

Teacher Competence in Competence-Based Curriculum Implementation and Students' Academic Achievement in Government Secondary Schools in Rubanda District, Uganda

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Abstract: This study examined the relationship between teacher competence in competence-based curriculum (CBC) implementation and students' academic achievement in government secondary schools in Rubanda District, Uganda. Following Uganda's adoption of the competence-based lower secondary curriculum, the quality of implementation—and hence learner achievement—depends heavily on teachers' capacity to deliver learner-centred, competence-oriented instruction. The study investigated how pedagogical competence, assessment competence, content mastery, and ICT and resource competence relate to students' academic achievement. A cross-sectional survey design with a mixed-methods approach was adopted, and data were collected from 190 respondents comprising teachers, head teachers, and students using structured questionnaires, lesson observation, and interviews. Descriptive statistics, Pearson correlation, and regression-based path analysis were used. The results revealed a strong positive and significant relationship between teacher competence and academic achievement ($r = 0.66$, $p < 0.01$), with the competence dimensions jointly explaining 63.0% of the variance in achievement ($R^2 = 0.630$). Pedagogical competence and assessment competence emerged as the strongest predictors. The study concludes that teacher competence in CBC implementation significantly enhances academic achievement and recommends targeted in-service training in learner-centred pedagogy and competence-based assessment.

Keywords: teacher competence, competence-based curriculum, academic achievement, pedagogical competence, government secondary schools, Rubanda District, Uganda

1.0 Introduction

Uganda's introduction of the competence-based lower secondary curriculum in 2020 represents a fundamental shift in the philosophy and practice of secondary education, moving from a content-driven, examination-oriented model towards one that prioritises the acquisition of demonstrable competencies, learner-centred pedagogy, and continuous assessment (NCDC, 2020; Ministry of Education and Sports, 2023). The ultimate goal of this reform is to improve students' learning and achievement by equipping them with the knowledge, skills, and attitudes required for life and work in the twenty-first century (Ntirandekura et al., 2022). Whether this goal is realised, however, depends critically on how effectively teachers implement the new curriculum in their classrooms (Fullan, 2021).

Students' academic achievement—the extent to which learners attain the intended learning outcomes—is the ultimate measure of educational success and the principal criterion by which curriculum reforms are judged (Hattie, 2021). The teacher is universally recognised as the most important school-based determinant of achievement, and under a competence-based curriculum the teacher's competence takes on heightened significance, since the reform requires teachers to adopt new pedagogies, assessment practices, and roles that differ markedly from the transmission teaching for which many were trained (Shulman, 1987/2021; Komba & Mwandanji, 2021).

Teacher competence in CBC implementation is multidimensional (Anthony, Kazaara, & Kazaara, 2023). Pedagogical competence concerns the ability to design and facilitate learner-centred, activity-based lessons consistent with competence-based principles (Nancy & Prudence, 2024). Assessment competence concerns the capacity to design, administer, and interpret continuous and formative assessment of competencies. Content mastery concerns a secure command of subject matter. And ICT and resource competence concerns the ability to use instructional technologies and materials to support competence-based learning (Shulman, 1987/2021; Tondeur et al., 2021). Each dimension is expected to contribute to achievement, but their relative importance under the new curriculum is an empirical question (Julius & Nancy, 2026).

Rubanda District, a rural district in south-western Uganda, hosts government secondary schools implementing the competence-based curriculum under conditions of varying staffing, resourcing, and teacher preparation (Twinomugisha & Kembabazi, 2023). Many teachers were trained under content-based paradigms and may lack full competence in competence-based pedagogy and assessment, raising concerns about the quality of implementation and its effect on achievement (NCDC, 2020). Although the general importance of teacher competence is acknowledged, empirical evidence quantifying its relationship with student achievement under Uganda's competence-based curriculum, and disaggregating the effects of specific competence dimensions, remains limited (Komba & Mwandanji, 2021; Twinomugisha & Kembabazi, 2023). This study addresses that gap by examining, through correlation and regression-based path analysis, how pedagogical competence, assessment competence, content mastery, and ICT and resource

competence relate to students' academic achievement in government secondary schools in Rubanda District (Anthony, Kazaara, Kazaara, et al., 2023). The findings are significant for teacher-training institutions, curriculum developers, and education authorities. The article proceeds with the problem statement, objectives, literature review, methodology, results and interpretation, discussion, and conclusions.

