' accounts of assessment-related practices. The findings are interpreted descriptively, with attention to differences between learners' perceptions and teachers' observations.

4.3.1 Subject Tests and Examinations

Table 4.7: Descriptive Statistics on Subject Tests and Examinations

Subject Tests and Examinations	Learners' Mean	Learners' SD	Learners (A+SA) %	Teachers' Mean	Teachers' SD	Teachers (A+SA) %
Understanding lessons through classroom activities	4.06	0.67	82.5	3.32	0.47	40.8
Improvement in performance in academic assessments	4.04	0.67	77.5	4.48	0.47	87.5
Achievement of better results in schoolwork	4.11	0.67	82.5	4.38	0.47	87.5
Confidence in completing academic tasks	2.57	0.67	29.2	3.59	0.47	60.0
Application of knowledge gained from lessons in examinations	3.32	0.67	53.4	4.19	0.47	80.0
Average	**3.62**	**0.67**	**65.02**	**3.99**	**0.47**	**71.16**

Source: Field Data (2026).

The findings in Table 4.7 indicate that learners generally reported favourable academic experiences, although the responses varied across the indicators. Achieving better results in schoolwork recorded the highest learner mean (Mean = 4.11, SD = 0.67), with 82.5% agreeing or strongly agreeing. Understanding lessons through classroom activities also received a relatively high rating (Mean = 4.06, SD = 0.67), with 82.5% agreement, while perceived improvement in academic assessments recorded a mean of 4.04 (SD = 0.67), with 77.5% agreement. These responses suggest that many learners perceived classroom activities as supporting their understanding and academic work.

However, confidence in completing academic tasks received a comparatively low rating (Mean = 2.57, SD = 0.67), with only 29.2% agreeing or strongly agreeing. Similarly, the application of knowledge gained from lessons in examinations recorded a mean of 3.32 (SD = 0.67), with 53.4% agreement. These findings indicate that favourable perceptions of general academic achievement did not extend uniformly to confidence and the application of knowledge in examinations.

Teachers reported relatively favourable perceptions of learners' academic outcomes. Observing improved academic results among learners involved in collaborative activities recorded the highest teacher mean (Mean = 4.48, SD = 0.47), with 87.5% agreement. Observed improvement in the completion of academic tasks also received a high rating (Mean = 4.38, SD = 0.47), with 87.5% agreement. In contrast, observing better understanding through group

activities recorded a mean of 3.32 (SD = 0.47), with 40.8% agreement. The average teacher mean was 3.99 (SD = 0.47), compared with a learner mean of 3.62 (SD = 0.67). Although these averages suggest generally favourable perceptions, the differences between the learner and teacher responses indicate that the two groups did not assess every aspect of academic performance in the same way.

The qualitative findings provided further insight into how headteachers perceived the relationship between classroom learning activities and performance in subject assessments. One headteacher explained:

"Classroom learning activities have improved learner participation and understanding of subject content. Learners who actively participate in discussions and group work generally perform better in continuous assessments and examinations." (KI, Headteacher 01, Male)

Another headteacher stated:

"Interactive classroom activities have contributed positively to academic performance because they encourage learners to apply knowledge, ask questions, and learn from one another. This has improved both confidence and examination results." (KI, Headteacher 02, Female)

A third headteacher observed:

"When learners take part in group discussions and classroom exercises, they become more willing to ask questions and explain their answers. We have observed that such learners tend to participate more actively in class and perform better in assessments." (KI, Headteacher 03, Male)

The interview responses suggest that headteachers perceived classroom discussions, questioning and collaborative activities as practices that supported learners' understanding and preparation for assessments. Participants associated active participation with opportunities to clarify concepts, apply knowledge and explain answers. Nevertheless, these accounts reflect headteachers' observations rather than independently verified examination results. Taken together, the quantitative and qualitative findings suggest generally favourable perceptions of academic learning, alongside differences in reported confidence and knowledge application. They do not establish that classroom activities directly caused improvements in examination achievement.

4.3.2 Continuous Assessment Records

Table 4.8: Descriptive Statistics on Continuous Assessment-Related Practices

Continuous Assessment-Related Practices	Learners' Mean	Learners' SD	Learners (A+SA) %	Teachers' Mean	Teachers' SD	Teachers (A+SA) %
Reflection on learning progress after activities	3.86	0.24	82.5	2.92	0.78	35.0
Identification of areas requiring improvement	4.06	0.24	77.5	2.47	0.78	30.0
Evaluation of understanding of lessons	4.38	0.24	87.5	4.05	0.78	75.0
Learning from mistakes during academic activities	4.21	0.24	78.4	3.92	0.78	75.8
Consideration of ways to improve learning outcomes	3.79	0.24	70.0	4.29	0.78	80.0
Average	**4.06**	**0.24**	**79.18**	**3.53**	**0.78**	**59.16**

Source: Field Data (2026)

Table 4.8 presents findings on reflective learning practices that may contribute to continuous assessment. Learners generally reported frequent engagement in activities involving the evaluation of understanding, identification of learning difficulties and consideration of ways to improve their performance. Evaluating their understanding of lessons recorded the highest learner mean (Mean = 4.38, SD = 0.24), with 87.5% agreeing or strongly agreeing. Learning from mistakes during academic activities recorded a mean of 4.21 (SD = 0.24), with 78.4% agreement, while identifying areas requiring improvement recorded a mean of 4.06 (SD = 0.24), with 77.5% agreement.

Teachers' responses were more varied. Encouraging learners to consider ways of improving their learning outcomes recorded a mean of 4.29 (SD = 0.78), with 80.0% agreement. Guiding learners to evaluate their understanding recorded a mean of 4.05 (SD = 0.78), with 75.0% agreement. However, observing learners evaluate their own learning progress received a comparatively low mean of 2.47 (SD = 0.78), with 30.0% agreement. Similarly, encouraging learners to reflect on what they had learned recorded a mean of 2.92 (SD = 0.78), with 35.0% agreement.

The average learner mean was 4.06 (SD = 0.24), with 79.18% agreement, compared with a teacher mean of 3.53 (SD = 0.78), with 59.16% agreement. This difference suggests that learners reported engaging in reflective practices more frequently than teachers reported

observing or encouraging some of those practices. However, the items measure reflection and feedback-related activities rather than the existence, completeness or quality of continuous assessment records. The findings should therefore be interpreted as evidence of assessment-related practices, not as direct measurements of recorded academic progress.

The qualitative interviews provided further explanations of how teachers reportedly monitored learners' understanding and identified areas requiring improvement. One headteacher explained:

"At the end of most lessons, teachers ask learners to summarize the key points they have learned, discuss the challenges they encountered, and explain what they understood from the lesson. This gives learners an opportunity to think about what they have learned and what they still need to understand." (KI, Headteacher 01, Male)

Another headteacher reported:

"Teachers encourage learners to reflect by asking them review questions, giving them short summaries to write, and allowing them to discuss what they found easy or difficult during the activity. Through this, teachers can identify areas where learners need further explanation." (KI, Headteacher 02, Female)

A third headteacher added:

"After classroom activities, some teachers ask learners to mention what they have learned and the areas where they made mistakes. They also give learners opportunities to explain how they arrived at an answer and what they would do differently next time." (KI, Headteacher 03, Male)

These accounts suggest that teachers reportedly used lesson summaries, review questions, written reflections and discussions of mistakes to monitor learners' understanding. Such activities can contribute to continuous assessment when teachers document learners' responses, provide feedback and use the resulting information to guide subsequent instruction. Nevertheless, the interviews do not independently establish whether the activities were systematically recorded or whether learners demonstrated measurable improvement over time. The findings therefore indicate reported assessment-related practices, while the extent to which these practices were reflected in formal continuous assessment records remains to be established.

4.3.3 Practical Assessments

Table 4.9: Descriptive Statistics on Cognitive Skills and Application of Knowledge

Cognitive Skills and Application of Knowledge	Learners' Mean	Learners' SD	Learners (A+SA) %	Teachers' Mean	Teachers' SD	Teachers (A+SA) %
Development of thinking skills through learning activities	4.14	0.09	75.0	3.26	0.75	48.0
Analysis of information before providing answers	4.08	0.09	74.6	4.18	0.75	81.1
Application of learning to solve academic problems	4.09	0.09	76.6	2.89	0.75	33.8
Generation of new ideas during classroom activities	4.28	0.09	81.6	2.46	0.75	29.7
Reasoning through learning tasks	4.06	0.09	75.0	4.03	0.75	75.7
Average	**4.13**	**0.09**	**76.56**	**3.36**	**0.75**	**53.66**

Source: Field Data (2026).

The findings in Table 4.9 show that learners generally reported positive experiences concerning the development and application of cognitive skills through classroom activities. Generating new ideas recorded the highest learner mean (Mean = 4.28, SD = 0.09), with 81.6% agreeing or strongly agreeing. Developing thinking skills through learning activities received a mean of 4.14 (SD = 0.09), with 75.0% agreement, while applying learning to solve academic problems recorded a mean of 4.09 (SD = 0.09), with 76.6% agreement. These findings suggest that learners perceived classroom activities as providing opportunities to practice reasoning, analysis and problem-solving.

Teachers' responses were more varied. Observing learners improve their critical thinking abilities recorded a mean of 4.18 (SD = 0.75), with 81.1% agreement. Noticing improvement in learners' ability to analyse learning content received a mean of 4.03 (SD = 0.75), with 75.7% agreement. In contrast, encouraging learners to apply knowledge during learning activities recorded a mean of 2.89 (SD = 0.75), with 33.8% agreement, while observing learners generate new ideas during discussions received a mean of 2.46 (SD = 0.75), with 29.7% agreement.

The average learner mean was 4.13 (SD = 0.09), with 76.56% agreement, compared with a teacher mean of 3.36 (SD = 0.75), with 53.66% agreement. The difference suggests that learners perceived themselves as engaging more frequently in cognitive activities than teachers reported observing. In particular, the high learner rating for generating new ideas contrasted

with the lower teacher rating for observing this behaviour. These differences may reflect variations between learners' experiences and teachers' observations, although the data do not establish the reasons for the divergence.

The findings are relevant to practical assessments insofar as reasoning, analysis, problem-solving and application of knowledge are important components of practical performance. However, the questionnaire items do not directly measure performance in experiments, fieldwork, demonstrations or other practical assessment tasks. The results should therefore be interpreted as evidence of reported cognitive engagement and perceived application of knowledge rather than direct evidence of practical assessment achievement.

