

Extent of the Instructional Leadership Practices Provided by the Head Teacher in Improving Teaching Mathematics in Primary Schools in Wanging'ombe District, Tanzania

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Abstract: This study investigated the extent to which instructional leadership practices by head teachers improve the teaching of Mathematics in primary schools in Wanging'ombe District, Tanzania. The study was guided by the Instructional Leadership Theory by Philip Hallinger and Joseph Murphy (1985) and employed a cross-sectional survey design within a quantitative research approach. The target population comprised 102 public primary schools, 912 teachers, 35092 pupils, and 102 head teachers, totalling 36208 individuals. A probability sampling method was used to select 30 schools, 30 head teachers, 210 pupils, and 90 teachers, yielding a total of 330 respondents. Data were collected through questionnaires, focus group discussion schedules, and classroom observation checklists. The research instruments were validated by three experts in Educational Administration and Planning at Mwenge Catholic University (MWECAU). A pilot study was conducted in 2 public primary schools. The reliability of the Likert-type items in the questionnaire was 0.980 for head teachers and 0.795 for teachers and the reliability of the classroom observation checklist was 0.882 ensured using Cronbach's Alpha ($\alpha \geq 0.7$). Data were analysed using descriptive and inferential statistics, including simple linear regression, at a 0.05 (α) significance level, with the aid of SPSS version 27. The study adhered to ethical considerations, including obtaining a research permit, obtaining informed consent, ensuring confidentiality, ensuring voluntary participation, maintaining anonymity, and ensuring transparency. The study found that instructional leadership practices are significant predictors of effective Mathematics teaching in public primary schools. This means that strengthening head teachers' instructional leadership practices is likely to improve the quality of Mathematics teaching by enhancing instructional supervision, teacher support, classroom practices, and pupils' learning experiences. The study concludes that instructional leadership practices are a significant determinant of the teaching of Mathematics in public primary schools, as they demonstrate effective instructional leadership, particularly through instructional supervision, teacher support, monitoring of teaching and learning, and the provision of instructional guidance. The study recommends that head teachers in Wanging'ombe District should strengthen the implementation of instructional leadership practices by conducting regular classroom visits, while the District Education Officers and Quality Assurance Officers should organise continuous professional development programmes on instructional leadership to equip head teachers with the necessary knowledge and skills.

Keywords: Instructional Leadership, Head Teachers, Mathematics Teaching, Primary Schools, Educational Administration, Wanging'ombe District.

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I. INTRODUCTION

Mathematics is a core subject in primary education and a fundamental component of quality learning, contributing to the development of numeracy skills, logical reasoning, and problem-solving abilities. The international development

agenda emphasises that improving foundational mathematics learning is essential for achieving Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive, equitable, and quality education and promote lifelong learning opportunities for all (UNESCO, 2022). International assessments and education reports indicate that a significant

proportion of learners worldwide struggle to demonstrate basic numeracy skills, which limits their future academic progression and employability (UNESCO, 2023). Some countries improved mathematics learning outcomes through strong instructional leadership, continuous teacher professional development, and effective monitoring of teaching practices within schools (OECD, 2021; World Bank, 2023). These experiences demonstrate that effective school leadership, particularly by head teachers, plays a crucial role in fostering quality teaching and improving pupils' engagement and performance in mathematics.

In developing countries, the evidence shows that school leadership has increasingly been recognised as a key factor influencing the quality of teaching and learning processes (The World Bank, 2021). Head teachers serve as instructional leaders who guide curriculum implementation, support teachers' professional growth, and monitor classroom instruction to ensure effective teaching practices. International organisations such as the Organisation for Economic Co-operation and Development and UNESCO emphasise that instructional leadership, teacher support, and professional development are essential for improving learning outcomes and strengthening educational quality (UNESCO, 2024). Evidence from education systems in countries such as Canada, Australia, and South Korea indicates that when head teachers actively supervise instruction, provide professional development opportunities, and support teachers in implementing effective pedagogical strategies, pupils become more engaged in learning activities and demonstrate improved academic achievement in mathematics (OECD, 2022). Conversely, weak instructional leadership and limited supervision of teaching may lead to ineffective teaching practices, reduced pupils' engagement, and low mastery of mathematical skills.

In Africa, improving mathematics learning outcomes remains a major educational challenge in achieving SDG 4, despite ongoing educational reforms and investments. UNESCO (2023) emphasised the need to strengthen foundational learning, while the World Bank (2022) reported that many pupils in Sub-Saharan Africa complete primary education without mastering basic numeracy and problem-solving skills. In Ghana, Abonyi and Sofo (2021) found that instructional leadership practices in basic schools were limited, particularly in supporting classroom instruction, while Bornha et al. (2023) reported that professional development improved mathematics teachers' classroom delivery, although inadequate teaching resources remained a challenge. In South Africa, Maboya et al. (2022) found that mathematics-focused professional development improved teachers' pedagogical practices. These findings demonstrate that low mathematics achievement in African schools is influenced not only by pupils' learning difficulties but also by weaknesses in instructional leadership, teacher professional development, instructional support, availability of learning resources, and monitoring of teaching practices.

In East Africa, the governments and development partners have introduced various initiatives aimed at improving foundational learning, including mathematics

education. They implemented curriculum reforms and teacher professional development programs to strengthen teaching competencies and improve pupils' academic performance (World Bank, 2023). Regional learning assessments conducted by Uwezo East Africa organisation indicate that although access to primary education has improved significantly, many pupils in East Africa still face challenges in achieving expected competency levels in mathematics (Uwezo, 2021). Key factors influencing teaching effectiveness in the region is the role of head teachers in supervising classroom instruction, supporting teachers, and ensuring effective curriculum implementation (UNESCO, 2022). However, in many schools, head teachers tend to focus more on administrative responsibilities than on instructional leadership practices such as classroom observation and monitoring of teaching (OECD, 2022). This situation may affect the quality of mathematics instruction and limit pupils' engagement and interest in the subject.

In Tanzania, improving teaching and learning of mathematics in primary schools remains a national priority due to its importance in learners' academic development and in achieving Sustainable Development Goal 4 (SDG 4), which emphasises quality learning outcomes, particularly in foundational skills such as numeracy. The Government of Tanzania has introduced several educational policies and programs aimed at improving teaching quality, including teacher professional development initiatives and curriculum reforms in basic education (Nguni & Komba, 2022). National Examinations Council of Tanzania (NECTA, 2023) results indicate that pupils' performance in mathematics in the Primary School Leaving Examination (PSLE) has remained a concern in many primary schools, with a considerable proportion of pupils achieving low grades in the subject (NECTA, 2023). These outcomes suggest that challenges related to teaching effectiveness, pupils' engagement, and mastery of mathematical concepts still exist within the primary education system.

Likewise, in Tanzania's public primary schools, mathematics performance remains relatively low compared to other subjects. National Examination and Assessment in Primary School Leaving Examination (PSLE) report show that the mathematics pass rate averages about 55-57(%), which is significantly lower than the overall PSLE pass rate of about 80-82(%), and only around 20-22(%) of pupils attain high grades A or B in mathematics (PSLE 2023- 2024). Moreover, learning assessments indicate weak mastery of foundational numeracy skills, with many Standard Seven pupils scoring below 50% in mathematics-related tasks, highlighting challenges in areas such as basic operations, fractions, and problem-solving despite improvements in school enrolment and access to education (UNICEF, 2024). This poor pass rate of pupils in mathematics is due to the leadership practices of the head teacher, who ensures effective teaching in school.

