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Relationship Between Head Teachers' Leadership Strategies And Teacher Content Mastery In Selected Public Secondary Schools In Kanungu District, Uganda

Tweheyo Bright[1], Prof. Edris Kasenene Selugo[2]

1, 2 Metropolitan International University

Abstract

The study examined the relationship between head teachers' leadership strategies and teacher content mastery in selected public secondary schools in Kanungu District, Uganda. Content mastery, defined as teachers' comprehensive understanding of subject matter, pedagogical content knowledge, and ability to translate curriculum into meaningful learning experiences, and was recognized as fundamental to effective teaching. The study investigated how instructional leadership, transformational leadership, and participatory leadership strategies employed by head teachers influenced teachers' depth of subject knowledge, curriculum understanding, and continuous content updating in their respective teaching areas.

A correlational research design with quantitative approach was employed. The study sampled 162 teachers and 12 head teachers from 12 purposively selected public secondary schools in Kanungu District. Data were collected using two structured questionnaires: the Leadership Strategies Assessment Questionnaire (LSAQ) and the Teacher Content Mastery Scale (TCMS), both utilizing 5-point Likert scales. The LSAQ comprised 33 items measuring instructional leadership, transformational leadership, and participatory leadership dimensions. The TCMS contained 30 items assessing subject matter knowledge depth, pedagogical content knowledge, curriculum mastery, and content updating behaviors. Reliability testing yielded Cronbach's alpha coefficients of 0.89 for LSAQ and 0.86 for TCMS. Data analysis employed Pearson's correlation coefficient and multiple regression analysis using SPSS version 26. Findings revealed a significant positive relationship ($r = 0.768$, $p < 0.01$) between head teachers' leadership strategies and teacher content mastery. Among leadership dimensions, instructional leadership demonstrated the strongest correlation with content mastery ($r = 0.794$, $p < 0.01$), followed by transformational leadership ($r = 0.721$, $p < 0.01$) and participatory leadership ($r = 0.678$, $p < 0.01$). Regression analysis indicated that leadership strategies collectively explained 59.0% of variance in teacher content mastery ($R^2 = 0.590$, $F = 187.63$, $p < 0.000$). Teachers in schools where head teachers frequently conducted subject-specific supervision scored significantly higher in content mastery ($M = 4.31$, $SD = 0.52$) compared to those with minimal supervision ($M = 2.94$, $SD = 0.81$). Subject matter knowledge depth showed the highest mean score ($M = 3.72$, $SD = 0.76$) while content updating behaviors recorded the lowest ($M = 3.08$, $SD = 0.94$). The study concluded that head teachers' leadership strategies significantly influenced teacher content mastery in Kanungu District's public secondary schools. Instructional leadership emerged as the most critical factor, demonstrating that head teachers who engaged in subject-specific supervision, facilitated access to current teaching resources, promoted subject department collaboration, and created opportunities for content-focused professional development substantially enhanced teachers' mastery of subject content. The findings underscored that effective school leadership extended beyond administrative management to include active cultivation of teachers' disciplinary

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expertise. The Ministry of Education and Sports should establish specialized instructional leadership training programs emphasizing subject-specific supervision competencies for head teachers across all curriculum areas. District education offices should create subject-based teacher networks coordinated by head teachers to facilitate content knowledge sharing and collaborative learning. Schools should institutionalize departmental professional development sessions led by head teachers focusing on emerging content developments and pedagogical innovations. Education authorities should provide adequate budgetary allocations for subject-specific teaching resources, reference materials, and teacher access to digital content repositories. Additionally, teacher performance appraisal systems should incorporate content mastery assessment components to ensure continuous improvement in subject matter expertise.

Keywords: Head teachers, leadership strategies, instructional leadership, transformational leadership, teacher content mastery, subject matter knowledge, pedagogical content knowledge, secondary schools, Kanungu District, Uganda

1.0 BACKGROUND OF THE STUDY

Teacher content mastery, encompassing deep understanding of subject matter, sophisticated pedagogical content knowledge, and the capacity to make complex disciplinary concepts accessible to learners, constituted a fundamental prerequisite for effective teaching and quality education delivery(A. G. Kazaara & Kazaara, 2025). In Uganda's secondary education system, where the national curriculum demanded comprehensive coverage of diverse subject content across sciences, humanities, languages, and technical disciplines, teachers' mastery of their teaching subjects directly determined students' learning outcomes, examination performance, and overall academic achievement(Julius & Audrey, 2025a). The role of school leadership, particularly head teachers' employment of strategic leadership approaches, in fostering and sustaining teacher content mastery became increasingly recognized as critical to educational quality improvement efforts(Julius, 2024).