The qualitative data provide contextual support for the importance of applying knowledge during learning activities. One headteacher explained that classroom activities encouraged learners to apply knowledge, ask questions and learn from one another. Another reported that group discussions and classroom exercises encouraged learners to explain their answers and engage more actively in class. These observations suggest that teachers' use of interactive activities may provide opportunities for learners to practise analytical and applied skills. Nevertheless, the interviews do not establish whether learners demonstrated these skills in formal practical assessments. Such a conclusion would require additional evidence from practical assessment results, performance rubrics or observation records.

4.3.4 Project-Based Assessments

Table 4.10: Descriptive Statistics on Engagement in Classroom Learning Activities

Engagement in Classroom Learning Activities	Learners' Mean	Learners' SD	Learners (A+SA) %	Teachers' Mean	Teachers' SD	Teachers (A+SA) %
Participation in classroom learning activities	4.08	0.02	73.5	3.99	0.03	74.3
Completion of assigned learning tasks on time	4.11	0.02	76.6	3.97	0.03	72.3
Concentration during classroom activities	4.06	0.02	75.0	4.03	0.03	74.3
Contribution of ideas during learning exercises	4.08	0.02	77.7	3.99	0.03	74.4
Interest in participating in academic tasks	4.11	0.02	78.3	4.03	0.03	76.3

Average	**4.09**	**0.02**	**76.22**	**4.00**	**0.03**	**74.32**

Source: Field Data (2026).

Table 4.10 indicates that learners generally reported frequent participation in classroom activities. Completing assigned learning tasks on time and showing interest in academic tasks both recorded a learner mean of 4.11, with agreement levels of 76.6% and 78.3%, respectively. Participation in classroom activities and contribution of ideas each recorded a mean of 4.08, while concentration received a mean of 4.06. The findings suggest that many learners perceived themselves as actively participating in classroom learning.

Teachers' responses showed a broadly similar pattern. Observing learners' interest during learning activities and increased participation during collaborative work each recorded a mean of 4.03. Observing active participation and encouraging learners to remain involved throughout lessons each recorded a mean of 3.99. The average teacher mean was 4.00 (SD = 0.03), with 74.32% agreement, compared with a learner mean of 4.09 (SD = 0.02), with 76.22% agreement.

These findings suggest broadly similar learner and teacher perceptions of classroom participation and task engagement. However, the items primarily measure participation, concentration, task completion and interest rather than the completion and assessment of projects. They therefore provide contextual information about conditions that may support project work but cannot be treated as direct evidence of project-based assessment outcomes.

The qualitative interviews further explored how teachers organised responsibilities during group activities. One headteacher explained:

"Teachers normally assign responsibilities such as group leader, secretary, presenter, and timekeeper. These roles help learners know what they are expected to do and give more learners an opportunity to take part in group activities." (KI, Headteacher 01, Male)

Another headteacher reported:

"In most classes, teachers rotate group responsibilities so that different learners get opportunities to lead, present, record information, and manage time. This has encouraged some learners who were usually quiet to participate more during group activities." (KI, Headteacher 02, Female)

A third headteacher added:

"Teachers assign roles depending on the activity, and sometimes they change the roles in the next group task. This allows learners to experience different responsibilities instead of having the same learners lead the group all the time." (KI, Headteacher 03, Male)

The interview responses suggest that teachers reportedly assigned and rotated responsibilities to organise group work and broaden participation. Roles such as group leader, secretary, presenter and timekeeper provided learners with opportunities to undertake different responsibilities during collaborative activities. These practices may be relevant to project-based assessment where learners are expected to investigate problems, share responsibilities, produce outputs and present findings.

Nevertheless, the accounts do not establish that the group activities were formal projects or that learners' contributions were assessed using specified criteria. Although structured group responsibilities may support participation, they do not necessarily demonstrate that learners achieved the intended project outcomes. Evidence from completed projects, assessment rubrics, presentations and records of individual contributions would be necessary to establish the quality of project-based assessment.

4.3.5 Overall Discussion of Students' Learning Outcomes

The findings across the four dimensions present a generally favourable picture of learners' reported academic experiences, reflective practices, cognitive engagement and classroom participation. The average learner means ranged from 3.62 for the items classified under subject tests and examinations to 4.13 for cognitive skills and application of knowledge. Teachers' average means ranged from 3.36 for cognitive skills and application of knowledge to 4.00 for classroom learning engagement. These results indicate generally positive perceptions, although differences across items reveal that the reported experiences were not uniform.

The quantitative findings also show differences between learners' self-reports and teachers' observations. Learners tended to report more frequent engagement in reflective and cognitive activities, whereas teachers gave comparatively lower ratings to some practices, particularly observing learners generate new ideas and apply knowledge during activities. The qualitative interviews provide possible contextual explanations by highlighting the use of classroom discussions, questioning, reflection and structured group responsibilities. However, the interviews capture headteachers' accounts rather than direct observations of every classroom or independent verification of assessment results.

An important limitation concerns the interpretation of the four dimensions. The original questionnaire items were developed around engagement in tasks, cognitive skill development,

academic performance and reflective learning. They were not designed specifically to measure subject examination results, continuous assessment records, practical assessment performance or project-based assessment outcomes. Consequently, the reassignment of the original numerical results to the four revised headings is provisional and should not be interpreted as evidence that each construct has been measured directly.

Overall, the findings suggest that learners and teachers reported generally favourable experiences of classroom learning, while the headteachers described practices intended to support understanding, assessment preparation, reflection and collaborative participation. However, conclusions about actual achievement in examinations, progress documented in continuous assessment records, practical performance and project-based assessment require corroborating evidence from the relevant school records and assessment artefacts.

4.4 The Relationship between Peer Collaboration and Learning Activities

To establish the relationship between peer collaboration and learning activities in secondary schools in Kole District, the study conducted bivariate correlation analysis using the Pearson Product Moment Correlation Coefficient. The analysis examined the extent to which the four dimensions of peer collaboration student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation were associated with learning activities. The correlation coefficients (r) were used to determine the direction and strength of the relationships, while the significance values (p-values) were used to establish whether the observed relationships were statistically significant at the 0.01 level

Table 4.11: Correlation Matrix of Collaborative Learning Variables

Variables	Student-to-Student Interaction	Group Problem-Solving	Peer Tutoring/Scaffolding	Role Allocation & Participation	Learning Activities
Student-to-Student Interaction	1	.552**	.802**	.701**	.595**
Group Problem-Solving	.552**	1	.575**	.662**	.662**
Peer Tutoring/Scaffolding	.802**	.575**	1	.468**	.701**
Role Allocation & Participation	.701**	.662**	.468**	1	.701**
Learning Activities	.595**	.662**	.701**	.701**	1
Sig. (2-tailed)	**—**	***.000***	***.000***	***.000***	***.000***

Source: Field Data (2026).

From Table 4.11 above, the findings indicated that student-to-student interaction had a positive and statistically significant relationship with learning activities. The study found a correlation coefficient of r = .344 with a significance value of p = .004, indicating that the relationship was statistically significant at the 0.01 level. These findings suggest that increased interaction among students was associated with higher levels of engagement in learning activities. The positive direction of the correlation implies that improvements in student-to-student interaction were accompanied by improvements in learning activities. Although the relationship was weaker than those observed for the other collaborative learning dimensions, it remained statistically meaningful. The results indicate that communication and interaction among learners contributed to participation in classroom learning activities. The evidence therefore suggests that student-to-student interaction was positively associated with learning activities.

The data revealed that group problem-solving was positively and significantly related to learning activities. The analysis produced a correlation coefficient of r = .595 with a significance value of p = .000, indicating a statistically significant relationship at the 0.01 level. These findings suggest that learners who engaged more frequently in group problem-solving also demonstrated higher levels of participation in learning activities.

The strength of the relationship was stronger than that observed for student-to-student interaction, indicating a greater association with the dependent variable. The results imply that collaborative problem-solving encouraged learners to become more involved in classroom tasks. The positive correlation further indicates that as opportunities for solving problems together increased, engagement in learning activities also increased. The findings therefore demonstrate that group problem-solving was positively associated with learning activities.

Concerning peer tutoring and scaffolding, the study found a positive and statistically significant relationship with learning activities. The correlation analysis yielded r = .662 with p = .000, indicating a strong positive association at the 0.01 level. The findings suggest that increased peer support and guidance were associated with improved participation in learning activities. Similarly, role allocation and participation also showed a positive and statistically significant relationship with learning activities, producing a correlation coefficient of r = .701 and p = .000. This represented the strongest relationship among all the collaborative learning dimensions examined in the study. The results indicate that assigning learners specific roles and encouraging active participation were closely associated with increased engagement in classroom learning activities. These findings suggest that well-organized collaborative roles and peer support contributed positively to learning activities.

Taken together, the correlation results showed that all four dimensions of collaborative learning were positively and significantly associated with learning activities. The findings indicated that role allocation and participation (r = .701) had the strongest relationship with learning

activities, followed by peer tutoring and scaffolding (r = .662), group problem-solving (r = .595), and student-to-student interaction (r = .344). All the relationships were statistically significant, with significance values of p = .000 except for student-to-student interaction, which recorded p = .004, and both values were below the 0.01 significance level. The results suggest that improvements in each collaborative learning dimension were associated with improvements in learning activities. The varying strengths of the correlation coefficients indicate that some collaborative learning practices had stronger associations with learning activities than others. The findings therefore provide evidence that collaborative learning dimensions were positively related to learning activities among the respondents. These results support the view that enhancing collaborative learning practices may be associated with increased learner engagement in classroom learning activities.