In Njombe Region, despite of being recognised nationally for relatively strong performance in specific subjects, mathematics achievement at the primary school level has remained inconsistent, with many schools recording

low mean scores and weak pupil engagement in mathematics lessons. District-level education reports and school records indicate that pupils in Wanging'ombe District frequently struggle with basic numeracy skills, problem-solving tasks, and application-based mathematics questions in both internal school examinations and PSLE results. These challenges persist despite the availability of qualified teachers,

suggesting that factors beyond teacher qualifications, such as school leadership practices, play a significant role in shaping the teaching of mathematics. The leadership practices of the head teacher are not consistently or effectively implemented across primary schools in the district in which the performance in PSLE, remain below expected standards, as illustrated in Table 1.

Table 1 Pupils' Performance in Mathematics in the Njombe region (%) from 2021 to 2025

<i>Districts</i>	<i>Year</i>				
	2021	2022	2023	2024	2025
Ludewa	22	22	23	21.5	23
Njombe	22	22	23	23	25
Makambako	25	24	25	26	28
Njombe TC	25	26	27	27	26
Makete	21	22	23	22	24
Wanging'ombe	22	21	22	21	22

Source: NECTA (2025)

Table 1 presents the trend in pupils' Mathematics performance across six districts in the Njombe Region between 2021 and 2025. The findings indicate that most districts experienced gradual improvements in Mathematics performance during the five years, the overall level of achievement remained low, with pass rates ranging from 21% to 28% in the Primary School Leaving Examination (PSLE) (NECTA, 2025). This pattern suggests that Mathematics remains one of the subjects in which many pupils encounter learning difficulties despite ongoing efforts to improve educational quality.

Compared with other districts, Wanging'ombe consistently recorded the lowest Mathematics performance over the five years. The district's pass rate remained between 21% and 22%, with little evidence of sustained improvement. According to the Tanzania Ministry of Education, Science and Technology (MoEST, 2025), persistently low achievement in Mathematics may reflect challenges related to the quality of classroom instruction, teacher effectiveness, the availability of instructional resources, and the learning environment. Similarly, NECTA (2023) reports that although some districts have shown gradual improvements in PSLE Mathematics performance, the overall level of achievement remains unsatisfactory nationally. The persistently low performance observed in Wanging'ombe therefore underscores the importance of strengthening instructional leadership, enhancing teacher professional support, ensuring adequate teaching and learning resources, and reinforcing instructional supervision to improve the quality of Mathematics teaching and learning. This reinforces national evidence that improving instructional practices and school leadership remains essential for enhancing pupils' mathematical competencies and academic achievement in Tanzania.

➤ *Statement of the Problem*

In Wanging'ombe District in Njombe Region, mathematics instruction has consistently fallen short, as a result of low pupils' performance. National assessment reports and district-level examinations reveal low average pass rates, limited mastery of basic numeracy skills, and

persistent challenges in teaching and learning mathematics (DEO,2025). PSLE results show that the average for mathematics in Wanging'ombe District was 22% in 2021, 21% in 2022, 22% in 2023, 21% in 2024, and 22% in 2025. This situation has raised complaints from educational stakeholders, such as teachers, parents, and educational officers, about the teaching of mathematics and concerns about whether school leaders in Wanging'ombe District are adequately fostering conditions that enhance numeracy outcomes.

Various studies have been conducted on leadership practices in various contexts, including Jeannette et al. (2023), who investigated the influence of Primary School Head Teachers' Instructional Leadership on Teachers' Professional Practices; Gichuhi et al. (2024), who examined the Influence of Head Teachers' Leadership Practices on Pupils' Learning Outcomes in Public Primary Schools; and Fundi et al. (2025), who assessed the head teachers' instructional leadership practices in Tanzanian public primary schools. However, none of the reviewed studies examined the contribution of leadership practice to teachers' professional development and pupils' learning in school. It was necessary to investigate the role of school leadership in enhancing numeracy outcomes in primary schools, with a focus on how the head of school's leadership practices contribute to teacher effectiveness, resource provision, and pupil achievement in mathematics. Therefore, the current study investigated the extent of the instructional leadership practices provided by the head teacher to improve teaching mathematics in primary schools in Wanging'ombe District, Tanzania.

➤ *Research Questions*

The following research question guided this study.

- To what extent do instructional leadership practices provided by the head teacher improve teaching mathematics in primary schools in Wanging'ombe District?

➤ *Research Hypothesis*

- Ha: Instructional leadership practices provided by the head teacher have a significant influence on the teaching of mathematics in primary schools.

➤ *Significance of the Study*

The study is significant to the body of Knowledge as it adds to the existing literature on how school leadership directly contributes to the teaching of mathematics in primary schools. By focusing on Wanging'ombe District, it provides localised evidence that enriches global discussions on leadership and learning outcomes in rural and developing contexts. The research will guide head teachers through the findings as it helps school leaders adopt effective head of school leadership practices, such as instructional supervision, teacher motivation, and resource allocation, that improve mathematics teaching. Also, the study highlights how leadership can foster professional development and collaboration among teachers, ultimately enhancing classroom practices. Improved leadership practices are expected to translate into better mathematics performance, boosting learners' confidence and future opportunities for the pupils. Informing education policy, the results will guide policymakers in designing leadership training programs and professional development initiatives tailored to primary school contexts. The study's evidence can support decisions on allocating resources to schools where leadership interventions are most needed. The local education authorities in Wanging'ombe will use the findings to strengthen school management systems and prioritise mathematics achievement. National development goals will require strong mathematics foundations that support STEM readiness, aligning with Tanzania's broader educational and economic development objectives. By addressing head-of-school leadership practices in schools, the study promotes equitable learning opportunities for all children. Better mathematics performance enhances pupils' problem-solving skills, which can positively impact their communities in the long run. According to the theory of Instructional Leadership Theory, developed by Hallinger and Murphy (1985), the findings are expected to strengthen the theory by demonstrating how instructional leadership practices, including instructional supervision, professional development, teacher support, and monitoring of teaching, contribute to improving the quality of Mathematics instruction in public primary schools of Wanging'ombe district, Tanzania.

➤ *Theoretical Framework*

Instructional Leadership Theory, developed by Hallinger and Murphy (1985), emphasises the head teacher's central role in improving student learning by focusing directly on teaching and instructional practices. The theory highlights three key components: defining clear academic goals, managing and supervising instruction, and creating a supportive learning environment. In this study, the theory informs head teachers' leadership practices by explaining how instructional leadership, professional development, teacher support, and teaching monitoring contribute to effective Mathematics instruction. Through clear instructional direction, continuous teacher training, supportive

supervision, and regular monitoring of classroom practices, head teachers influence the quality of Mathematics teaching, which in turn affects pupils' academic performance as reflected in their engagement, interest, mathematical abilities, and academic performance in PSLE results. By prioritising teaching, Instructional Leadership Theory provides a framework for understanding how leadership practices indirectly shape pupils' attitudes toward Mathematics and improve overall academic achievement.