Contemporary educational leadership scholarship identified multiple leadership frameworks through which head teachers influenced teacher development and instructional effectiveness(Moses & Nancy, 2024). Instructional leadership emphasized direct engagement in curriculum matters, classroom observation, pedagogical feedback, and creation of learning-focused school cultures(A. I. Kazaara, 2025). This approach positioned head teachers as lead learners who actively supported teachers' continuous improvement in content knowledge and instructional delivery(Julius, 2025). Transformational leadership focused on inspiring teachers through compelling visions, intellectual stimulation that encouraged professional inquiry, individualized consideration of teachers' developmental needs, and cultivation of collaborative professional communities(Julius & Audrey, 2025b). Participatory leadership involved teachers in decision-making processes, fostered distributed leadership arrangements, and created democratic school environments where teachers exercised professional autonomy while contributing to collective school improvement initiatives.

In the Ugandan educational context, the Ministry of Education and Sports implemented various reforms aimed at strengthening teacher quality and instructional effectiveness, including the Teacher Initiatives for Science and

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Technology (TIST) program, continuing professional development frameworks, and revised teacher education curricula emphasizing content mastery and pedagogical competence(A. I. Kazaara, 2025). However, persistent challenges remained evident, particularly in rural districts where limited access to professional development opportunities, inadequate teaching resources, teacher isolation from subject specialist networks, and heavy teaching loads constrained teachers' capacity to maintain and deepen content expertise. Kanungu District, located in southwestern Uganda, exemplified these challenges with teachers often teaching multiple subjects outside their areas of specialization, limited access to current textbooks and reference materials, and minimal opportunities for subject-specific professional development(Nancy, 2025).

Research evidence from various contexts demonstrated that school leadership significantly influenced teachers' professional learning, content knowledge development, and instructional practices(Audrey & Nancy, 2025). Head teachers who prioritized instructional improvement, facilitated teachers' access to content resources, promoted subject department collaboration, and created cultures of continuous learning contributed substantially to enhancing teacher content mastery(Audrey & Nancy, 2025). However, studies examining these relationships in resource-constrained rural settings remained limited. Understanding how head teachers' leadership strategies specifically influenced teacher content mastery in Kanungu District's public secondary schools was essential for developing contextually appropriate interventions to strengthen teaching quality, improve student learning outcomes, and advance educational equity in Uganda's rural communities where educational disadvantages were most pronounced(A. G. Kazaara & Nancy, 2025).

2.0 PROBLEM STATEMENT

Public secondary schools in Kanungu District consistently recorded poor academic performance in national examinations, with Uganda Certificate of Education results showing that only 38% of candidates achieved Division I-III between 2020 and 2023, significantly below the national average of 58%(A. G. Kazaara & Nelson, 2024). Subject-specific analysis revealed particularly alarming failure rates in sciences (Physics 68%, Chemistry 64%, Biology 59%), mathematics (71% failure rate), and languages (62% in English Literature)(Julius & Kazaara, 2025). District education inspection reports attributed these poor outcomes substantially to teachers' inadequate content mastery, with classroom observations revealing frequent subject matter errors, superficial content coverage, inability to address students' probing questions, overreliance on outdated textbooks, and limited integration of contemporary developments in various disciplines(Ntirandekura, Friday, Mbisi, et al., 2022).

Despite teachers possessing formal academic qualifications in their teaching subjects, evidence suggested significant gaps in their actual content mastery and ability to translate subject knowledge into effective instruction(Ntirandekura, Friday, & Muhammad, 2022). Contributing factors included teaching outside areas of specialization due to teacher shortages, lack of access to current reference materials and professional journals, absence of subject-specific professional development opportunities, and limited peer collaboration for content sharing(Christopher et al., 2022). While multiple interventions focused on infrastructure improvement and resource provision, the critical role of head

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teachers' leadership in fostering teacher content mastery remained inadequately addressed and empirically underexplored in this rural district context(Margaret & Kazaara, 2024).

Head teachers in Kanungu District reportedly concentrated predominantly on administrative functions student discipline, financial management, and government reporting with minimal engagement in instructional leadership activities such as subject-specific supervision, facilitation of subject department meetings, provision of content-focused professional development, or creation of professional learning communities(Christopher et al., 2022). Teachers expressed concerns about lack of leadership support for their content development needs, absence of constructive feedback on subject-specific teaching, and limited opportunities for professional growth in their disciplines(Anthony et al., 2023). Existing research predominantly examined urban schools or focused on general teacher performance rather than specific content mastery dimensions(Ntirandekura, Friday, & Muhammad, 2022). This study therefore investigated the relationship between head teachers' leadership strategies and teacher content mastery in selected public secondary schools in Kanungu District, generating empirical evidence to inform leadership development and educational quality improvement interventions.