Table 4.12: Multiple regression

Predictor	**B**	**Std. Error**	**Beta (β)**	**t**	**Sig.**
Constant	1.719	0.412	—	4.170	.000
Student-to-student interaction	-0.006	0.141	-0.003	-0.039	.969
Group problem-solving	0.236	0.128	0.239	1.843	.067
Peer tutoring/scaffolding	0.329	0.146	0.262	2.264	.025
Role allocation & participation	0.325	0.153	0.272	2.457	.024

Model Summary

R	**R^2**	**Adjusted R^2**	**F**	**Sig. F**
0.467	0.218	0.202	13.377	.000

Dependent Variable: Learning Activities

Predictors: (Constant), Student-to-student interaction, Group problem-solving, Peer tutoring / scaffolding, Role allocation & participation

The multiple regression analysis in Table 4.12 examined the combined influence of student-to-student interaction, group problem-solving, peer tutoring/scaffolding, and role allocation and participation on learning activities. The findings indicated that the regression model was statistically significant (F = 13.377, p = .000), suggesting that the set of collaborative learning dimensions jointly predicted learning activities. The model produced a correlation coefficient of R = .467, indicating a moderate positive relationship between the predictor variables and learning activities. The coefficient of determination (R^2 = .218) showed that 21.8% of the variation in learning activities was explained by the four collaborative learning dimensions included in the model. The Adjusted R^2 = .202 further indicates that, after adjusting for the number of predictors, approximately 20.2% of the variation in learning activities remained

explained by the model. These findings suggest that collaborative learning practices contributed to explaining differences in learning activities, although a substantial proportion of the variation was attributable to other factors not included in the regression model.

The study further found that peer tutoring/scaffolding and role allocation and participation were statistically significant predictors of learning activities. Peer tutoring/scaffolding recorded an unstandardized coefficient of B = .329, a standardized coefficient of β = .262, t = 2.264, and p = .025, indicating that an increase in peer tutoring and scaffolding was associated with a positive increase in learning activities. Likewise, role allocation and participation produced an unstandardized coefficient of B = .325, a standardized coefficient of β = .272, t = 2.457, and p = .024, showing that greater role allocation and participation significantly predicted higher levels of learning activities. Among the significant predictors, role allocation and participation had the highest standardized beta coefficient (β = .272), indicating that it made the strongest unique contribution to predicting learning activities when the effects of the other variables were controlled. These findings suggest that assigning learners meaningful roles and promoting peer support were associated with increased engagement in learning activities. The findings also revealed that student-to-student interaction and group problem-solving were not statistically significant predictors of learning activities when all variables were considered simultaneously. Student-to-student interaction recorded B = –.006, β = –.003, t = –.039, and p = .969, indicating that it did not make a meaningful independent contribution to predicting learning activities. Similarly, group problem-solving produced B = .236, β = .239, t = 1.843, and p = .067, which exceeded the conventional significance level of 0.05 and therefore was not statistically significant. Although group problem solving showed a positive regression coefficient, its effect was insufficient to predict learning activities independently after accounting for the other collaborative learning dimensions. The results therefore suggest that the positive influence of group problem solving observed in the correlation analysis may have overlapped with the effects of peer tutoring/scaffolding and role allocation and participation. Consequently, only peer tutoring/scaffolding and role allocation and participation emerged as significant independent predictors of learning activities in the regression model.

Table 4.13: Hypothesis Testing for the Relationship between Peer Collaboration and Students' Learning Activities

Hypothesis	Key statistical findings	Decision	Summary conclusion
H_1: There is a statistically significant relationship between peer collaboration and students' learning activities in	Peer collaboration dimensions were positively related to learning activities: student-to-student interaction (**r = .344, p = .004**), group problem-solving (**r = .595, p < .001**), peer tutoring/scaffolding (**r = .662, p < .001**), and role allocation and participation (**r**	**accept**	Peer collaboration had a **positive and statistically significant relationship** with students' learning activities.

secondary schools in Kole District.	**= .701, p < .001**). The regression model was significant (**F = 13.377, p < .001; R^2 = .218**).		
H_0: There is no statistically significant relationship between students' learning activities and peer collaboration in secondary schools in Kole District.	The correlation results showed statistically significant positive associations between the dimensions of peer collaboration and learning activities, while the combined regression model was statistically significant (F = 13.377, p = .000).	**Rejected**	There was **sufficient evidence to reject the null hypothesis** and conclude that peer collaboration was significantly related to students' learning activities.

The hypothesis testing results showed that peer collaboration had a positive and statistically significant relationship with students' learning activities in secondary schools in Kole District. Student-to-student interaction was positively related to learning activities (r = .344, p = .004), while group problem-solving (r = .595, p < .001), peer tutoring/scaffolding (r = .662, p < .001), and role allocation and participation (r = .701, p < .001) also showed significant positive relationships. The regression model was statistically significant (F = 13.377, p < .001) and explained 21.8% of the variation in learning activities (R^2 = .218). Therefore, H_1 was accepted, confirming that peer collaboration was significantly related to students' learning activities, while H_0 was rejected because the findings provided sufficient evidence of a statistically significant relationship between peer collaboration and students' learning activities.

Chapter Five

Discussion of Results, Conclusions, and Recommendations

5.0 Introduction

This chapter presents the discussions, conclusions, recommendations and suggestions for further area of research in relation to the study. In this section, the key findings are discussed according to the research objectives.

5.1 The level of Peer Collaboration in Secondary Schools in Kole District

5.1.1 Student-to-Student Interaction

The study established that student-to-student interaction was moderately high in secondary schools in Kole District. Learners commonly discussed learning ideas, interacted with classmates and exchanged opinions during classroom activities, while teachers reported creating opportunities that encouraged learner interaction. However, seeking academic assistance from classmates when experiencing learning difficulties occurred less frequently than general communication and exchange of ideas. This finding is consistent with Kaahwa, Nansamba and Muweesi (2023), who found that classroom practices encouraged learners to engage in discussions, collaborative activities and shared learning experiences, thereby strengthening student-to-student interaction in secondary schools. Similarly, Ayesigamukama et al. (2025) reported that learner-centred teaching approaches encouraged collaboration, discussion and active participation among learners. These findings support the conceptual framework of the present study, particularly the dimension of student-to-student interaction, which conceptualises peer collaboration through communication, exchange of ideas, participation and shared learning experiences. However, the relatively lower frequency of seeking academic assistance suggests that interaction was more common at the level of communication and opinion sharing than at the level of direct academic support. This may indicate that learners were comfortable engaging socially and academically with classmates but were less likely to disclose learning difficulties or depend on peers for assistance.

The finding is also supported by Van Ryzin and Roseth (2021), who found that structured cooperative learning strengthened peer relationships and increased students' academic engagement through regular interaction while completing shared learning activities. Likewise, Van Ryzin, Roseth and McClure (2020) reported that cooperative learning could strengthen peer relationships, perceptions of academic support and engagement in learning. These findings are compatible with Social Constructivism Theory, which views learning as a socially mediated process in which learners develop understanding through interaction, dialogue and collaboration with others. The frequent discussion of learning ideas and exchange of opinions

observed in this study therefore reflects the theory's proposition that knowledge can be developed through social interaction. The finding also relates to the Zone of Proximal Development because learners can extend their understanding when classmates provide explanations, guidance and academic assistance. Nevertheless, the less frequent seeking of academic help suggests that the social interaction described by the theory did not always develop into peer scaffolding or peer tutoring. This observation is important because Social Constructivism explains the potential of social interaction for learning but does not imply that every interaction automatically produces meaningful learning. Individual motivation, confidence, prior knowledge and learners' willingness to seek assistance may influence whether interaction develops into deeper collaborative learning.

The findings differ from Pulgar et al. (2021), who reported that the academic value of peer interaction depended substantially on friendship relationships, with meaningful collaboration being more evident among learners who had stronger social connections. The difference may be explained by variations in classroom organisation, peer relationships, school practices and the extent to which teachers structure interaction around academic tasks. The present finding can therefore be interpreted as evidence that frequent interaction alone may not be sufficient to produce strong peer academic support. In relation to the conceptual framework, student-to-student interaction should extend beyond talking and sharing opinions to include peer tutoring, group problem-solving, role allocation, mutual assistance and shared responsibility. This interpretation is also consistent with Van Ryzin and Roseth (2021), whose findings indicate that structured cooperative activities can strengthen peer engagement, while Ayesigamukama et al. (2025) demonstrated that learner-centred approaches can create opportunities for active collaboration and participation. The findings therefore support Social Constructivism as a useful theoretical lens because it explains how interaction can facilitate participation, knowledge sharing and collaborative problem-solving, while also acknowledging that individual and classroom factors may determine whether interaction develops into academically supportive collaboration.

5.1.2 Group Problem-Solving

The study established that the level of group problem-solving was high in secondary schools in Kole District. Learners frequently worked together to solve academic problems, contributed ideas during discussions, learned from group members and supported one another when addressing challenging tasks. Teachers similarly reported assigning collaborative activities and encouraging learners to develop solutions collectively through group discussions. The finding is consistent with Namusoke and Rukundo (2022), who found that cooperative learning enabled learners to work together on academic tasks, exchange ideas and develop confidence in solving

problems collectively. Similarly, Ahmad and Zakariyya (2022) established that collaborative problem-solving encouraged learners to analyse problems jointly, discuss possible solutions and support one another during learning activities. These findings correspond with the conceptual framework of the present study, in which group problem-solving is conceptualised as a dimension of peer collaboration involving joint analysis of academic tasks, exchange of ideas, shared decision-making and mutual assistance. From the perspective of Social Constructivism Theory, the high level of group problem-solving can be understood as evidence that learners were constructing and refining knowledge through interaction with peers. When learners explain their reasoning, compare possible solutions and respond to the ideas of group members, they obtain opportunities to extend their understanding beyond what they might accomplish independently.

The finding further agrees with Wang and Wu (2022), who reported that cooperative learning strengthened students' problem-solving abilities by promoting continuous interaction, knowledge sharing and collective responsibility during learning activities. Likewise, Rojas et al. (2022) found that structured collaborative problem-solving encouraged group regulation, joint decision-making and mutual support, enabling learners to develop shared solutions to academic challenges. The agreement between these studies and the present findings suggests that group problem-solving is strengthened when learners are given opportunities to participate actively rather than simply receiving solutions from teachers. This interpretation is consistent with the Social Constructivist concept of the Zone of Proximal Development (ZPD), whereby learners can accomplish challenging tasks through assistance and guidance from more knowledgeable peers. In the present study, learners' reports of learning from group members and supporting one another during difficult tasks indicate that peer interaction may have provided such assistance. However, the theory should not be interpreted as suggesting that group work automatically produces effective learning. The quality of participation, prior knowledge, individual motivation, task structure and teacher guidance can influence how productively learners engage in group problem-solving. Therefore, the high level reported in this study reflects frequent engagement in collective problem-solving but does not by itself establish that every group interaction resulted in the same level of learning.