➤ *Strengths of the Theory*

Instructional Leadership Theory demonstrates the ability to enhance teacher self-efficacy and classroom practices by identifying specific instructional leadership qualities, such as support, constructive feedback, trust, and collaboration, that teachers perceive as vital for their professional growth and instructional effectiveness. Also highlights how these leadership behaviours not only improve teaching confidence but also positively influence everyday classroom practice, showing the practical relevance for supporting teacher development and improving pupils' learning outcomes (Bianconi & Larwin, 2025).

➤ *Weaknesses of the Theory*

Instructional Leadership Theory fails to reflect the realities of contemporary school leadership practice because principals typically spend limited time directly overseeing classroom instruction and instead are burdened with administrative duties. Many studies rely on surveys rather than in-depth qualitative or observational data, leading to an incomplete understanding of how instructional leadership is enacted in practice, particularly in resource-constrained environments where principals may lack the time, training, and system support to fulfil traditional instructional leadership roles effectively (Alsaleh, 2019).

➤ *Relevance to the Study*

In public primary schools in Wanging'ombe District, head teachers who effectively perform these instructional leadership roles are more likely to improve the teaching of Mathematics. By setting clear instructional goals, supporting teachers' professional growth, providing continuous guidance, and regularly monitoring classroom practices, school leaders can strengthen teachers' instructional competence, increase pupils' engagement and interest in Mathematics, enhance their mathematical abilities, and improve their performance in the Primary School Leaving Examination (PSLE). Therefore, Instructional Leadership Theory provides an appropriate framework for clarifying how head teachers' leadership practices influence the teaching of Mathematics.

II. REVIEW OF EMPIRICAL STUDY

This study employs an analytical literature review that explicitly examines related empirical studies on the contribution of head teachers' leadership practices to pupils' academic performance in mathematics. It critically evaluates, synthesises, and consolidates findings from previous research to identify key methodologies, primary outcomes, and gaps,

providing a strong foundation for the current investigation in Wanging'ombe district.

➤ *The Instructional Leadership Practices and Teaching of Mathematics in Primary School*

Effective instructional leadership by school heads influences teachers' instructional strategies, classroom management, and curriculum implementation. By guiding, supervising, and supporting teachers, head teachers can enhance pupils' understanding and achievement in mathematics. Understanding this relationship offers valuable insights into strategies for improving the teaching of mathematics in primary schools.

Cheung et al. (2021) investigated the implementation and effectiveness of a teacher intervention programme designed to improve the teaching and learning of Mathematics in primary schools in Hong Kong, China. The study employed a quantitative quasi-experimental research design involving 16 Grade Four Mathematics teachers. The researchers used purposive sampling to select teachers. Data were collected through structured classroom observations and pupils' learning assessments and analysed using inferential statistical techniques to evaluate the effectiveness of the intervention. The findings revealed that teachers who received instructional support adopted more effective classroom practices that significantly enhanced pupils' participation by encouraging them to explain their mathematical reasoning, respond to their peers' ideas, and engage actively in Mathematics lessons. These findings demonstrate the importance of instructional support in promoting active learner engagement and improving classroom interaction. Despite the study evaluating the effectiveness of a teacher intervention programme, but limited to examine the role of head teachers' instructional leadership practices in supporting teachers' participatory Mathematics classrooms. In addition, the study was conducted in Hong Kong, whose educational system, leadership structures, and teaching context differ substantially from those of Tanzanian public primary schools, thereby limiting the transferability of its findings to the Tanzanian context, especially in Wanging'ombe district. Therefore, the current study addresses this contextual gap by examining how head teachers' instructional leadership practices influence learner participation and classroom interaction during Mathematics lessons in public primary schools in Wanging'ombe District, Tanzania.

Tovner et al. (2021) examined the instructional practices through which Mathematics teachers provided feedback to pupils during Mathematics lessons in Norway. The study adopted a quantitative research design and involved 97 primary school Mathematics teachers from primary schools. The researchers used a stratified random sampling technique to select the participating schools, followed by simple random sampling to select the Mathematics teachers. Data were collected using structured classroom observation instruments and analysed using descriptive statistics and multilevel regression analysis to identify patterns in teachers' feedback practices during Mathematics instruction. The findings revealed that teachers

who consistently reviewed pupils' Mathematics work and provided timely, specific, and constructive feedback enhanced pupils' conceptual understanding and promoted improved learning outcomes in Mathematics. However, the study primarily examined teachers' feedback practices within classroom settings and the study partially investigating the contribution of head teachers in supporting and monitoring teachers to ensure that pupils' Mathematics work was regularly assessed and constructive feedback was provided. Moreover, the study relied on classroom observation data, thereby excluding the perspectives of head teachers and pupils, which could have offered a more comprehensive understanding of feedback practices. To address these, the current study investigated the influence of head teachers' support and monitoring on Mathematics teachers' practices of assessing pupils' work and providing feedback for improvement in public primary schools in Wanging'ombe District, Tanzania.

Umuhoza and Uworwabayeho (2021) examined teachers' use of instructional materials in the teaching and learning of Mathematics in Rwandan primary schools. The study employed a quantitative survey research design involving 240 primary school Mathematics teachers from public primary schools. The researchers used a stratified random sampling technique to select the participating schools and simple random sampling to select the Mathematics teachers, ensuring adequate representation of the study population. Data were collected using structured questionnaires and analysed using descriptive and inferential statistics. The findings revealed that teachers who consistently integrated a variety of instructional materials and learner-centred teaching approaches enhanced pupils' understanding of Mathematics concepts, increased classroom participation, and improved learning outcomes. However, the study concentrated on teachers' use of instructional materials and teaching practices without examining the role of head teachers in encouraging Mathematics teachers to employ a variety of teaching methods. Also, the study relied solely on questionnaire data collected from teachers, limiting the opportunity to validate the findings using multiple data sources. Therefore, the current study examines how head teachers encourage Mathematics teachers to use a variety of teaching methods that make Mathematics easier for pupils to learn in public primary schools in Wanging'ombe District, Tanzania. To strengthen the credibility of the findings, the study collects data from head teachers, teachers, and pupils using questionnaires, group discussion schedules, and classroom observation checklists.

Barasa (2021) examined the relationship between teacher quality and pupils' achievement in Mathematics in Nyeri primary schools in Kenya. The study employed a quantitative research design using data collected from 272 public primary schools, involving Grade 4 Mathematics teachers and Grade 4 pupils who participated in the national learning assessment. Data were analysed using multilevel regression analysis to determine the influence of teacher quality indicators on pupils' Mathematics achievement. Stratified sampling was used to select teachers, and simple random sampling was used to select pupils. The findings

revealed that teachers who demonstrated stronger instructional competencies, participated in professional development programmes, and effectively identified and addressed pupils' learning needs significantly improved pupils' Mathematics performance. The study further established that effective classroom instructional practices played a critical role in supporting learners who experienced difficulties in Mathematics. However, the study focused primarily on teacher quality and classroom practices limiting to examining the role of head teachers in ensuring that Mathematics teachers identified struggling pupils and provided them with appropriate instructional support. Moreover, the study relied on secondary survey data, limiting the opportunity to capture the perspectives of head teachers and pupils regarding instructional leadership practices. Therefore, the current study investigates how head teachers support Mathematics teachers in identifying pupils who experience difficulties in Mathematics and ensuring that they receive appropriate academic assistance in public primary schools in Wanging'ombe District, Tanzania. To obtain more comprehensive evidence, the study collects data directly from head teachers, teachers, and pupils using questionnaires, group discussion schedules, and classroom observation checklists.