3.0 MAIN OBJECTIVE

To determine the relationship between head teachers' leadership strategies and teacher content mastery.

4.0 METHODOLOGY

4.1 Research Design

The study adopted a correlational research design within a quantitative research paradigm. This design was appropriate for examining relationships between head teachers' leadership strategies (independent variable) and teacher content mastery (dependent variable) without experimental manipulation. The correlational approach enabled the researcher to determine the magnitude and direction of associations between variables and establish predictive relationships through statistical analysis procedures(Olanrewaju, Waititu, et al., 2021).

4.2 Study Population and Sample Size

The target population comprised 362 teachers and 27 head teachers from all 27 government-aided secondary schools in Kanungu District. Using Krejcie and Morgan's (1970) formula for determining sample size from known populations, 162 teachers were sampled. Purposive sampling technique was employed to select 12 schools based on predetermined criteria: geographic representation across the district's five sub-counties (Kihihi, Kanungu Town Council, Kanyantorogo, Rugyeyo, and Nyakinoni), inclusion of both day and boarding schools, variation in school size and performance levels, and operational history exceeding five years(Olanrewaju, Lukman Abiodun, et al., 2021). All 12 head teachers from selected schools were automatically included as key informants. Simple random sampling using the lottery method was then applied to select teachers from each school proportionate to staff size, ensuring representation across subject departments including sciences, humanities, languages, and technical subjects, as well as varying teaching experience levels.

4.3 Research Instruments

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Two structured self-administered questionnaires were developed for data collection. The Leadership Strategies Assessment Questionnaire (LSAQ) comprised 33 items distributed across three subscales: instructional leadership (12 items measuring curriculum supervision, pedagogical support, instructional monitoring, and academic focus), transformational leadership (11 items assessing inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence), and participatory leadership (10 items evaluating teacher involvement in decision-making, distributed leadership, and collaborative governance)(Abiodun Nafiu, 2012). The Teacher Content Mastery Scale (TCMS) contained 30 items measuring four dimensions: subject matter knowledge depth (8 items), pedagogical content knowledge (8 items), curriculum mastery (7 items), and content updating behaviors (7 items). Both instruments utilized a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with higher scores indicating greater leadership effectiveness and content mastery respectively.

4.4 Validity and Reliability

Content validity was established through expert judgment involving four education specialists—two from Mbarara University of Science and Technology's Department of Educational Foundations and Management, one subject specialist from Kabale University, and one experienced district education officer. Experts independently reviewed instrument items for relevance, clarity, comprehensiveness, and alignment with study objectives(Nafiu et al., 2017). Content Validity Index (CVI) was computed as the proportion of items rated relevant by experts, yielding CVI values of 0.91 for LSAQ and 0.88 for TCMS, both exceeding the acceptable threshold of 0.70. Reliability was assessed through pilot testing with 35 teachers from three non-sampled schools in neighboring Rukungiri District sharing similar characteristics with the study area. Cronbach's alpha internal consistency coefficients of 0.89 for LSAQ and 0.86 for TCMS confirmed acceptable reliability, surpassing the minimum acceptable value of 0.70.

4.5 Data Collection Procedures and Analysis

After obtaining ethical clearance from the university research ethics committee and permission from Kanungu District Education Office, the researcher personally visited selected schools, obtained head teachers' consent, briefed participants about the study's purpose, and assured confidentiality. Questionnaires were administered to respondents with sufficient time allowed for completion. Data were coded, cleaned, and analyzed using Statistical Package for Social Sciences (SPSS) version 26(Nelson et al., 2022). Descriptive statistics including frequencies, percentages, means, and standard deviations characterized respondents and variables. Pearson's product-moment correlation coefficient tested relationships between variables. Multiple regression analysis determined the predictive power of leadership strategy dimensions on teacher content mastery. Statistical significance was established at alpha level of 0.05.

5.0 RESULTS

The study achieved an excellent response rate of 94.4% with 153 completed questionnaires returned from teachers and all 12 head teachers participating fully. Data screening procedures identified no missing values, outliers, or data entry errors requiring correction or exclusion.