The findings, however, differ from Pulgar et al. (2022), who found that the effectiveness of collaborative problem-solving was influenced substantially by the quality of friendship relationships among learners. Their findings suggested that learners working with close friends experienced stronger cooperation, whereas groups with weaker social connections encountered greater difficulties in coordinating their activities and developing shared solutions. In contrast, the present study found a high level of group problem-solving across the participating schools, without establishing that such practices depended on friendship ties. The difference may be

associated with variations in classroom organisation, teacher facilitation, group formation procedures and the nature of collaborative tasks. Whereas Pulgar et al. (2022) examined collaboration in relation to friendship networks, the present study focused on routine classroom group problem-solving as a component of peer collaboration. The finding therefore provides support for the conceptual framework and Social Constructivism Theory while also demonstrating the need to distinguish between the frequency of group problem-solving and its quality. The high level of collective task engagement observed in the study suggests that learners were regularly provided with opportunities to exchange ideas, support one another and develop shared solutions, consistent with findings by Wang and Wu (2022) and Rojas et al. (2022). At the same time, the limitations of Social Constructivism are recognised because social interaction alone may not explain differences in learners' problem-solving outcomes; individual cognitive abilities, prior knowledge, motivation and instructional conditions may also shape how learners benefit from group activities.

5.1.3 Peer Tutoring/Scaffolding

The study established that the level of peer tutoring and scaffolding was moderately high in secondary schools in Kole District. Learners reported that explanations from classmates improved their understanding of learning content and that they benefited from academic support provided by peers, while teachers indicated that they encouraged learners to assist one another during lessons. However, direct academic guidance and sustained support among learners were not consistently practised in all learning situations. The finding suggests that peer tutoring and scaffolding were evident but varied in frequency and intensity across classroom activities. This finding is consistent with Bowman-Perrott et al. (2020), who found that peer tutoring provided opportunities for learners to explain concepts, give feedback and strengthen academic understanding through structured interaction. Similarly, Hott, Walker and Sahni (2021) reported that peer-assisted learning enabled learners to exchange explanations, clarify misconceptions and support one another during learning activities. These studies support the conceptual framework of the present study, particularly the peer tutoring/scaffolding dimension, which proposes that learners can assist one another through explanation, guidance, feedback and academic support. The moderate level found in Kole District may therefore indicate that such practices were established in classrooms but had not yet become consistent features of every learning activity.

The findings are further supported by Ginsburg-Block, Rohrbeck and Fantuzzo (2019), who found that peer tutoring promoted learner engagement, confidence and academic achievement when students assumed supportive roles during instruction. Their findings also showed that teacher guidance influenced the frequency and effectiveness of peer assistance. This relates to

Social Constructivism Theory, particularly Vygotsky's concept of the Zone of Proximal Development, which proposes that learners can perform tasks with assistance from more knowledgeable others before eventually performing them independently. In the present study, learners' reports that peer explanations improved their understanding suggest that classmates were sometimes functioning as sources of assistance within this zone. The finding also relates to scaffolding because peer explanations and guidance can provide temporary support that enables learners to understand difficult concepts and complete learning tasks. However, the moderate level of peer tutoring indicates that this process was not uniform across all classrooms. Differences in learners' prior knowledge, confidence, willingness to assist others and teachers' ability to organise collaborative activities may influence whether peer support develops into effective scaffolding. Thus, the findings support Social Constructivism while also recognising that social interaction alone does not guarantee effective peer learning.

The finding contrasts with Le, Janssen and Wubbels (2018), who reported that peer tutoring could produce uneven learning outcomes where learners lacked the knowledge and skills required to provide accurate explanations and sustained academic support. Their findings suggested that ineffective peer guidance could contribute to misconceptions and unequal participation. The difference may be explained by variations in teacher supervision, learner preparedness and the organisation of collaborative activities. While the present study found that learners generally perceived peer explanations as beneficial, the moderate level of peer tutoring and scaffolding suggests that the practice was not sufficiently consistent to assume that all learners received the same level of academic support. This interpretation is also consistent with Hott, Walker and Sahni (2021), who noted that the effectiveness of peer-assisted learning can vary according to the quality of interaction and the assistance provided by learners. In relation to the conceptual framework, the finding therefore suggests that peer tutoring and scaffolding should involve more than simply placing learners together; learners need opportunities to explain concepts, guide classmates, provide feedback and jointly address learning difficulties. The study consequently supports the use of Social Constructivism as a theoretical explanation of peer tutoring and scaffolding while acknowledging that individual learner characteristics, teacher facilitation and classroom organisation can influence how effectively these practices contribute to students' learning activities.

5.1.4 Role Allocation and Participation

The study revealed that the level of role allocation and participation was moderate in secondary schools in Kole District. Teachers reported assigning responsibilities, monitoring learners' involvement and encouraging students to take responsibility during collaborative activities. However, learners expressed less positive views regarding equal participation and

opportunities to contribute their individual skills during group work. This finding is consistent with Gillies (2020), who found that assigning specific responsibilities within cooperative learning groups encouraged learner participation and accountability, although unequal involvement could occur when some learners dominated discussions while others remained passive. Similarly, Kozikoğlu (2021) observed that structured role allocation increased learner engagement during collaborative learning, but differences in learners' confidence and communication abilities influenced the extent of their participation. These findings support the conceptual framework of the present study, particularly the role allocation and participation dimension, which assumes that assigning responsibilities can promote shared participation and accountability during peer collaboration. However, the moderate level found in this study suggests that assigning roles alone did not ensure equal involvement of all group members. Some learners participated more actively than others, indicating that the effectiveness of role allocation depends not only on the presence of assigned responsibilities but also on how learners are supported to perform them.

The findings further agree with Järvelä, Malmberg and Koivuniemi (2021), who reported that collaborative learning was more effective when learners were given defined responsibilities that promoted shared accountability and coordinated participation, although equal contribution was not always achieved. Likewise, Saqr, Viberg and Vartiainen (2023) found that assigning roles improved coordination and responsibility among group members, but differences in learner engagement and interaction patterns continued to influence participation. These findings are consistent with Social Constructivism Theory, which views learning as a socially mediated process in which learners construct knowledge through interaction and shared activity. Role allocation can create opportunities for learners to participate within collaborative learning groups by requiring them to contribute to a common task, exchange ideas and support one another. It can also provide a basis for peer scaffolding because learners with different responsibilities may contribute different forms of knowledge and assistance. However, the present finding that equal participation remained moderate demonstrates one of the limitations of relying on social interaction alone. Learners differ in confidence, prior knowledge, motivation and communication skills, and these differences may affect their willingness and ability to perform assigned roles. Therefore, while role allocation creates opportunities for participation, meaningful collaborative learning requires continued teacher guidance and monitoring to ensure that less active learners are also able to contribute.

The findings differ from Zhang, Chen and Wang (2022), who reported that carefully structured collaborative learning involving clearly defined roles, regular feedback and peer accountability produced consistently high and more equitable participation among learners. The difference suggests that the presence of role allocation does not necessarily produce the same level of

participation across educational settings. In the present study, teachers reported assigning responsibilities, but learners did not consistently experience equal opportunities to contribute their skills. This variation may be related to differences in classroom management, teacher follow-up, learner readiness and the consistency with which collaborative learning procedures are implemented. The finding also has implications for the conceptual framework because role allocation and participation should be understood as related but distinct processes: roles may be assigned formally, while actual participation depends on whether learners are given opportunities and encouragement to perform those roles. This interpretation is supported by Gillies (2020) and Saqr, Viberg and Vartiainen (2023), whose findings indicate that structured responsibilities can promote accountability and coordination but require teacher monitoring to prevent passive participation. The present study therefore supports Social Constructivism as a useful explanation of how shared responsibilities can facilitate collaborative learning, while recognising that individual learner characteristics and teacher facilitation influence whether assigned roles translate into balanced participation.

5.2 The Status of Students' Learning Outcomes in Secondary Schools

5.2.1 Subject Tests and Examinations

The findings indicated that students' perceived academic outcomes were generally favourable in secondary schools in Kole District, although differences emerged across the indicators of subject learning and examination performance. Learners reported relatively positive experiences regarding understanding lessons through classroom activities, achieving better results in schoolwork and improving their performance in academic assessments. Teachers similarly reported favourable observations concerning improvement in academic results and the completion of learning tasks. However, learners reported comparatively lower confidence in completing academic tasks and applying knowledge in examinations. These findings suggest that favourable classroom learning experiences did not necessarily translate into equally strong perceptions of independent knowledge application during formal examinations.

The findings are consistent with Hattie (2023), who emphasised the importance of instructional practices, feedback and learner participation in supporting learning and achievement. They also relate to the argument by Kyriakides, Creemers and Charalambous (2021) that the quality of classroom instruction is an important consideration in explaining differences in learners' achievement. In the present study, headteachers reported that classroom discussions, group work, questioning and interactive learning activities were perceived to support learners' understanding of subject content and preparation for assessments. These accounts suggest that participatory classroom practices may provide opportunities for learners to clarify concepts, exchange ideas and practise explaining their answers.

The findings can also be interpreted through Social Constructivism Theory, which emphasises knowledge construction through interaction, dialogue and guided participation. When learners discuss subject content, receive explanations from peers and teachers, and articulate their reasoning, they may develop a deeper understanding of concepts than through passive reception of information alone. Such learning experiences may support preparation for subject tests and examinations. Nevertheless, the comparatively lower learner ratings concerning examination application indicate that participation and understanding should not be assumed to guarantee the independent application of knowledge under formal assessment conditions. Examination performance may also be influenced by prior knowledge, individual study habits, assessment demands, learner confidence and the quality of instructional support.

The findings should therefore be interpreted cautiously. Although the questionnaire results and headteachers' accounts indicate generally favourable perceptions of academic learning, they do not independently establish that students' subject test or examination scores improved. A more direct assessment would require examination results, subject-level assessment records and, where appropriate, comparisons across assessment periods. The study consequently suggests that classroom learning activities may support students' preparation for formal assessments, while the extent of their contribution to actual examination achievement requires verification using documented performance data.

5.2.2 Continuous Assessment Records

The findings on continuous assessment-related practices indicated that learners generally reported favourable experiences of evaluating their understanding, identifying areas requiring improvement and learning from mistakes. Teachers also reported encouraging learners to consider ways of improving their learning outcomes and guiding them to evaluate their understanding. However, teachers were less positive about observing learners reflect on their learning progress and identify areas requiring improvement. This difference suggests that learners' perceptions of their reflective practices were more favourable than teachers' observations of some of those practices.