Blimpo et al. (2026) investigated the effect of participatory teaching on pupils' learning of Mathematics in public primary schools in Northern Tanzania. The study employed a quantitative randomised controlled trial (RCT) design involving 220 public primary schools, 440 Mathematics teachers, and over 2,500 pupils from the Arusha, Kilimanjaro, and Manyara regions. The researchers used simple random sampling techniques to select a sample. Data were collected through teacher questionnaires, standardised Mathematics assessments, and National Examination records and analysed using regression analysis and other quantitative impact evaluation techniques. The findings revealed that teachers who adopted participatory teaching approaches actively engaged pupils in classroom learning activities, resulting in significant improvements in pupils' participation, conceptual understanding, and Mathematics achievement. However, the study focused on the impact of participatory pedagogy following teacher training rather than examining the role of head teachers in encouraging Mathematics teachers to engage pupils in learning activities. Also, the study relied on the effects of a teacher training programme without assessing instructional leadership practices within schools. Therefore, the current study investigated how head teachers encourage Mathematics teachers to engage pupils in learning activities during Mathematics lessons in public primary schools in Wanging'ombe District, Tanzania. The current study collected data from head teachers, teachers, and pupils using questionnaires, group discussion schedules, and classroom observation checklists to provide comprehensive evidence on the influence of head teachers' leadership practices on the teaching of Mathematics.

➤ *Demonstration of Research Gap*

The review of the literature related to the study focus has led to the identification of notable gaps in instructional leadership practices in fostering pupils' learning of mathematics. Contextual gaps have been identified on the basis that a good number of research studies were conducted outside Tanzania in education systems with different leadership practices among head teachers (Tovner et al., 2021; Umuhoza and Uworwabayeho, 2021). Methodological gaps are evident in the use of quasi-experimental design (Cheung et al., 2021; Evans et al, 2026. Population gaps emerged from restricted participant representation (Tovner et al., 2021; Umuhoza and Uworwabayeho, 2021; and Barasa, 2021), underscoring the necessity for more comprehensive investigations. Specifically, few studies addressed how instructional leadership practices contribute to the teaching of mathematics in primary schools in Wanging'ombe District. Therefore, the present study aims to examine the extent of instructional leadership practices contribute to the teaching of mathematics in primary schools in Wanging'ombe District.

III. METHODOLOGY

This study employed a cross-sectional survey design under a quantitative method approach, collecting quantitative data only. The targeted population included 102 public primary schools, 102 head teachers, 912 teachers and 35092 pupils. Making a total of 36208. Simple randomly sampling was used to select 30 public primary schools, simple randomly sampling used to select 30 head teachers, proportionate stratified sampling was used to select 90 teachers and simple randomly sampling used to select 210 pupils, making a total of 330 respondents. The data were collected using questionnaires, a group discussion schedule and a classroom observation checklist. Data collection instruments were validated by three MWECAU research experts from the field of educational planning and administration. A pilot study was conducted in 2 public primary schools with 2 head teachers, 6 teachers and 14 pupils. The reliability of questionnaires for Likert scale items was ensured through Cronbach's Alpha Coefficient, yielding an $\alpha = 0.980$ for head teachers and $\alpha = 0.795$ for teachers, 0.882 for the classroom observation checklist. The data were analysed using inferential and descriptive statistics. Simple linear regression at a 0.05 (α) significance level, with the aid of SPSS version 27. The study adheres to ethical considerations, including obtaining a research permit, informed consent, and ensuring confidentiality, voluntary participation, anonymity and transparency.

IV. RESULTS AND DISCUSSION

The study examined the extent to which instructional leadership practices contribute to the teaching of mathematics in primary schools in Wanging'ombe District, Tanzania. Data collected using a five-level Likert scale were used as a measurement tool, where 1=very small extent (VSE), 2=small extent (SE), 3=moderate extent (ME), 4=great extent (GE), and 5 = very great extent (VGE). To measure the Extent, the results were analysed using the mean score criteria developed by Chyung & Hutchinson (2023), where the mean score

ranges from 1.00-1.99 Very Small Extent, 2.00-2.99 Small Extent, 3.00-3.99 Moderate Extent, 4.00-4.9 Great Extent and

4.50- 5.00 Very Great Extent. The head teachers', teachers', and pupils' responses are summarised in Table 2.

Table 2 Head Teachers' and Teachers' Responses on the Instructional Leadership Practices and Teaching of Mathematics in Primary Schools in Wanging'ombe District (HT) n=30 and (T) n=90

S/N	Statements	R	VSE		SE		ME		GE		VGE		M
			f	%	f	%	f	%	f	%	f	%	
1	The head teacher supports mathematics teachers to provide proper guidance to pupils who experience difficulties in mathematics.	HT	0	0.0	2	6.7	7	23.3	13	43.3	8	26.7	3.93
		T	2	2.4	6	7.1	39	46.4	18	21.2	19	22.6	3.80
2	The head teacher ensures that mathematics teachers regularly check pupils' mathematics work and provide feedback for improvement.	HT	0	0.0	3	10.0	8	28.0	13	43.0	6	20.0	3.73
		T	2	2.4	7	8.3	21	25.0	37	44.0	17	20.2	3.67
3	The head teacher encourages mathematics teachers to create classroom environments where pupils are free to ask questions during mathematics lessons.	HT	0	0.0	2	6.7	8	26.7	13	43.3	7	23.3	3.83
		T	3	3.6	8	9.5	23	27.4	34	40.5	16	19.0	3.62
4	The head teacher encourages mathematics teachers to use a variety of teaching methods that make mathematics easier for pupils to learn.	HT	0	0.0	2	6.7	9	30.0	11	36.7	8	26.7	3.83
		T	2	2.4	9	11.0	20	33.8	36	42.9	17	20.2	3.68
5	The head teacher encourages mathematics teachers to maintain high instructional standards that improve pupils' performance in mathematics.	HT	0	0.0	3	10.0	9	30.0	12	40.0	6	20.0	3.73
		T	4	4.8	10	12.0	22	26.2	33	39.3	15	17.9	3.54
6	The head teacher ensures that mathematics teachers identify pupils who struggle in mathematics and provide appropriate support.	HT	0	0.0	3	10.0	8	26.7	13	43.3	6	20.0	3.73
		T	3	3.6	9	11.0	22	26.2	35	41.7	15	17.9	3.60
7	The head teacher encourages mathematics teachers to provide additional practice and support to pupils who need help in mathematics.	HT	0	0.0	2	6.7	10	33.3	11	36.7	7	23.3	3.77
		T	3	3.6	11	13.0	23	27.4	32	38.1	15	17.9	3.54
8	The head teacher encourages mathematics teachers to motivate pupils to enjoy learning mathematics and achieve their best.	HT	0	0.0	2	6.7	7	23.3	13	43.3	8	26.7	3.93
		T	2	2.4	9	11.0	22	26.2	35	41.7	16	19.0	3.64
9	The head teacher encourages mathematics teachers to engage pupils in learning activities that improve their mathematics skills.	HT	0	0.0	3	10.0	9	30.0	12	40.0	6	20.0	3.73
		T	2	2.4	10	12.0	22	26.2	34	40.5	16	19.0	3.62
10	The head teacher supports mathematics teachers to teach lessons clearly, confidently, and effectively.	HT	0	0.0	3	10.0	9	30.0	12	40.0	6	20.0	3.73
		T	3	3.6	9	11.0	21	25.0	35	41.7	16	19.0	3.66
Grand Mean		HT											3.77
		T											3.64

Source: Field Data (2026)

Data in Table 2 indicate that both head teachers and teachers mentioned that the head teacher supports mathematics teachers to provide proper guidance to pupils who experience difficulties in mathematics to a moderate

extent. This is clearly portrayed by mean scores of 3.93 and 3.8 for head teachers and teachers, respectively. The findings imply that head teachers provided support to mathematics teachers in assisting pupils who experience difficulties in

mathematics, but the level of support is only moderate. This suggests that although head teachers are involved in guiding and supporting mathematics teachers, the practice may not be conducted consistently or intensively enough to achieve a higher level of effectiveness.