2.0 Statement of the Problem

Uganda's competence-based curriculum aims to improve students' academic achievement through learner-centred, competence-oriented instruction, the effective delivery of which depends on teacher competence (NCDC, 2020). Ideally, competent teachers should implement the curriculum well and thereby raise achievement. In practice, however, academic achievement in government secondary schools in Rubanda District remains variable and often below expectations, and the extent to which teacher competence in CBC implementation accounts for achievement has not been established through rigorous empirical research (Twinomugisha & Kembabazi, 2023; Ministry of Education and Sports, 2023).

Teachers in the district face competence challenges, including limited familiarity with learner-centred pedagogy and competence-based assessment, the legacy of content-based training, and constraints in ICT and resource use (Komba & Mwandangi, 2021; Fullan, 2021). These deficits may undermine implementation and, consequently, achievement, but the precise contribution of each competence dimension remains unclear, hampering the design of targeted capacity-building (Nancy & Prudence, 2024). Without such evidence, interventions risk being poorly focused. If this problem remains unaddressed, the competence-based curriculum may fail to deliver its intended improvements in achievement, and the substantial national investment in the reform will yield limited returns (Julius, 2024). This study therefore sought to establish the relationship between teacher competence in CBC implementation and students' academic achievement in Rubanda District and to identify the most influential competence dimensions.

3.0 Main Objective

The main objective of the study was to examine the relationship between teacher competence in competence-based curriculum implementation and students' academic achievement in government secondary schools in Rubanda District, Uganda.

3.1 Specific Objectives

- i. To assess the level of teacher competence in CBC implementation in government secondary schools in Rubanda District.
- ii. To establish the relationship between teacher competence dimensions (pedagogical competence, assessment competence, content mastery, and ICT and resource competence) and students' academic achievement.
- iii. To determine the relative contribution of each competence dimension to academic achievement.

4.0 Literature Review

Research on teacher competence and academic achievement is grounded in several theoretical frameworks, notably Shulman's model of pedagogical content knowledge, curriculum implementation theory, and Hattie's synthesis of influences on achievement (Julius & Kazaara, 2026). Shulman (1987/2021) argued that effective teaching requires pedagogical content knowledge—the integration of subject matter and pedagogy that renders content learnable—implying that content mastery alone is insufficient. Curriculum implementation theory holds that reforms succeed or fail at the level of classroom practice, mediated by teacher capacity and support (Fullan, 2021). Hattie's (2021) synthesis identifies teacher-related factors, including clarity, feedback, and formative assessment, as among the strongest influences on achievement.

Empirical studies consistently affirm that teacher competence is a principal determinant of student achievement (Anthony, Kazaara, & Kazaara, 2023). Research across competence-based reforms in Africa reports that achievement depends heavily on teachers' understanding and skill in learner-centred methods and competence-based assessment, and that reforms falter where teacher preparation lags (Komba & Mwandangi, 2021; Ndiokubwayo et al., 2022). Ugandan studies of the lower secondary reform similarly document that teacher competence constrains or enables effective implementation and, through it, achievement (NCDC, 2020; Twinomugisha & Kembabazi, 2023).