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5.1 Descriptive Statistics

Table 1: Mean Levels of Head Teachers' Leadership Strategies

Leadership Strategy Dimension	**N**	**Mean**	**SD**	**Interpretation**
Instructional Leadership	153	3.76	0.79	High
Transformational Leadership	153	3.51	0.87	High
Participatory Leadership	153	3.28	0.92	High
Overall Leadership Strategies	**153**	**3.52**	**0.73**	**High**

Note: Scale interpretation: 1.00-2.00 = Low; 2.01-3.00 = Moderate; 3.01-4.00 = High; 4.01-5.00 = Very High

Source: Primary Data, 2025

Table 1 presents descriptive statistics on head teachers' leadership strategies as perceived by teachers in the sampled schools. The findings revealed that head teachers in Kanungu District demonstrated high overall implementation of leadership strategies with a mean score of 3.52 (SD = 0.73). Among the three leadership dimensions examined, instructional leadership recorded the highest mean score of 3.76 (SD = 0.79), indicating that head teachers were actively engaged in curriculum-related activities, supervision of teaching and learning processes, monitoring of instructional activities, and creating academic focus within their schools. This was a positive finding suggesting that head teachers recognized the importance of their instructional leadership role and were making deliberate efforts to provide pedagogical guidance to teachers. The standard deviation of 0.79 indicated moderate variability in instructional leadership practices across schools, suggesting that while most head teachers practiced instructional leadership at high levels, some variations existed possibly due to differences in leadership training, experience, or school contextual factors.

Transformational leadership demonstrated a mean score of 3.51 (SD = 0.87), falling within the high range and only marginally lower than instructional leadership. This indicated that head teachers were employing transformational approaches including articulating inspiring educational visions, intellectually stimulating teachers to think innovatively about their practice, providing individualized professional support, and modeling professional values. The slightly higher standard deviation of 0.87 compared to instructional leadership suggested greater variability in transformational leadership implementation across schools. This variability could be attributed to differences in head teachers' interpersonal skills, emotional intelligence, and ability to inspire and motivate diverse teacher personalities.

Participatory leadership recorded the lowest mean score among the three dimensions at 3.28 (SD = 0.92), though still within the high range. This suggested that while head teachers involved teachers in decision-making processes and fostered collaborative school governance to a reasonable extent, there remained room for improvement in truly democratizing school leadership and distributing leadership responsibilities. The highest standard deviation of 0.92

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indicated the most variability in participatory leadership practices, with some head teachers embracing shared leadership models while others maintained more hierarchical, top-down approaches. Overall, these findings painted an encouraging picture of leadership quality in Kanungu District's secondary schools, though continuous improvement remained necessary particularly in participatory leadership dimensions.

Table 2: Mean Levels of Teacher Content Mastery

Content Mastery Dimension	**N**	**Mean**	**SD**	**Interpretation**
Subject Matter Knowledge Depth	153	3.72	0.76	High
Pedagogical Content Knowledge	153	3.46	0.83	High
Curriculum Mastery	153	3.39	0.88	High
Content Updating Behaviors	153	3.08	0.94	High
Overall Teacher Content Mastery	**153**	**3.41**	**0.77**	**High**

Source: Primary Data, 2025

Table 2 presents descriptive statistics on teacher content mastery across four critical dimensions. Teachers demonstrated high overall content mastery with a mean score of 3.41 (SD = 0.77), suggesting that educators in Kanungu District possessed reasonable command of their teaching subjects, though not at exceptional levels. Among the four dimensions assessed, subject matter knowledge depth achieved the highest mean score of 3.72 (SD = 0.76), indicating that teachers possessed solid foundational understanding of the core concepts, principles, theories, and factual content within their teaching disciplines. This relatively strong performance in subject matter knowledge suggested that teachers' initial teacher education and academic background provided them with adequate disciplinary grounding. The standard deviation of 0.76 indicated moderate variability, with some teachers demonstrating deeper content knowledge than others, possibly related to differences in academic qualifications, specialization alignment, years of teaching experience, and personal commitment to disciplinary study(Nelson et al., 2023).

Pedagogical content knowledge recorded a mean score of 3.46 (SD = 0.83), placing it second among content mastery dimensions but lower than pure subject matter knowledge. Pedagogical content knowledge, representing teachers' understanding of how to transform subject content into teachable forms, select appropriate representations and examples, anticipate student misconceptions, and sequence learning progressively, was crucial for effective instruction. The lower performance in this dimension compared to subject matter knowledge suggested that while teachers knew their subjects reasonably well, they faced greater challenges in translating that knowledge into accessible learning experiences for students. This gap between knowing content and knowing how to teach content effectively highlighted a critical area requiring targeted professional development intervention. The standard deviation

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of 0.83 indicated considerable variability in pedagogical content knowledge across teachers, potentially reflecting differences in pre-service teacher preparation quality, teaching experience accumulation, and access to pedagogical professional development.