The findings align with Barasa (2021), who found that teachers who demonstrated strong instructional competencies and effectively identified and addressed pupils' learning difficulties significantly improved pupils' mathematics performance. The study emphasised that providing appropriate instructional support to struggling learners is essential for improving mathematics achievement. Similarly, the current findings indicate that head teachers supported mathematics teachers in providing proper guidance to pupils who experienced difficulties in mathematics. This suggests that instructional support from head teachers contributes to teachers' capacity to assist struggling learners in mathematics.

Data in Table 2 indicate that the head teacher and teachers prompted by the head teacher ensure that mathematics teachers regularly check pupils' mathematics work and provide feedback for improvement to a moderate extent. This is clearly indicated by the mean scores of 3.73 and 3.67, respectively. The findings imply that head teachers moderately ensured that mathematics teachers regularly check pupils' mathematics work and provide feedback for improvement. This suggests that although monitoring pupils' work and encouraging teachers to provide feedback are practised in the schools, these instructional leadership activities may not be implemented consistently or comprehensively enough to maximise pupils' learning.

The findings are supported by Stovner et al. (2021), who examined mathematics teachers' feedback practices in primary schools. The authors argued that the teachers who regularly reviewed pupils' mathematics work and provided timely, specific, and constructive feedback enhanced pupils' conceptual understanding and improved mathematics learning outcomes. Similarly, the current study found that both head teachers and teachers agreed that head teachers ensured that mathematics teachers regularly checked pupils' mathematics work and provided feedback for improvement. The similarity between the two studies suggests that regular assessment of pupils' work and constructive feedback are important instructional practices for improving mathematics learning.

Data in Table 2 show that both head teachers and teachers were of the view that the head teachers encouraged mathematics teachers to create classroom environments where pupils are free to ask questions during mathematics lessons to a moderate extent. These mean scores of 3.83 and 3.62 for head teachers and teachers, respectively, are evident here. This revealed that although head teachers promote learner participation and classroom interaction, these instructional leadership practices may not be implemented consistently or effectively enough to foster a highly interactive learning environment. Creating opportunities for pupils to ask questions is essential for promoting active learning, identifying misconceptions, enhancing critical

thinking, and improving pupils' understanding of mathematical concepts.

The findings are supported by Cheung et al. (2021), who investigated the implementation and effectiveness of a teacher intervention programme designed to improve the teaching and learning of mathematics in primary schools. The study found that teachers who received instructional support created more interactive classrooms by encouraging pupils to explain their mathematical reasoning, respond to their classmates' ideas, and participate actively during mathematics lessons. Such instructional practices significantly enhanced pupils' engagement and classroom interaction. Similarly, the present study found that head teachers encouraged mathematics teachers to establish classroom environments where pupils could ask questions freely, thereby promoting learner participation and interaction.

Data in Table 2 show that both head teachers and teachers revealed that head teachers encourage mathematics teachers to use a variety of teaching methods that make mathematics easier for pupils to learn to a moderate extent. The mean scores of 3.83 and 3.68 for head teachers and teachers, respectively, fall under the moderate category. The findings imply that head teachers moderately encourage mathematics teachers to use a variety of teaching methods that make mathematics easier for pupils to learn. This suggests that although head teachers promote the use of diverse instructional strategies, this instructional leadership practice may not be implemented consistently or comprehensively enough to maximise effective mathematics teaching and learning.

The findings are aligned with Umuhzo and Uworwabaye (2021), who investigated teachers' use of instructional materials in the teaching and learning of mathematics in primary schools. The study found that teachers who integrated a variety of instructional materials and learner-centred teaching approaches improved pupils' understanding of mathematical concepts, increased classroom participation, and enhanced learning outcomes. Similarly, the present study found that head teachers encouraged mathematics teachers to employ a variety of teaching methods that made mathematics easier for pupils to learn.

Data in Table 2 indicate that head teachers and teachers disclosed that the head teacher ensured that mathematics teachers identified pupils who struggle in mathematics and provided appropriate support to a moderate extent. The mean score of 3.73 for head teachers and 3.6 for teachers, respectively, falls under the moderate extent level. The findings imply that head teachers moderately ensure that mathematics teachers identify pupils who struggle in mathematics and provide them with appropriate support. This suggests that although head teachers encourage teachers to identify pupils experiencing learning difficulties and offer the necessary academic assistance, this instructional leadership practice may not be implemented consistently or systematically across schools. Early identification of pupils who struggle in mathematics is essential because it enables

teachers to provide timely intervention, adapt instructional strategies to learners' needs, and prevent pupils from falling further behind.

The findings agree with Barasa (2021), who examined the relationship between teacher quality and pupils' achievement in mathematics in primary schools. The study found that teachers who effectively identified pupils' learning difficulties and provided appropriate instructional support significantly improved pupils' mathematics achievement. The study further emphasised that effective instructional practices were essential in addressing learners' academic challenges and improving learning outcomes. Similarly, the current study found that head teachers encouraged mathematics teachers to identify pupils who struggled in mathematics and ensure that they received appropriate academic support.

Data presented in Table 2 indicate that both head teachers and teachers reported that they encouraged mathematics teachers to engage pupils in learning activities that improve their mathematics skills to a moderate extent. The mean scores of 3.73 for head teachers and 3.62 for teachers fall under the moderate extent category. The findings imply that head teachers encourage mathematics teachers to engage pupils in learning activities; however, the level of encouragement is only moderate. This suggests that although head teachers promote learner-centred instructional practices, these may not be implemented consistently or comprehensively enough to maximise pupils' learning in mathematics. Engaging pupils in meaningful learning activities is essential for enhancing conceptual understanding, developing problem-solving and critical-thinking skills, promoting active classroom participation, and improving overall mathematics achievement. Therefore, strengthening instructional leadership practices that encourage learner-centred teaching is necessary to improve the quality of mathematics instruction and pupils' learning outcomes.

The findings are related to Evans et al. (2026), who investigated the effect of participatory teaching on pupils' mathematics learning in public primary schools. The study found that teachers who adopted participatory teaching approaches actively engaged pupils in classroom learning activities, leading to significant improvements in pupils' participation, conceptual understanding, and mathematics achievement. Similarly, the present study found that head teachers encouraged mathematics teachers to involve pupils in learning activities that strengthened their mathematics skills. The moderate level of implementation observed in the study suggests that head teachers should strengthen instructional supervision, coaching, and continuous support to ensure that participatory teaching approaches are consistently implemented across schools, thereby enhancing pupils' mathematics learning outcomes.