The findings are consistent with Panadero et al. (2022), who discussed the role of self-assessment and reflective processes in helping learners monitor their understanding and regulate subsequent learning. They also relate to Carless and Winstone (2023), whose work highlights the importance of learners interpreting feedback and using it to determine appropriate actions for improvement. In the present study, headteachers described practices such as lesson summaries, review questions, written reflections and discussions of learning difficulties. These practices may support continuous assessment by helping teachers identify

misconceptions, monitor understanding and provide feedback that informs subsequent instruction.

Social Constructivism Theory provides a useful explanation for these practices because learning can be strengthened through dialogue, guided reflection and feedback from teachers and peers. When learners explain their answers, discuss mistakes and compare their understanding with others, they may identify gaps in their knowledge and develop strategies for addressing them. From this perspective, continuous assessment is not limited to assigning marks; it can also involve gathering information about learning progress and using that information to guide improvement.

However, the results must be distinguished from evidence obtained directly from continuous assessment records. The questionnaire items measured reflective and feedback-related practices rather than the existence, completeness or quality of documented assessment records. Likewise, the headteachers' accounts described reported classroom practices but did not establish whether teachers systematically recorded assessment results, maintained individual learner progress records or used the records consistently to plan remedial instruction. The findings therefore suggest that some practices relevant to continuous assessment were reportedly taking place, but the adequacy of formal continuous assessment records would need to be established through examination of teachers' assessment books, learners' progress records, marked assignments, feedback comments and related school documents.

5.2.3 Practical Assessments

The findings relating to cognitive skills and the application of knowledge indicated that learners generally perceived classroom activities as supporting their thinking, reasoning, analysis and problem-solving abilities. Generating new ideas received the highest learner rating among the indicators, while applying learning to solve academic problems and analysing information also received favourable ratings. Teachers, however, were less positive about observing learners generate new ideas and apply knowledge during learning activities, although they reported more favourable observations concerning learners' analysis of information and reasoning. This divergence suggests that learners' perceptions of their cognitive development were not fully matched by teachers' observations of how consistently these skills were demonstrated.

These findings relate to Darling-Hammond et al. (2020), who emphasised the importance of active and learner-centred approaches in developing higher-order thinking and problem-solving. They also correspond with Fiorella and Mayer (2021), whose work highlights the importance of instructional activities that require learners to explain, process and apply knowledge. Such perspectives are relevant to practical assessments because practical tasks

often require learners to demonstrate their understanding through procedures, investigations, demonstrations, fieldwork or the application of concepts to concrete situations.

From the perspective of Social Constructivism Theory, practical learning can provide opportunities for learners to construct and refine knowledge through guided activity, dialogue, observation and feedback. Where teachers organise activities that require learners to investigate problems, explain procedures and evaluate results, students may develop opportunities to connect theoretical knowledge with practical application. The findings from the headteacher interviews similarly suggest that classroom discussions and collaborative exercises encouraged learners to explain their answers and engage with subject content. Such practices may provide a foundation for practical learning when they are deliberately connected to practical tasks and assessment criteria.

Nevertheless, the available questionnaire items did not directly measure performance in practical assessments. They focused on perceived cognitive development and application of knowledge rather than learners' demonstrated competence in experiments, fieldwork, demonstrations or other practical tasks. Consequently, the findings cannot establish that practical assessment performance was satisfactory or that learners achieved particular practical competencies. To determine the status of practical assessments more directly, the study would need to examine practical assessment scores, performance rubrics, observation checklists, completed practical tasks and relevant subject-specific assessment records. The current findings should therefore be understood as indicating perceived cognitive capacities that may be relevant to practical performance, rather than as direct evidence of achievement in practical assessments.

5.2.4 Project-Based Assessments

The findings on engagement in classroom learning activities indicated that learners generally reported favourable participation, task completion, concentration, contribution of ideas and interest in academic activities. Teachers reported similar levels of engagement, with positive responses concerning learner participation, interest and involvement in collaborative activities. The relatively close average ratings for learners and teachers suggest broad agreement about classroom engagement. However, these indicators measured participation in learning activities rather than the completion, quality or assessment of formal projects.

The qualitative findings provided additional insight into the organisation of group activities. Headteachers described how teachers assigned responsibilities such as group leader, secretary, presenter and timekeeper, and sometimes rotated these roles to give different learners opportunities to contribute. These accounts suggest that some teachers used structured group

responsibilities to organise participation and encourage learners to undertake different tasks. Such practices may be relevant to project-based assessment, in which students may need to plan activities, distribute responsibilities, investigate questions, produce outputs and communicate their findings.

These findings can be interpreted through Social Constructivism Theory, which emphasises learning through interaction, shared activity and the construction of meaning with others. In project-based learning, learners may draw on one another's knowledge, negotiate different perspectives and coordinate their contributions towards a shared outcome. Defined responsibilities may also help teachers identify individual contributions and encourage participation from learners who might otherwise remain less involved. In this respect, the reported use of group roles provides contextual evidence of practices that could support collaborative project work.

However, the available evidence does not establish that the reported group activities constituted formal projects or that learners were assessed against project-specific criteria. Participation in group work alone does not demonstrate the quality of a completed project, the achievement of intended learning outcomes or the extent of each learner's contribution. Direct evidence of project-based assessment would require examination of completed projects, project reports, presentations, assessment rubrics, teacher feedback and records showing how individual and group performance were evaluated. The findings therefore suggest that classroom engagement and structured group responsibilities may provide a foundation for project-based learning, but the actual status of project-based assessments remains to be verified using relevant assessment artefacts.

5.2.5 Overall Discussion of Students' Learning Outcomes

Taken together, the findings suggest that students and teachers generally perceived classroom learning experiences favourably across the four dimensions examined. Learners reported positive experiences concerning academic understanding, reflective learning, cognitive engagement and participation in classroom activities. Teachers also reported favourable observations in several areas, particularly academic achievement-related experiences and classroom engagement. However, differences between learners' self-reports and teachers' observations were evident in the application of knowledge, generation of new ideas and some reflective practices.

The qualitative interviews provided contextual explanations of the practices that headteachers associated with students' learning. These included interactive classroom discussions, questioning, lesson summaries, reflection on mistakes and the allocation of responsibilities

during group activities. The accounts suggest that teachers reportedly used approaches intended to promote understanding, feedback, participation and shared responsibility. They provide contextual support for interpreting the quantitative findings, but they do not independently demonstrate improved examination scores, systematic continuous assessment records, practical assessment achievement or successful project completion.

An important methodological consideration is that the questionnaire items were originally framed around engagement in tasks, cognitive skill development, academic performance and reflective learning. Their subsequent classification under subject tests and examinations, continuous assessment records, practical assessments and project-based assessments is therefore provisional. Although the original results can be discussed in relation to these dimensions, the items do not measure all four constructs directly. This distinction is important for ensuring that conclusions remain consistent with the evidence collected.

The study consequently indicates generally favourable perceptions of students' learning experiences, while also identifying areas requiring further attention, particularly the independent application of knowledge and the consistent demonstration of higher-order thinking. More definitive conclusions about students' learning outcomes would require triangulation with school-based assessment evidence, including subject tests and examination results, continuous assessment records, practical performance data and completed project assessments.

5.3 The Relationship Between Peer Collaboration and Learning Activities in Secondary Schools

The study examined the relationship between peer collaboration and learning activities in secondary schools in Kole District. The findings revealed positive and statistically significant relationships between all four dimensions of peer collaboration and learning activities. Student-to-student interaction had a positive relationship with learning activities ($r = .344, p = .004$), while group problem-solving demonstrated a stronger relationship ($r = .595, p < .001$). Peer tutoring and scaffolding also had a strong positive relationship ($r = .662, p < .001$), whereas role allocation and participation recorded the strongest relationship ($r = .701, p < .001$). These results suggest that higher levels of the measured collaborative practices were associated with higher levels of engagement in learning activities, although the strength of the associations varied across the dimensions.

The strongest relationship, observed between role allocation and participation and learning activities, suggests that the organisation of collaborative tasks may be particularly important in classroom learning. When learners are assigned responsibilities and expected to contribute to

shared activities, they have opportunities to participate actively, exchange ideas and take responsibility for completing learning tasks. Similarly, the relationship between peer tutoring and scaffolding suggests that opportunities for learners to explain concepts, assist classmates and provide peer support were associated with greater engagement in learning activities. Group problem-solving also demonstrated a substantial positive relationship, indicating that working collectively on academic problems was associated with students' involvement in classroom learning. Student-to-student interaction had the weakest relationship, although it remained positive and statistically significant. This suggests that interaction alone may be less strongly associated with learning activities than collaboration involving explicit responsibilities, problem-solving and peer support.

These findings are consistent with the central propositions of Social Constructivism Theory, which emphasises the role of social interaction, dialogue and guided participation in knowledge construction. Through collaborative problem-solving, learners can compare interpretations, explain their reasoning and negotiate possible solutions. Peer tutoring and scaffolding may provide additional opportunities for learners to clarify difficult concepts and develop understanding with support from classmates. Similarly, structured group responsibilities may help organise interaction around shared learning goals. The findings therefore support the relevance of social interaction and purposeful collaboration as features of classroom learning, while indicating that the form and organisation of collaboration may matter.

However, the results should be interpreted within the limits of the research design and the variables measured. Pearson's correlation establishes the direction and strength of association between variables but does not demonstrate that one variable caused changes in another. The observed relationships may also be influenced by teacher facilitation, learner motivation, prior knowledge, classroom organisation, class size and access to learning resources. Moreover, the presence of group activities does not necessarily guarantee meaningful collaboration, because participation may be uneven and some learners may depend excessively on others. Effective collaborative learning requires clear expectations, meaningful individual contributions and appropriate teacher guidance.

An important distinction must also be maintained between learning activities and students' learning outcomes. The reported coefficients describe relationships between peer collaboration and learning activities. They do not establish that peer collaboration was significantly associated with examination scores, continuous assessment results, practical assessment performance or project-based assessment achievement, because those outcomes were not directly represented in the reported correlation analysis. Consequently, the findings should not

be used to claim that peer collaboration improved students' academic achievement. Such a conclusion would require direct analysis of appropriate assessment data.