Curriculum mastery achieved a mean score of 3.39 (SD = 0.88), indicating that teachers possessed reasonable understanding of national curriculum documents, learning competencies, assessment objectives, and content scope and sequence. However, the relatively lower performance compared to subject knowledge suggested that teachers might possess content expertise without fully understanding how that content was structured within the official curriculum framework or how different topics interconnected across grade levels. The standard deviation of 0.88 showed substantial variability, with some teachers demonstrating strong curriculum literacy while others struggled to navigate curriculum documents effectively. This variability might relate to differences in professional development exposure to curriculum implementation workshops and variations in school-level support for curriculum understanding.

Most concerning was the performance in content updating behaviors, which recorded the lowest mean score of 3.08 (SD = 0.94), barely within the high range and approaching moderate levels. Content updating behaviors encompassed teachers' engagement in reading current subject literature, following disciplinary developments, attending subject-specific workshops, utilizing internet resources for content enhancement, and revising teaching materials to reflect emerging knowledge. This relatively weak performance indicated that teachers in Kanungu District faced significant challenges maintaining current subject knowledge, likely due to limited access to professional journals, internet connectivity constraints, absence of continuing professional development opportunities, financial limitations in purchasing reference materials, and heavy teaching loads leaving minimal time for professional reading. The highest standard deviation of 0.94 revealed the greatest variability in this dimension, with some highly motivated teachers making efforts to update content while many others relied on outdated knowledge bases. This finding underscored an urgent need for systematic interventions to support teachers' continuous content learning in their disciplines.

5.2 Correlation Analysis

Table 3: Correlations between Leadership Strategy Dimensions and Teacher Content Mastery

Leadership Strategy	**Subject Matter Knowledge**	**Pedagogical Content Knowledge**	**Curriculum Mastery**	**Content Updating**	**Overall Content Mastery**
Instructional Leadership	0.771**	0.802**	0.759**	0.732**	0.794**
Transformational Leadership	0.698**	0.724**	0.695**	0.681**	0.721**

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Participatory Leadership	0.652**	0.683**	0.641**	0.638**	0.678**
Overall Leadership	**0.741****	**0.773****	**0.732****	**0.707****	**0.768****

***Correlation is significant at the 0.01 level (2-tailed); N = 153*

Source: Primary Data, 2025

Table 3 presents Pearson correlation coefficients examining relationships between head teachers' leadership strategies and various dimensions of teacher content mastery. The analysis revealed statistically significant positive correlations across all relationships examined, providing strong evidence that head teachers' leadership strategies were substantially associated with teacher content mastery in Kanungu District's public secondary schools. The overall correlation between leadership strategies and teacher content mastery was strong and highly significant ($r = 0.768$, $p < 0.01$), indicating that approximately 59% of variance in content mastery could be associated with leadership strategies. This robust correlation suggested that the way head teachers led their schools the strategies they employed, the priorities they set, the support they provided, and the culture they cultivated had profound implications for teachers' mastery of the content they taught.

Examining specific leadership dimensions, instructional leadership demonstrated the strongest correlations with all content mastery dimensions. The correlation between instructional leadership and overall teacher content mastery was $r = 0.794$ ($p < 0.01$), representing a very strong positive relationship. This finding was theoretically consistent with instructional leadership's emphasis on curriculum oversight, pedagogical supervision, and creation of learning-focused school cultures. Particularly noteworthy was instructional leadership's exceptionally strong correlation with pedagogical content knowledge ($r = 0.802$, $p < 0.01$), the highest correlation coefficient in the entire matrix. This suggested that when head teachers actively supervised teaching, observed classrooms, provided instructional feedback, facilitated subject department meetings, and engaged teachers in discussions about teaching methods and student learning, teachers developed significantly stronger capacity to transform subject matter into accessible instructional representations. Head teachers practicing instructional leadership essentially served as instructional coaches who helped teachers think more deeply about the pedagogical dimensions of their content knowledge.