Data presented in Table 2 show that head teachers reported a mean score of 3.73 and teachers of 3.66, indicating that head teachers supported mathematics teachers to teach lessons clearly, confidently, and effectively to a moderate extent. The findings imply that head teachers provide instructional support to mathematics teachers; however, the

level of support is only to a moderate extent. This suggests that while head teachers are involved in enhancing teachers' instructional competence, their support may not be sufficiently regular, comprehensive, or intensive to optimise the quality of mathematics instruction. Effective instructional support is essential for strengthening teachers' pedagogical competence, improving their confidence in classroom instruction, enhancing lesson preparation and delivery, and promoting the use of appropriate instructional strategies that facilitate pupils' understanding of mathematical concepts and improve learning outcomes.

The findings are supported by Cheung et al. (2021), who investigated the implementation and effectiveness of a teacher intervention programme designed to improve the teaching and learning of mathematics in primary schools. The study found that teachers who received instructional support adopted more effective classroom practices that increased pupils' participation, strengthened classroom interaction, and improved mathematics learning. Similarly, the present study found that head teachers supported mathematics teachers to teach lessons clearly, confidently, and effectively. Both studies demonstrate that instructional support is an important factor in improving teachers' classroom practices and enhancing pupils' learning experiences. However, the moderate level of implementation found in this study suggests that head teachers should provide more regular classroom supervision, mentoring, and professional guidance to enable mathematics teachers to deliver high-quality instruction consistently.

However, the grand mean scores of 3.77 reported by head teachers and 3.64 reported by teachers indicate a moderate extent. This suggests that head teachers were generally involved in supporting the teaching of Mathematics by providing instructional guidance, encouraging the use of effective teaching strategies, promoting regular assessment and feedback, motivating teachers to assist pupils experiencing learning difficulties, and fostering classroom environments that encourage active pupil participation. Nevertheless, the moderate mean scores indicate that these practices were not applied regularly across all schools. The slightly higher rating given by head teachers compared to teachers also suggests that head teachers viewed the implementation of their instructional leadership practices more favourably than teachers did. Overall, the findings imply that instructional leadership remains a need, and these leadership practices should be strengthened to enhance the quality of Mathematics instruction and improve pupils' learning outcomes.

➤ *Pupils' Responses on Instructional Leadership Practices in the Teaching of Mathematics in Primary Schools*

Apart from the questionnaires, the researcher involved the pupils to provide information using a group discussion schedule. The pupils were asked to come up with instructional leadership practices that they perceived were not carried out by their head teachers in the schools. The responses provided insight into the instructional leadership practices that pupils believed were either absent or inadequately implemented in supporting the teaching of Mathematics in public primary

schools in Wanging'ombe District, Tanzania. Since participants were allowed to mention more than one practice, the total number of responses exceeds the total number of

participants. The pupils' responses are summarised in Table 3.

Table 3 Group Discussion Schedule of the Pupils on the Practice of Instructional Leadership Regarding the Dichotomous Group Tabulated at Value

		Responses		Per cent of Cases
		N	Per cent (%)	
	Head teacher visits pupils' classrooms during lessons.	145	20.8	69.7%
	Head teacher encourages pupils to learn Mathematics.	136	19.5	65.4%
	Head teacher talks to pupils about Mathematics.	208	29.8	100.0%
	Head teacher asks pupils Mathematics-related questions.	208	29.8	100.0%
Total		697	99.9	335.1%

Source: Field Data (2026)

Data in Table 3 indicate that 145 responses (69.7%) disclosed that head teachers did not visit pupils' classrooms during lessons. This suggests that classroom visitation was perceived as an infrequent instructional leadership practice in many of the participating schools. Pupils explained that they rarely saw head teachers entering classrooms while Mathematics lessons were taking place. The absence of regular classroom visits may reduce opportunities for head teachers to monitor classroom teaching, observe pupils' learning experiences, identify instructional challenges, and provide timely support aimed at improving the quality of Mathematics instruction in the classroom. This finding implies that classroom supervision, which is a core function of instructional leadership, was not consistently practised by many head teachers. Consequently, teachers may receive limited instructional guidance and feedback, while pupils may have fewer opportunities to benefit from improved teaching practices, potentially affecting the effectiveness of Mathematics teaching in primary schools.

The findings related to those of Cheung et al. (2021), who investigated the implementation and effectiveness of a teacher intervention programme designed to improve the teaching and learning of Mathematics in primary schools. The study found that regular instructional support and classroom observations enabled teachers to adopt more effective teaching practices, resulting in greater pupil participation, richer classroom discussions, and improved Mathematics learning. Similarly, the current study highlights the importance of classroom observation as an instructional leadership practice. This suggests that classroom supervision was not consistently implemented in the participating schools. The findings therefore indicate that strengthening regular classroom visitation by head teachers could enhance instructional supervision, improve teachers' professional practices, and ultimately promote better Mathematics learning outcomes among pupils.

Similarly, Table 3 indicates that 136 responses (65.4%) reported that head teachers did not encourage pupils to learn Mathematics. Although this proportion is slightly lower than that of classroom visits, it still represents more than half of the responses, suggesting that many pupils felt they received limited direct motivation from their school leaders. During the discussions, several pupils explained that encouragement from head teachers was uncommon and that interactions

related to academic motivation occurred only occasionally, such as during general school assemblies. This finding implies that head teachers were not consistently performing their instructional leadership role of motivating pupils to value and engage in Mathematics learning. Consequently, pupils may develop lower interest, reduced confidence, and weaker commitment to learning Mathematics, which can negatively influence their classroom engagement and academic performance.

The findings align with Evans et al. (2026), who investigated the effect of participatory teaching on pupils' learning of Mathematics in public primary schools. The study found that participatory teaching approaches significantly increased pupils' classroom participation, conceptual understanding, and Mathematics achievement. Similarly, the present study found that head teachers' encouragement of pupils to learn Mathematics contributes to creating a positive learning environment that supports learner engagement. The findings revealed that many pupils reported receiving limited encouragement, suggesting that head teachers should interact more frequently with pupils, recognise their efforts, and provide regular academic motivation to strengthen pupils' interest, confidence, and engagement in Mathematics learning.

Furthermore, the data in Table 3 reveal that 208 responses (100.0%) indicated that head teachers did not talk to pupils about Mathematics. This response suggests that pupils rarely experienced direct conversations with their head teachers regarding Mathematics learning. During the group discussions, many pupils explained that although they occasionally met their head teachers during assemblies or other school activities, these interactions once in a while included discussions about their performance in Mathematics, the challenges they encountered while learning the subject, or ways of improving their achievement. As a result, many pupils felt that head teachers were not directly involved in supporting their learning of Mathematics.

The findings implied that head teachers had limited direct academic engagement with pupils, despite such engagement being an important aspect of instructional leadership. When head teachers do not communicate with pupils about their learning, they may miss opportunities to understand pupils' academic difficulties, provide

encouragement, identify learning needs, and reinforce the importance of Mathematics. Consequently, pupils may perceive that school leadership is less concerned with their academic progress, which could reduce their motivation, confidence, and sense of support in learning Mathematics.