Overall, the findings demonstrate that peer collaboration was positively and significantly associated with learning activities in the participating secondary schools. Role allocation and participation showed the strongest relationship, followed by peer tutoring and scaffolding, group problem-solving and student-to-student interaction. The findings highlight the importance of organising collaboration around meaningful tasks, peer support and shared responsibilities. They also establish a basis for further investigation into whether, and under what conditions, these collaborative practices are associated with measurable improvements in students' learning outcomes.

5.4 Conclusions

5.4.1 Objective One: To Establish the Level of Peer Collaboration in Secondary Schools in Kole District

The study identified four dimensions of peer collaboration: student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation. The findings indicate that these dimensions were positively associated with learning activities, with role allocation and participation recording the strongest relationship. This highlights the potential importance of structured responsibilities and meaningful contributions during collaborative learning. However, the strength of a correlation does not establish the level of a construct. Therefore, conclusions about whether peer collaboration was low, moderate or high should be based on the descriptive statistics for the peer-collaboration measures rather than the correlation coefficients alone.

5.4.2 Objective Two: To Assess the Status of Students' Learning Outcomes in Secondary Schools in Kole District

The findings indicated generally favourable learner and teacher perceptions of classroom learning experiences, including academic understanding, cognitive engagement, reflection and participation. Nevertheless, differences emerged in learners' reported confidence in applying knowledge during examinations and teachers' observations of learners applying knowledge and generating new ideas. These differences suggest that positive classroom experiences do not necessarily translate uniformly into independent application of knowledge or consistently demonstrated higher-order thinking.

The qualitative findings further indicated that headteachers reported the use of interactive discussions, review questions, reflection and structured group responsibilities to support

learning. However, the original questionnaire items primarily measured engagement, cognitive skill development, perceived academic performance and reflective learning. They did not directly establish students' achievement in subject tests and examinations, the quality of continuous assessment records, practical assessment performance or project-based assessment outcomes. The study therefore concludes that reported learning experiences were generally favourable, while the actual status of these four dimensions of learning outcomes requires verification through relevant assessment records and performance evidence.

5.4.3 Objective Three: To Determine the Relationship Between Peer Collaboration and Learning Activities in Secondary Schools in Kole District

The study established positive and statistically significant relationships between each of the four dimensions of peer collaboration and learning activities. Student-to-student interaction, group problem-solving, peer tutoring and scaffolding, and role allocation and participation were all positively associated with learning activities. Role allocation and participation had the strongest relationship, while student-to-student interaction had the weakest. These findings indicate that collaborative practices involving defined responsibilities, peer assistance and shared problem-solving were more strongly associated with learning activities than general interaction alone.

The study concludes that peer collaboration is an important correlate of learning activities in the participating schools. Nevertheless, the correlational findings do not establish causation, and the relationship between peer collaboration and actual students' learning outcomes remains undetermined by the reported analysis. Further analysis would be necessary to establish whether collaborative practices are associated with measurable differences in examination performance, continuous assessment, practical assessments and project-based assessments.

5.4.4 Overall Conclusion

The study demonstrates that peer collaboration was positively associated with learning activities in secondary schools in Kole District. The findings suggest that interaction, group problem-solving, peer tutoring, scaffolding and clearly assigned responsibilities are relevant features of collaborative classroom learning. Students and teachers also reported generally favourable learning experiences, although some aspects of independent knowledge application and higher-order thinking warrant further attention.

Social Constructivism Theory provides a useful framework for interpreting these findings because it explains how dialogue, interaction and guided participation can support learning. However, the study distinguishes the observed relationships from claims about causal effects

or verified academic achievement. Establishing whether peer collaboration is associated with actual learning outcomes will require direct assessment evidence and appropriate statistical analysis.

5.5 Recommendations

5.5.1 Recommendations for Students

Students should participate actively and responsibly in collaborative learning activities by contributing ideas, asking questions, explaining concepts and supporting classmates. They should take responsibility for assigned tasks, respect differing viewpoints and ensure that their participation contributes to the group's learning objectives. Students should also use peer discussions to identify gaps in their understanding while developing the ability to apply knowledge independently.

5.5.2 Recommendations for Teachers

Teachers should incorporate purposeful peer collaboration into classroom instruction through structured discussions, group problem-solving, peer tutoring and activities that require learners to explain and apply knowledge. They should assign and rotate group responsibilities to promote equitable participation and reduce the likelihood that a few learners dominate collaborative tasks. Teachers should also monitor individual contributions and provide guidance where learners experience difficulties or participation is uneven.

Teachers should connect collaborative learning activities with appropriate assessment practices. These may include subject tests and examinations to assess individual understanding, continuous assessment records to monitor progress, practical tasks to assess the application of knowledge and project-based assessments to evaluate the production of learning outputs. Clear assessment criteria and timely feedback should be used to identify learning gaps and guide subsequent instruction.

5.5.3 Recommendations for School Administrators

School administrators should support the implementation of collaborative learning through professional development, instructional supervision and the provision of appropriate learning resources. They should encourage teachers to share effective practices for organising group work, facilitating peer support and monitoring individual contributions. Administrators should also ensure that school-based assessment practices are systematic and that assessment results are documented and used to inform instructional decisions.

In addition, school administrators should promote the use of subject assessment results, continuous assessment records, practical performance evidence and project assessment rubrics to monitor students' learning outcomes. Reviewing these records can help schools identify areas of strength and weakness and determine where additional instructional support is required.

5.5.4 Recommendations for the District Education Office

The District Education Office should provide guidance and professional support to secondary schools on implementing collaborative learning and assessing students' learning outcomes. Through school supervision, it should examine how teachers organise peer collaboration, monitor participation and use assessment evidence to improve teaching and learning. The Office should also facilitate the sharing of effective practices across schools and support teachers in using appropriate assessment tools and feedback strategies.

5.5.5 Recommendations for Further Research

Further research should investigate the relationship between peer collaboration and objectively measured students' learning outcomes. Researchers could analyse examination results, continuous assessment records, practical assessment scores and project assessment results alongside measures of peer collaboration. Longitudinal or quasi-experimental designs could provide stronger evidence about whether changes in collaborative learning practices are associated with subsequent changes in academic achievement.

Further studies could also examine the conditions that influence the effectiveness of peer collaboration, including teacher facilitation, class size, and availability of learning materials, learner motivation and the distribution of responsibilities within groups. Such investigations would clarify how collaborative practices operate in different classroom contexts and whether particular forms of collaboration are more consistently associated with measurable learning outcomes.

5.6 Areas of Further Study

Other studies could look at:

i. The influence of teacher instructional practices on the effectiveness of peer collaboration in secondary schools.
ii. The relationship between peer collaboration and learners' academic achievement in specific subject areas
iii. The effect of peer collaboration on learners' motivation, self-confidence, and classroom participation in secondary schools.

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Appendices

Appendix I: Questionnaire for Learners

GULU UNIVERSITY

Research Title: Peer Collaboration and Students' Learning Outcomes in Secondary Schools in Kole District, Uganda

Introduction to the Respondent

Dear Respondent,

I am a student of Gulu University conducting a study on peer collaboration and students' learning outcomes in secondary schools in Kole District, Uganda. The study seeks to understand how students' interactions, group problem-solving, peer tutoring and scaffolding, and allocation of group responsibilities relate to students' performance in subject tests and examinations, continuous assessment, practical assessments, and project-based assessments.

You are kindly requested to respond honestly to the questions in this questionnaire. Your participation is voluntary, and the information you provide will be treated confidentially and used strictly for academic purposes. Do not write your name on this questionnaire. There are no right or wrong answers; please select the responses that best represent your experiences.

Thank you for your participation.

Section A: Demographic Characteristics

DEMOGRAPHIC CHARACTERISTICS

Kindly tick (✓) the option that best describes you.

What is your gender?

☐ Male

☐ Female

What is your age group?

☐ Below 14 years

☐ 14–16 years

☐ 17–19 years

☐ Above 19 years

What is your current class level?

☐ Senior One

☐ Senior Two

☐ Senior Three

☐ Senior Four

☐ Senior Five

☐ Senior Six

How long have you studied in this school?

Less than 1 year ☐

☐ 1–2 years

☐ 3–4 years

☐ More than 4 years

How often do you participate in group learning activities with your classmates?

☐ Always

☐ Often

☐ Sometimes

☐ Rarely

☐ Never

Section B: Peer Collaboration

Instructions: Indicate the extent to which you agree with each statement about your experiences of peer collaboration at school. Tick one response for each statement.

Response scale: 1 = Strongly Disagree (SD); 2 = Disagree (D); 3 = Neutral (N); 4 = Agree (A); 5 = Strongly Agree (SA).

B1. Student-to-Student Interaction

No.	Statement	1	2	3	4	5
1	I discuss learning ideas with classmates during lessons.					
2	I learn from exchanging ideas with other students.					
3	I share my opinions with classmates during group activities.					
4	I ask classmates for help when I encounter learning difficulties.					
5	I communicate freely with classmates when working on learning tasks.					

B2. Group Problem-Solving

No.	Statement	1	2	3	4	5
1	I work with classmates to solve academic problems.					
2	I contribute ideas when our group is solving a problem.					
3	I learn alternative ways of solving problems from group members.					
4	I participate in group discussions to identify possible solutions.					
5	I support classmates when our group faces challenging tasks.					

B3. Peer Tutoring and Scaffolding

No.	Statement	1	2	3	4	5
1	I receive academic help from classmates when I need it.					

2	I explain difficult concepts to classmates when I understand them.					
3	Explanations from classmates help me understand difficult topics.					
4	I guide classmates through learning tasks they find difficult.					
5	I receive step-by-step support from classmates when learning challenging content.					

B4. Role Allocation and Participation

No.	Statement	1	2	3	4	5
1	I take an active role during group learning activities.					
2	I carry out the responsibilities assigned to me during group tasks.					
3	I have a fair opportunity to contribute during group activities.					
4	I contribute my abilities and ideas to collaborative tasks.					
5	I respect the responsibilities assigned to other group members.					

Section C: Students' Learning Outcomes

Instructions: The following statements concern your experiences and performance in school assessments. Indicate how far you agree with each statement. Where you have not undertaken a particular type of assessment, indicate "Not Applicable" if that option is provided.

Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree; N/A = Not Applicable.

C1. Subject Tests and Examinations

No.	Statement	1	2	3	4	5	N/A
1	I achieve satisfactory results in subject tests and examinations.						
2	I can explain the main concepts assessed in my subject tests and examinations.						
3	I can apply what I have learned when answering examination questions.						
4	My performance in subject tests and examinations has improved over time.						
5	I can answer questions that require me to analyse information and solve problems in examinations.						

C2. Continuous Assessment

No.	Statement	1	2	3	4	5	N/A
1	I complete class exercises and assignments used to assess my progress.						
2	I perform satisfactorily in regular classroom assessments.						
3	Teachers provide feedback that helps me understand my performance in continuous assessment.						

4	I use feedback from class exercises, assignments and tests to improve my subsequent work.						
5	My performance in regular assessments shows progress in my understanding of subject content.						

C3. Practical Assessments

Answer these questions in relation to subjects in which you undertake practical activities or performance-based tasks.

No.	Statement	1	2	3	4	5	N/A
1	I can demonstrate the practical skills required in the subjects I study.						
2	I can follow the appropriate procedures when completing practical tasks.						
3	I can apply subject knowledge to complete practical activities.						
4	I perform satisfactorily when my practical work is assessed by a teacher.						
5	I use feedback on practical tasks to improve my performance.						

C4. Project-Based Assessments

No.	Statement	1	2	3	4	5	N/A
1	I complete assigned school projects according to the stated requirements.						
2	I can apply knowledge from my subjects when developing a project.						
3	I contribute meaningfully to group projects when projects are completed collaboratively.						
4	I can present or explain the findings and outputs of my projects.						
5	I use feedback on completed projects to improve the quality of my work.						

Thank you for completing the questionnaire.

Appendix II: Questionnaire for Teachers

GULU UNIVERSITY

Research Title: Peer Collaboration and Students' Learning Outcomes in Secondary Schools in Kole District, Uganda

Introduction to the Respondent

Dear Respondent,

I am conducting an academic study at Gulu University on peer collaboration and students' learning outcomes in secondary schools in Kole District. The study examines the relationship between collaborative learning practices and students' performance in subject tests and examinations, continuous assessment, practical assessments, and project-based assessments.

You are requested to provide honest responses based on your teaching experience and available assessment evidence. Your participation is voluntary, and your responses will be treated confidentially and used exclusively for academic purposes. Do not write your name on this questionnaire.

Thank you for your cooperation.

Section A: Demographic Characteristics

Instructions: Tick (✓) the appropriate response.

What is your gender?

☐ Male

☐ Female

What is your age group?

☐ Below 25 years

☐ 25–34 years

☐ 35–44 years

☐ 45 years and above

What is your highest level of education attained?

☐ Diploma

☐ Bachelor's Degree

☐ Postgraduate qualification

Other (Specify) _____

How long have you been teaching?

☐ Below 5 years

☐ 5–10 years

☐ 11–15 years

☐ Above 15 years

What subject area do you teach?

☐ Sciences

☐ Humanities

☐ Languages

☐ Mathematics

Other (Specify) _____

Section B: Peer Collaboration

Instructions: Indicate the extent to which you agree with each statement concerning peer collaboration among learners in the classes you teach.

Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

B1. Student-to-Student Interaction

No.	Statement	1	2	3	4	5
1	I provide opportunities for learners to exchange ideas during lessons.					
2	I observe learners discussing subject content with classmates.					
3	I organise activities that encourage learners to interact academically.					
4	Learners seek explanations from classmates when they encounter difficulties.					
5	Learners use discussions with classmates to clarify their understanding of lesson content.					

B2. Group Problem-Solving

No.	Statement	1	2	3	4	5
1	I assign group tasks that require learners to solve academic problems together.					
2	I encourage learners to combine ideas when addressing challenging tasks.					
3	I guide learners to develop solutions through group discussions.					
4	I observe learners evaluating different solutions before reaching conclusions.					
5	I provide opportunities for learners to explain the reasoning behind their group solutions.					

B3. Peer Tutoring and Scaffolding

No.	Statement	1	2	3	4	5
1	I encourage learners to assist classmates who experience learning difficulties.					
2	I provide opportunities for learners to explain concepts to their peers.					

3	I organise activities in which learners learn through peer assistance.					
4	I encourage learners to provide step-by-step explanations when helping classmates.					
5	I monitor peer support to ensure that learners develop their own understanding rather than merely copying answers.					

B4. Role Allocation and Participation

No.	Statement	1	2	3	4	5
1	I assign specific responsibilities to learners during group activities.					
2	I rotate group responsibilities to give different learners opportunities to participate.					
3	I monitor individual learners' contributions during group tasks.					
4	I encourage learners to take responsibility for completing their assigned tasks.					
5	I take steps to address unequal participation among members of learning groups.					

Section C: Students' Learning Outcomes

Instructions: Indicate the extent to which you agree with each statement, drawing on your teaching experience and assessment evidence where available.

Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree; N/A = Not Applicable or insufficient evidence.

C1. Subject Tests and Examinations

No.	Statement	1	2	3	4	5	N/A
1	Assessment records indicate that learners achieve satisfactory results in subject tests and examinations.						
2	Learners demonstrate understanding of key subject concepts in written tests and examinations.						
3	Learners apply subject knowledge when answering examination questions.						
4	Learners' test and examination results show improvement across successive assessments.						
5	Learners demonstrate analytical and problem-solving skills in test and examination responses.						

C2. Continuous Assessment Records

No.	Statement	1	2	3	4	5	N/A
1	Learners regularly complete class exercises, assignments and other continuous assessment tasks.						
2	Continuous assessment records provide evidence of learners' progress in subject learning.						
3	Learners' recorded performance improves following feedback and remedial support.						
4	I maintain assessment records that document learners' performance across successive tasks.						
5	I use continuous assessment results to identify learning difficulties and adjust my teaching.						

C3. Practical Assessments

Answer with reference to the subjects and classes in which you assess practical or performance-based tasks.

No.	Statement	1	2	3	4	5	N/A
1	Learners demonstrate the practical skills required by the subject.						

2	Learners follow appropriate procedures when carrying out practical tasks.						
3	Learners apply theoretical knowledge when completing practical activities.						
4	Practical assessment results indicate that learners meet the stated assessment criteria.						
5	Learners improve their practical performance after receiving feedback.						

C4. Project-Based Assessments

No.	Statement	1	2	3	4	5	N/A
1	Learners complete assigned projects in accordance with the stated requirements.						
2	Learners apply knowledge and skills from relevant subjects when undertaking projects.						
3	Learners' project outputs demonstrate analysis, creativity or problem-solving appropriate to the task.						
4	Learners can explain and present their project processes, findings or outputs.						
5	Project assessment records indicate the extent to which learners meet the stated assessment criteria.						

Thank you for completing the questionnaire.

Appendix III: Interview Guide for Head teachers

GULU UNIVERSITY

Research Title: Peer Collaboration and Students' Learning Outcomes in Secondary Schools in Kole District, Uganda

Introduction

Dear Headteacher,

I am conducting a study at Gulu University on peer collaboration and students' learning outcomes in secondary schools in Kole District. The study seeks to understand how peer collaboration relates to students' performance in subject tests and examinations, continuous assessment, practical assessments, and project-based assessments.

You are kindly requested to share your experiences and observations concerning classroom practices, assessment procedures and students' learning outcomes in your school. Your participation is voluntary, and the information you provide will be treated confidentially and used exclusively for academic purposes. With your permission, the interview may be recorded to ensure accurate representation of your responses.

Thank you for your time and contribution.

Interview Questions

Section A: Peer Collaboration Practices

How do learners interact with one another during classroom learning activities in your school? Please provide examples of common practices.

How do teachers organise and facilitate group problem-solving activities, and what challenges do they encounter?

How do teachers promote peer tutoring and scaffolding among learners? What arrangements are used to ensure that learners support one another effectively?

How are responsibilities assigned and rotated during group activities? How do teachers address situations in which some learners participate more actively than others?

Section B: Students' Learning Outcomes

Subject Tests and Examinations

How would you describe students' performance in subject tests and examinations in your school? What assessment evidence supports your observations?

What patterns, if any, have you observed between students' participation in collaborative learning and their performance in subject tests and examinations? Please distinguish documented evidence from your professional observations.

Continuous Assessment Records

How does your school organise and maintain continuous assessment records, and how are these records used to monitor students' progress?

How do teachers use continuous assessment feedback to identify learning difficulties and support improvement? Please provide examples.

Practical Assessments

How are practical or performance-based assessments conducted in subjects where they are applicable? What criteria are used to evaluate students' performance?

What evidence is available concerning students' ability to apply subject knowledge and demonstrate practical skills? What factors facilitate or constrain their performance?

Project-Based Assessments

To what extent are project-based assessments used in your school, and how are students' projects assessed?

How do teachers assess individual contributions, application of knowledge, problem-solving and the quality of project outputs, particularly when projects are completed collaboratively?

Section C: Relationship Between Peer Collaboration and Learning Outcomes

Based on available assessment records and your observations, what relationship, if any, exists between peer collaboration and students' learning outcomes? Please provide examples from the four assessment areas.

What school-level factors, such as class size, availability of learning materials, teacher competence, time allocation and school support, influence the organisation of peer collaboration and the assessment of learning outcomes?

What measures could your school adopt to strengthen peer collaboration and improve the assessment and monitoring of students' learning outcomes?

Closing question: Is there any additional information about peer collaboration, assessment practices or students' learning outcomes that you consider important to this study?

Thank you for participating in the interview.

Appendix IV: Informed Consent Form for Mixed Method Research

INFORMED CONSENT FORM

You are being invited to participate in a research study titled “Examining the Role of Peer Collaboration on Learning Activities among Learners”. The purpose of this study is to understand how peer collaboration practices such as student interaction, group problem-solving, peer tutoring, and role allocation influence learners’ engagement, cognitive development, academic performance, and reflective learning. Your participation is voluntary, and you are encouraged to ask any questions before agreeing to take part in the study.

If you agree to participate, you will be asked to respond to questions in a questionnaire or interview depending on the study design. The information you provide will be treated with strict confidentiality and will be used only for academic purposes. Your name will not appear in the final report, and all responses will be summarized in a way that protects your identity. There are no direct risks expected from participating in this study, and you are free to withdraw at any time without any penalty or loss of benefit.