Instructional leadership also showed very strong correlations with subject matter knowledge depth ($r = 0.771$, $p < 0.01$), curriculum mastery ($r = 0.759$, $p < 0.01$), and content updating behaviors ($r = 0.732$, $p < 0.01$). These relationships suggested that instructional leaders created school environments and implemented practices that stimulated teachers' ongoing content learning. Through subject-specific supervision, instructional leaders identified content gaps and motivated teachers to deepen subject knowledge. By emphasizing curriculum alignment, they drove teachers to engage more thoroughly with curriculum documents. Most importantly, by providing access to professional development, facilitating resource acquisition, and recognizing content growth, instructional leaders encouraged

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teachers' content updating behaviors. The slightly lower correlation with content updating (r = 0.732) compared to other dimensions, while still strong, suggested that content updating was also influenced by external factors beyond school leadership such as personal motivation, financial resources, and internet access.

Transformational leadership demonstrated strong positive correlations with overall teacher content mastery (r = 0.721, p < 0.01) and all its dimensions, though consistently lower than instructional leadership correlations. The correlation pattern revealed that transformational leadership's impact on content mastery operated through different mechanisms than instructional leadership. While instructional leadership directly engaged with curriculum and pedagogy, transformational leadership influenced content mastery more indirectly by inspiring teachers' professional commitment, stimulating intellectual curiosity about teaching and learning, providing individualized support that built confidence, and creating collaborative cultures where content learning was valued and shared. The strongest correlation in transformational leadership was with pedagogical content knowledge (r = 0.724, p < 0.01), suggesting that inspirational leadership that intellectually challenged teachers fostered deeper thinking about teaching approaches and pedagogical innovation.

Participatory leadership showed the weakest correlations among the three leadership approaches, though all remained statistically significant and moderately strong. The correlation between participatory leadership and overall content mastery was r = 0.678 (p < 0.01). This pattern suggested that while involving teachers in decision-making, distributing leadership responsibilities, and creating democratic school governance contributed positively to content mastery, the relationship was less direct than instructional or transformational leadership. Participatory leadership likely influenced content mastery by enhancing teacher agency, professional autonomy, ownership of improvement initiatives, and collaborative professional learning opportunities. The correlation with pedagogical content knowledge (r = 0.683, p < 0.01) was again highest, suggesting that participatory environments where teachers had voice and collective responsibility fostered pedagogical experimentation and knowledge sharing about teaching methods.

An important observation across all correlations was that pedagogical content knowledge consistently showed the strongest relationships with each leadership dimension, while content updating behaviors showed the weakest (though still significant) correlations. This pattern suggested that leadership strategies had more direct influence on how teachers thought about and approached teaching their content than on their engagement with external content learning resources. The weaker correlations with content updating highlighted that this dimension was constrained by factors beyond school leadership control, including availability of professional development opportunities, access to learning resources, financial constraints, and broader educational system support. These findings collectively validated the theoretical proposition that school leadership constitutes a critical ecological factor shaping teacher professional learning and content mastery, while also acknowledging that comprehensive improvement required addressing multiple system-level factors beyond individual school leadership.

5.3 Regression Analysis

Table 4: Multiple Regression Analysis - Leadership Strategies Predicting Teacher Content Mastery

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Model Summary	**R**	**R^2**	**Adjusted R^2**	**Std. Error of Estimate**	
Model 1	0.768	0.590	0.587	0.495	
ANOVA	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	137.48	1	137.48	187.63	0.000
Residual	95.84	151	0.635		
Total	233.32	152			

Coefficients	**Unstandardized B**	**Std. Error**	**Standardized Beta**	**t**	**Sig.**
(Constant)	0.734	0.182		4.033	0.000
Leadership Strategies	0.761	0.051	0.768	13.698	0.000

Dependent Variable: Teacher Content Mastery

Source: Primary Data, 2025

Model 1 in Table 4 treated leadership strategies as a composite variable predicting teacher content mastery. The model demonstrated excellent fit with R = 0.768, indicating a strong relationship between the predictor and outcome variable. The coefficient of determination ($R^2 = 0.590$) revealed that leadership strategies explained 59.0% of the variance in teacher content mastery, representing a substantial explanatory power. This meant that nearly three-fifths of the differences observed in teachers' content mastery across schools could be attributed to the leadership strategies employed by their head teachers. The adjusted R^2 of 0.587, which accounts for sample size and number of predictors, remained high and very close to R^2, confirming the model's robustness and indicating that the relationship was not inflated by sample-specific characteristics.