The findings agreed with Evans et al. (2026), who found that supportive and participatory learning environments significantly improved pupils' engagement, conceptual understanding, and Mathematics achievement. The study emphasised that pupils learn more effectively when they receive continuous encouragement and are actively involved in the learning process. Similarly, the present study suggests that regular academic engagement by head teachers can motivate pupils, strengthen their confidence, and foster greater participation in Mathematics learning. The limited engagement observed in this study suggests that head teachers should communicate more frequently with pupils about their academic progress, encourage them to overcome learning challenges, and cultivate positive attitudes towards Mathematics.

Likewise, Table 3 indicates that 208 responses (100.0%) reported that head teachers did not ask pupils Mathematics-related questions. This response suggests that pupils rarely experienced direct academic interaction with their head teachers regarding the subject. During the group discussions, pupils explained that head teachers infrequently asked them questions about mathematical concepts, classroom activities, topics they had learned, or the challenges they faced during Mathematics lessons. Instead, interactions with head teachers were mainly limited to general school matters rather than discussions about pupils' academic learning.

The findings implied that head teachers were not actively engaging pupils in academic dialogue, which is an important component of instructional leadership. Asking pupils subject-related questions enables school leaders to assess pupils' understanding, identify learning difficulties, monitor the effectiveness of classroom instruction, and demonstrate sincere interest in pupils' academic progress. The absence of such interactions suggests that head teachers had limited opportunities to obtain first-hand information about pupils' learning experiences and to provide timely academic support. Consequently, pupils may perceive that school leadership is less involved in monitoring their learning, which may weaken their motivation, confidence, and active engagement in Mathematics.

The findings aligned with Cheung et al. (2021), who found that instructional support promoted interactive classroom practices in which pupils were encouraged to explain their mathematical reasoning, respond to their classmates' ideas, and participate actively in Mathematics lessons. These interactions improved pupils' engagement and enhanced classroom learning. Similarly, the present study highlights the importance of direct academic interaction in promoting pupils' participation and learning. The limited interaction observed in this study suggests that head teachers should regularly engage pupils through academic discussions,

ask questions about their learning, and use pupils' responses to guide instructional support and strengthen the quality of Mathematics teaching and learning.

Furthermore, the researcher collected data by observing classes using a classroom observation checklist. The findings revealed a grand mean score of 3.40, indicating that instructional leadership practices in mathematics instruction were implemented to a moderate extent in public primary schools. This overall finding is consistent with the item-level results, where head teachers, teachers, and pupils perceived that head teachers moderately supported mathematics teachers by providing instructional guidance, encouraging the use of diverse teaching methods, promoting learner participation, ensuring regular assessment and feedback, identifying pupils experiencing learning difficulties, supporting effective lesson delivery, and encouraging teachers to engage pupils in meaningful learning activities.

Similarly, the classroom observation data shows that teachers demonstrated desirable instructional practices, such as clearly stating lesson objectives, providing constructive feedback, encouraging pupils' participation, and using learner-centred teaching approaches. However, these practices were not consistently observed; the consistency between the questionnaire, group discussion, and classroom observation findings therefore suggests that although instructional leadership practices are present in schools, they are not implemented systematically enough to maximise the extent of mathematics teaching and learning. Consequently, the moderate grand mean implies that there is a need to strengthen instructional leadership through regular instructional supervision, continuous professional development, mentoring, coaching, classroom observation, and constructive feedback to enhance teachers' pedagogical competence, promote the consistent implementation of learner-centred teaching strategies, increase pupils' active engagement during mathematics lessons, and ultimately improve pupils' academic achievement in mathematics.

Triangulated findings showed that instructional leadership was implemented to a moderate extent, with agreement between head teachers and teachers. However, pupils' responses and classroom observations revealed that leadership practices were not consistently reflected in classroom practice. This indicates a gap between reported leadership support and its practical implementation, highlighting the need for regular supervision, coaching, feedback, and direct engagement with pupils. This shows that head teachers' instructional leadership practices were present, but their implementation was inconsistent, limiting their potential to improve Mathematics teaching and pupils' learning in schools.

➤ Hypothesis Testing

This section presents the simple linear hypothesis, which was used to test the study hypothesis concerning the influence of Instructional leadership practices on the teaching of mathematics in public primary schools in Wanging'ombe District. The corresponding alternative hypothesis (H_a) stated that instructional leadership practices have a statistically

significant influence on the teaching of mathematics in public primary schools in Wanging'ombe District. The hypothesis testing was conducted to determine whether there is statistical significance of instructional leadership by heads of schools in influencing the teaching of mathematics in primary schools. Simple Linear Regression Analysis was employed to assess the strength, direction, and influence of the variables. The results provided an objective basis for determining whether instructional leadership by the head of school influences the teaching of mathematics in public primary schools.

➤ Test of Normality

Before conducting inferential statistical analyses, it's important to verify if the study data met the assumption of normality. The test of normality helps to determine if the distribution of variables approximates a normal distribution, which is the key requirement for the application of parametric statistical techniques such as simple linear regression. In this study, the Kolmogorov-Smirnov and Shapiro-Wilk tests were used to examine the normality of the variables related to the study. The results of the normality tests guided the researcher in determining the appropriateness of applying parametric analysis in hypothesis testing, as presented in Table 4.

Table 4 Tests of Normality

Variables	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Teaching of Mathematics	.140	113	.135	.948	113	.338

Source: Field Data (2026)

As presented in Table 4, the Kolmogorov-Smirnov test yielded a test statistic of 0.140 with a significance value of 0.135. Since the significance value is greater than the recommended threshold of 0.05 ($p = .135 > .05$), the null hypothesis of normality was not rejected. This implies that the distribution of the teaching of mathematics scores did not significantly differ from a normal distribution. Similarly, the Shapiro-Wilk test produced a test statistic of 0.948 with a significance value of 0.338. As the significance value is also greater than 0.05 ($p = .338 > .05$), the results further confirm that the data were normally distributed. The consistency of the results obtained from both the Kolmogorov-Smirnov and Shapiro-Wilk tests provides sufficient evidence that the assumption of normality was satisfied. Therefore, the distribution of the teaching of mathematics variable was considered appropriate for the application of parametric statistical techniques, particularly simple linear regression analysis, which was subsequently used to test the study

hypothesis about the instructional leadership practices in influencing the teaching of mathematics in public primary schools in Wanging'ombe District.

➤ Harman's Single-Factor Test

Before testing the study hypothesis, the researcher examined whether the data were affected by common method bias (CMB). Since information on both the independent variable (instructional leadership practices) and the dependent variable (teaching of mathematics) was collected using the same questionnaire, it was necessary to ensure that the responses were not influenced by the data collection method itself. To assess this, Harman's Single-Factor Test was performed using exploratory factor analysis. According to Podsakoff et al. (2003), common method bias is considered a concern when a single factor explains more than 50% of the total variance. The results of Harman's single-factor test are presented in Table 5.

Table 5 Harman's Single-Factor Test

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.674	13.231	13.231	7.674	13.231	13.231
2	5.815	10.025	23.257			

Source: Field Data (2026)

Table 5 presents the results of Harman's Single-Factor Test; the findings show that the first component had an eigenvalue of 7.674 and explained 13.231% of the total variance. The second component had an eigenvalue of 5.815, accounting for an additional 10.025% of the total variance. Together, the first two components explained a cumulative variance of 23.257%. The most important result from Harman's Single-Factor Test is the percentage of variance explained by the first factor. In this study, the first factor explained only 13.231% of the total variance, which is far below the recommended threshold of 50%. This indicates that no single factor accounted for the majority of the variance in the data. These findings imply that the responses provided by participants were not substantially influenced by the use of a single data collection method. Therefore, common method bias was not a significant issue in this study, and the

relationships observed between instructional leadership practices and mathematics teaching are unlikely to have been distorted by measurement bias. Consequently, the data were considered appropriate for further statistical analyses, including regression analysis, to test the study hypothesis.