By signing this form, you confirm that you have read and understood the information provided above and that you voluntarily agree to participate in this study. You also acknowledge that you are free to refuse to answer any question that you are not comfortable with.

PARTICIPANT DETAILS

Signature: _____

Date: _____

RESEARCHER DETAILS

Name of Researcher: _____

Signature: _____

Date: _____

Appendix V: Work plan/Timeframe 2025 - 2026

Activities	December2025	January 2025	February 2026	March 2026	April 2026	May 2026
Proposal writing						
Data collection						
Data analysis						
Compiling Draft and fair copy						
Producing final copy						
Submission of bound copies						

Appendix VI: Budget

S/No	Item	Quantity	Unit cost	Total cost (Ugx)
1	Stationeries			
	Ream of paper	03	20,000=	60,000=
	Pens (Bic)	06	700=	4,200=
	Note book	03	5,000=	15,000=
	Clip board	03	4,000=	12,000=
	Umbrella	03	10,000=	30,000=
	Flash disk	01	40,000=	40,000=
	Research fees			500,000=
	Participants' Compensation	297 73 03	2,000= 5,000= 15,000=	594,000= 365,000= 45,000=
2	Secretarial services			120,000=
3	Data analysis	01	400,000=	400,000=
4	Communication: Data/Airtime			250,000=
5	Transport			500,000=
6	Contingencies			600,000=
	Total			3,365,200=

Appendix VII: Krejcie and Morgan(1970): Determining Sample Size for a Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381

Where N- Study population

S- Sample population

Appendix VIII: Introductory Letter

GULU UNIVERSITY

P.O. BOX 166 GULU

TEL: +256471432922

OFFICE OF THE DEAN, FACULTY OF EDUCATION AND HUMANITIES

30th June 2026

TO : WHOM IT MAY CONCERN

This is to introduce to you Mr. Okellolira Humphereys Caesarinous (Reg No. 24/U/05342/MED/PS) a student pursuing a programme of study leading to an award of Master of Education in Education Management of Gulu University, Master of Gulu University.

He is undertaking research on the Topic:

EXAMINING THE ROLE OF PEER COLLABORATION ON STUDENTS LEARNING ACTIVITIES IN SECONDARY SCHOOLS IN KOLE DISTRICT

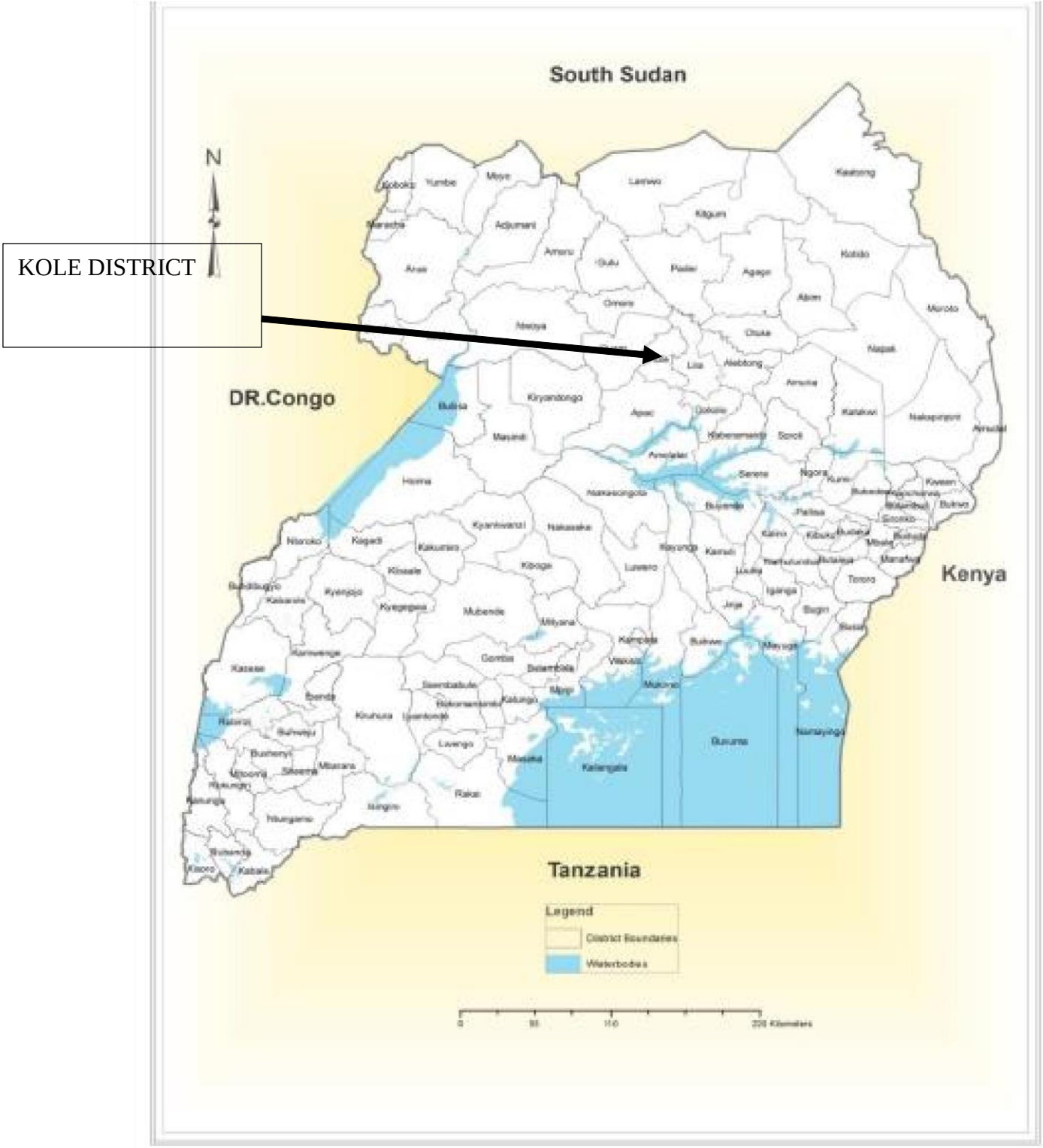
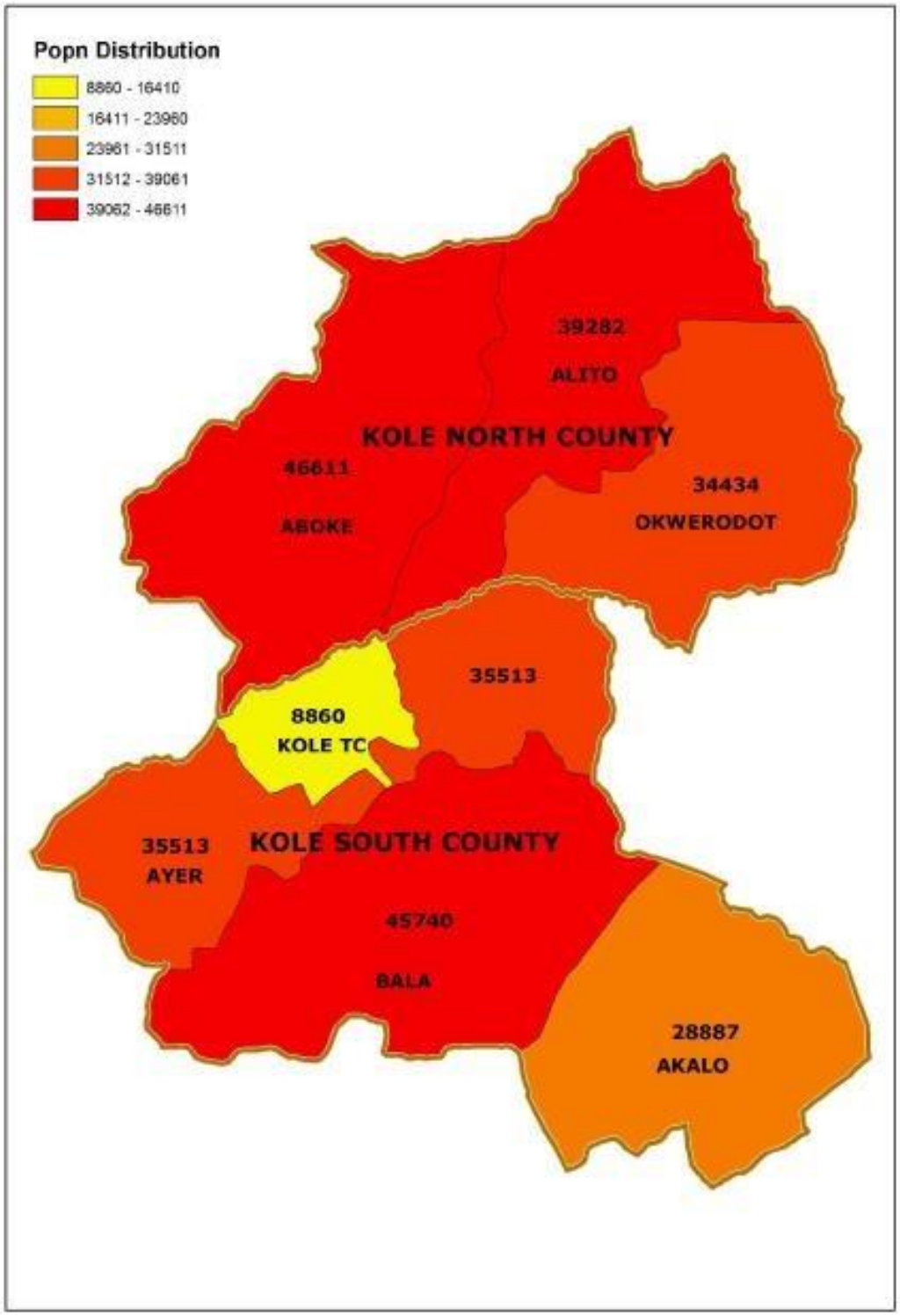
Any assistance rendered to him in relation to this research work will be highly appreciated.

Yours faithfully,

GULU UNIVERSITY
30 JUN 2026
FACULTY OF EDUCATION AND HUMANITIES

Assoc. Prof. Denis Thaddeus Ofoyuru
Dean, Faculty of Education and Humanities

Appendix IX: Map of Uganda showing Kole District with key



Appendix X : Map of Kole District with key