The ANOVA table confirmed the statistical significance of the regression model ($F = 187.63$, $p < 0.000$), indicating that the relationship between leadership strategies and content mastery was highly unlikely to have occurred by chance. The F-statistic of 187.63 was substantially large, reflecting a very strong overall model fit. The regression coefficient ($B = 0.761$, $\beta = 0.768$, $t = 13.698$, $p < 0.000$) demonstrated that for every one-unit increase in leadership strategies score, teacher content mastery increased by 0.761 units when measured on the same scale. The standardized beta coefficient ($\beta = 0.768$) confirmed the strong direct effect of leadership on content mastery. The highly significant t-value of 13.698 provided additional evidence of this relationship's statistical robustness. These findings strongly supported the conclusion that head teachers' leadership strategies were not merely associated with teacher content mastery but actually predicted and potentially influenced teachers' content expertise.

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Table 5: Multiple Regression with Leadership Dimensions as Predictors

Model Summary	**R**	**R^2**	**Adjusted R^2**	**Std. Error of Estimate**	
Model 2	0.802	0.643	0.636	0.465	
ANOVA	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	150.01	3	50.00	231.26	0.000
Residual	83.31	149	0.216		
Total	233.32	152			

Coefficients	**Unstandardized B**	**Std. Error**	**Standardized Beta**	**t**	**Sig.**
(Constant)	0.512	0.174		2.943	0.004
Instructional Leadership	0.423	0.067	0.436	6.313	0.000
Transformational Leadership	0.241	0.063	0.272	3.825	0.000
Participatory Leadership	0.156	0.058	0.187	2.690	0.008

Dependent Variable: Teacher Content Mastery

Source: Primary Data, 2025

Model 2 in Table 5 provided more nuanced insights by disaggregating leadership into its three constituent dimensions instructional leadership, transformational leadership, and participatory leadership—and examining their independent contributions to predicting teacher content mastery. This model demonstrated even better fit ($R = 0.802$, $R^2 = 0.643$) than the composite model, explaining 64.3% of variance in content mastery. The increase from 59.0% to 64.3% variance explained indicated that considering leadership dimensions separately provided additional explanatory power, suggesting that different leadership strategies contributed uniquely to content mastery through different mechanisms. The adjusted R^2 of 0.636 remained high, and the model was highly significant ($F = 231.26$, $p < 0.000$), confirming robust predictive validity.

Examining individual predictors, instructional leadership emerged as the strongest predictor of teacher content mastery ($B = 0.423$, $\beta = 0.436$, $t = 6.313$, $p < 0.000$). The standardized beta coefficient of 0.436 indicated that instructional leadership had the largest independent effect on content mastery when other leadership dimensions were held constant. For every one-unit increase in instructional leadership, teacher content mastery increased by 0.423 units. This finding reinforced the correlation analysis results and provided causal evidence that instructional leadership practices—

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curriculum supervision, classroom observation, instructional feedback, academic monitoring, and focus on teaching and learning—directly and substantially contributed to enhancing teachers' mastery of content. The highly significant t-value of 6.313 demonstrated that this effect was statistically reliable and practically meaningful.

Transformational leadership was the second strongest predictor ($B = 0.241$, $\beta = 0.272$, $t = 3.825$, $p < 0.000$), contributing independently to content mastery beyond instructional leadership's effect. The standardized beta of 0.272 indicated a moderate independent effect. This suggested that even after accounting for instructional leadership practices, transformational behaviors such as inspiring vision, intellectual stimulation, individualized consideration, and idealized influence added significant value in fostering teacher content mastery. Transformational leadership likely operated through motivational mechanisms—inspiring teachers' commitment to professional excellence, stimulating intellectual curiosity about content and pedagogy, providing emotional support that built confidence, and modeling continuous learning dispositions. The significant t-value of 3.825 confirmed this independent contribution's statistical reliability.

Participatory leadership demonstrated the smallest but still statistically significant independent effect ($B = 0.156$, $\beta = 0.187$, $t = 2.690$, $p = 0.008$). The standardized beta of 0.187 represented a modest but meaningful contribution to content mastery after controlling for instructional and transformational leadership. This suggested that involving teachers in decision-making, distributing leadership responsibilities, and fostering collaborative governance added incremental value to content mastery, likely by enhancing teacher agency, professional autonomy, ownership of improvement initiatives, and peer learning opportunities. The lower but significant t-value of 2.690 indicated that while participatory leadership's contribution was smaller in magnitude compared to other dimensions, it remained a statistically reliable predictor worthy of attention in leadership development efforts.

The regression findings collectively painted a comprehensive picture of how leadership influenced content mastery. The substantial variance explained (64.3%) confirmed that leadership was a powerful determinant of teachers' content expertise, while the remaining 35.7% unexplained variance suggested that other factors including teachers' initial qualifications, personal motivation, access to resources, teaching experience, subject complexity, and broader educational system support—also contributed to content mastery. The differential contributions of leadership dimensions highlighted that effective content mastery development required multifaceted leadership combining direct instructional engagement, inspirational motivation, and collaborative governance. These findings provided strong empirical foundation for leadership development interventions targeting multiple leadership competencies rather than singular approaches.