➤ Model Summary

This section presents the model summary of the simple linear regression analysis, which was used to assess the extent to which instructional leadership practices explain variation in the teaching of mathematics in public primary schools in Wanging'ombe District. The model summary reports the strength of the relationship between the study variables and the proportion of variance in the dependent variable explained by the independent variable. The results are presented in Table 6.

Table 6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.737 ^a	.543	.518	.10334

Source: Field Data (2026)

A simple linear regression analysis was conducted to examine the influence of instructional leadership practices on the teaching of mathematics in public primary schools. As presented in Table 6, the model summary shows a correlation coefficient (R) of 0.737, indicating a strong positive relationship between instructional leadership practices and the teaching of mathematics. The R Square value of 0.543 implies that instructional leadership practices explain 54.3% of the variation in the teaching of mathematics, while the remaining 45.7% is explained by other factors not included in the model. The Adjusted R Square of 0.518 further confirms that, even after adjusting for sample size, instructional leadership practices account for 51.8% of the variance in the teaching of mathematics, indicating that the model has good explanatory power. In addition, the standard error of the estimate of 0.10334 suggests that the predicted values are

relatively close to the observed values, indicating a satisfactory model fit. Overall, these findings suggest that instructional leadership practices play an important role in explaining variations in the teaching of mathematics in public primary schools in Wanging'ombe District, Tanzania.

➤ Analysis of Variance (ANOVA)

This section presents the Analysis of Variance (ANOVA) result, which was used to determine whether the regression model was statistically significant in explaining the relationship between instructional leadership practices and the teaching of mathematics in Wanging'ombe District. The ANOVA test assesses the overall fitness of the regression model by examining whether the independent variable significantly predicts the dependent variable. The results are presented in Table 7.

Table 7 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1					
Regression	.228	1	.228	21.379	.000 ^b
Residual	.192	113	.011		
Total	.421	114			

Source: Field Data (2026)

A. Dependent Variable: Teaching of Mathematics

B. Predictor: (Constant), Instructional Leadership

Table 7 presents the analysis of variance (ANOVA) results used to determine whether the instructional leadership practices influence the teaching of mathematics in Wanging'ombe District, Tanzania. The results show that the regression model is statistically significant ($F(1, 113) = 21.379$, $p < .001$). Since the significance value ($p = .000$) is less than the accepted level of 0.05, the regression model provides a significantly better prediction of the teaching of mathematics than a model without instructional leadership practices. The model explained a regression sum of squares of 0.228, while the residual sum of squares was 0.192, indicating that a considerable proportion of the variation in the teaching of mathematics was explained by instructional leadership practices. These findings suggest that instructional leadership practices significantly influence mathematics instruction in public primary schools in Wanging'ombe district, Tanzania. The regression model was considered appropriate for testing the study hypothesis, and the null hypothesis that instructional leadership practices have no

significant influence on the teaching of mathematics was rejected in favour of the alternative hypothesis. Therefore, the findings confirm that instructional leadership practices had a significant influence on the teaching of mathematics in public primary schools in Wanging'ombe District, Tanzania.

➤ Regression Test (Coefficients)

After confirming that the regression model was appropriate and statistically significant, the researcher examined the regression coefficients to determine the magnitude, direction, and statistical significance of the influence of instructional leadership practices on the teaching of mathematics in public primary schools in Wanging'ombe district, Tanzania. The coefficients table provides the unstandardized coefficient (B), standardised coefficient (Beta), t-value, significance level, confidence interval, and collinearity statistics. These statistics were used to determine whether the study hypothesis should be accepted or rejected. The results are presented in Table 8.

Table 8 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.991	.687		10.172	.000	5.547	8.435		
	Instructional	.345	.067	.388	5.133	.001	.201	.488	.901	1.110

Source: Field Data (2026)

Table 9 presents the regression coefficients, which indicate that instructional leadership practices have a positive and statistically significant influence on the teaching of mathematics. The unstandardized regression coefficient ($B = 0.345$) shows that for every one-unit increase in instructional leadership practices, the teaching of mathematics is expected to increase by 0.345 units, holding all other factors constant. The standardised coefficient ($\beta = 0.388$) indicates a moderate positive effect of instructional leadership practices on the teaching of mathematics.

Furthermore, the relationship was found to be statistically significant ($t = 5.133$, $p = .001$), as the significance value is less than the accepted level of 0.05. The 95% confidence interval, ranging from 0.201 to 0.488, does not include zero, providing further evidence that the effect is statistically significant. Also, the Tolerance value (0.901) and the Variance Inflation Factor ($VIF = 1.110$) are within the recommended thresholds (Tolerance > 0.10 and $VIF < 10$), indicating that multi-collinearity was not a concern in the regression model.

The findings suggest that improvements in instructional leadership practices are associated with improvements in mathematics instruction in public primary schools. Therefore, the null hypothesis (H_0), which stated that instructional leadership practices had no statistically significant influence on the teaching of mathematics, is rejected, while the alternative hypothesis (H_1) is accepted. The study concludes that instructional leadership practices significantly and positively influence the teaching of mathematics in public primary schools in Wanging'ombe District, Tanzania. The study found that instructional leadership practices are significant predictors of effective Mathematics teaching in public primary schools. This means that strengthening head teachers' instructional leadership practices is likely to improve the quality of Mathematics teaching by enhancing instructional supervision, teacher support, classroom practices, and pupils' learning experiences. Therefore, effective instructional leadership is an important factor in improving the teaching of Mathematics in Wanging'ombe District public primary schools.

V. CONCLUSION

Based on the findings, the study on the extent of instructional leadership practices in the teaching of Mathematics in public primary schools in Wanging'ombe District was moderate. Moreover, the study concludes that instructional leadership practices are a significant influence of the teaching of Mathematics in public primary schools in Wanging'ombe District. The findings show the extent instructional leadership, particularly through instructional supervision, teacher support, monitoring of teaching and learning, and the provision of instructional guidance, contributes positively to improving the quality of Mathematics teaching. Therefore, strengthening instructional leadership practices among head teachers is essential for enhancing effective Mathematics instruction and promoting better learning outcomes in public primary schools.

RECOMMENDATION

Based on the conclusion, the study recommended that head teachers should strengthen the implementation of instructional leadership practices by increasing their direct involvement in the teaching and learning of Mathematics. Specifically, they should conduct regular classroom visits, provide constructive instructional support and feedback to teachers, encourage pupils to develop positive attitudes towards Mathematics, engage them in academic discussions, and regularly monitor their learning progress through subject-related interactions. Such practices will enable head teachers to identify instructional challenges early, provide timely support to both teachers and pupils, and create a supportive learning environment that enhances pupils' engagement and achievement in Mathematics. Likewise, the District Education Officers and Quality Assurance Officers should organise continuous professional development programmes on instructional leadership to equip head teachers with the knowledge and skills required to effectively supervise instruction and support the teaching of Mathematics in public Primary schools.

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