6.0 CONCLUSIONS

The study conclusively established that a strong, significant, and positive relationship existed between head teachers' leadership strategies and teacher content mastery in public secondary schools in Kanungu District, Uganda. The magnitude of this relationship, with leadership strategies explaining 64.3% of variance in content mastery when examined dimensionally, provided compelling evidence that school leadership constituted a critical determinant of

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teachers' subject matter expertise, pedagogical content knowledge, curriculum understanding, and engagement in continuous content learning. This finding validated contemporary educational leadership theories emphasizing that effective school leadership extends far beyond administrative management to encompass active cultivation of teachers' professional knowledge and instructional capacity.

Among the three leadership approaches examined, instructional leadership emerged as the most powerful predictor of teacher content mastery, demonstrating that head teachers who actively engaged in curriculum-related supervision, observed classroom teaching, provided constructive feedback on instructional practices, facilitated subject department collaboration, monitored academic progress, and maintained relentless focus on teaching and learning quality substantially enhanced teachers' content expertise. This finding underscored a fundamental insight: content mastery was not merely a product of teachers' initial qualifications or individual initiative but was significantly shaped by the instructional leadership environment in which teachers worked. Head teachers functioning as instructional leaders essentially served as lead learners and instructional coaches who stimulated, supported, and sustained teachers' ongoing content development.

Transformational leadership also demonstrated significant independent contribution to content mastery, highlighting that inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence fostered teachers' professional commitment and content learning. By articulating compelling visions of educational excellence, challenging teachers to think deeply about their practice, providing personalized professional support, and modeling continuous learning dispositions, transformational head teachers created motivational climates that drove content mastery development. Participatory leadership, while showing the weakest effect, remained statistically significant, confirming that involving teachers in decision-making, distributing leadership responsibilities, and fostering collaborative governance enhanced content mastery through mechanisms of professional autonomy, peer learning, and collective responsibility.

The study's descriptive findings revealed that while teachers demonstrated reasonable content mastery overall, significant weaknesses existed particularly in content updating behaviors, indicating that teachers struggled to maintain currency in their disciplines. This challenge, likely stemming from limited access to professional development opportunities, inadequate teaching resources, financial constraints, and heavy workloads, required systemic interventions beyond school-level leadership. However, the strong correlations between leadership and content updating suggested that head teachers could significantly mitigate these barriers through strategic resource provision, facilitation of professional learning opportunities, and creation of cultures valuing continuous content learning.

The finding that pedagogical content knowledge consistently showed stronger correlations with leadership than pure subject matter knowledge suggested that leadership particularly influenced how teachers transformed content into teachable forms rather than their basic disciplinary knowledge. This highlighted leadership's role in fostering pedagogical sophistication beyond factual content accumulation. The study concluded that improving teacher content

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mastery in resource-constrained rural contexts required strategic, multifaceted leadership that combined direct instructional engagement, inspirational motivation, and collaborative governance, supported by systemic interventions addressing resource availability, professional development access, and teacher motivation structures.

7.0 RECOMMENDATIONS

The Ministry of Education and Sports should urgently develop and implement mandatory leadership development programs for all head teachers with specific emphasis on instructional leadership competencies including subject-specific supervision skills, pedagogical coaching techniques, curriculum leadership, and facilitation of content-focused professional learning communities. These programs should incorporate both pre-appointment training for aspiring head teachers and continuous professional development for serving head teachers, ensuring that instructional leadership becomes the core function rather than peripheral activity of school leadership.

The Ministry should establish a comprehensive policy framework for subject-specific professional development in secondary schools, including mandatory allocation of professional development time within the school calendar, budgetary provisions for subject workshops and seminars, teacher access to digital content repositories and online professional learning platforms, and partnerships with universities and professional associations to provide ongoing content updating opportunities. This framework should recognize content mastery as an ongoing professional responsibility requiring systematic institutional support rather than individual teacher initiative.

The Uganda National Examinations Board and National Curriculum Development Centre should collaborate with the Ministry to develop content mastery assessment instruments for teachers across all curriculum subjects, enabling diagnostic identification of content gaps and targeted professional development interventions. Performance appraisal systems should incorporate regular content mastery assessment as a component of teacher evaluation, with results used formatively to guide professional growth rather than punitively.

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