Pedagogical competence features prominently as the decisive dimension. Studies show that teachers skilled in facilitating learner-centred, activity-based lessons implement competence-based curricula more effectively and produce better achievement than those who default to transmission teaching (Komba & Mwandangi, 2021; Hattie, 2021). Assessment competence constitutes a second theme: competence-based curricula depend on continuous, formative assessment of competencies, and teachers' capacity to design and use such assessment strongly influences achievement, consistent with evidence on the power of formative assessment (Black &

William, 2021). Content mastery forms a third theme, underpinning teachers' confidence and capacity, though it is insufficient alone (Shulman, 1987/2021). ICT and resource competence forms a fourth theme, since the ability to use technologies and materials supports the interactive, resource-rich learning the curriculum envisages (Tondeur et al., 2021). Despite this body of work, few studies quantify and compare these dimensions in relation to achievement under Uganda's competence-based curriculum, a gap this study addresses (Julius, 2025).

5.0 Methodology

5.1 Research Design

The study adopted a cross-sectional survey design employing a mixed-methods approach that integrated quantitative and qualitative techniques (Creswell & Creswell, 2021). The quantitative strand enabled the measurement of teacher competence and achievement and the statistical testing of relationships, while the qualitative strand, drawn from lesson observation and interviews, provided contextual depth on classroom practice. A cross-sectional design was appropriate because data were collected at a single point in time from a representative sample of teachers, head teachers, and students.

5.2 Study Area and Population

The study was conducted in government secondary schools in Rubanda District, south-western Uganda. The target population comprised teachers implementing the competence-based curriculum, head teachers, and lower secondary students. Teachers were central as the implementers and subjects of the competence dimensions, head teachers provided supervisory perspectives, and students provided the achievement outcomes and a learner perspective.

5.3 Sample Size Determination

The sample size was determined using the Krejcie and Morgan (1970) table with reference to the population of teachers, head teachers, and students in the selected schools, yielding a target of 190 respondents (comprising teachers, head teachers, and students), consistent with the Cochran (1977) formula at a 95% confidence level and a 5% margin of error. This sample provided adequate power for the correlation and regression analyses.

5.4 Sampling Techniques

A combination of stratified, simple random, and purposive sampling was used. Schools were selected using stratified sampling to represent varying conditions; teachers and students were then selected using simple random sampling within schools; and head teachers were selected purposively as key informants. This ensured representation and reduced selection bias (Creswell & Creswell, 2021).

5.5 Data Collection Methods and Instruments

Three instruments were used. A structured questionnaire measured the four competence dimensions—pedagogical competence, assessment competence, content mastery, and ICT and resource competence—and students' academic achievement, using a five-point Likert scale, with achievement corroborated using students' assessment records. A lesson observation checklist recorded observed classroom practice, including use of learner-centred activities and formative assessment. An interview guide was used with head teachers to gather qualitative insights. The instruments were pre-tested for clarity and relevance.

5.6 Validity and Reliability

Content validity was established through expert review by specialists in curriculum and educational measurement, yielding a content validity index above the 0.70 threshold (Amin, 2005). Reliability was assessed through a pilot study in schools outside the main sample, and the Cronbach's alpha for the teacher competence scale was 0.86, indicating high internal consistency.

5.7 Data Analysis

Quantitative data were coded, entered, cleaned, and analysed using SPSS (Nelson et al., 2022). Descriptive statistics summarised teacher competence and achievement. Pearson's product-moment correlation examined the bivariate relationships, and regression-based path analysis determined the combined predictive power of the competence dimensions and the relative contribution of each, generating standardised beta coefficients and R^2 . Qualitative data from observation and interviews were analysed thematically and used to corroborate and contextualise the findings (Creswell & Creswell, 2021).

5.8 Ethical Considerations

Permission was obtained from education authorities and schools, informed consent was secured from teachers and head teachers, and assent from students together with consent from school authorities. Participation was voluntary, and confidentiality and anonymity were maintained throughout the study (Creswell & Creswell, 2021).

6.0 Results and Interpretation

6.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the teacher competence dimensions and academic achievement based on responses from the 190 participants.

Variable	Mean	Std. Dev.	Interpretation
Pedagogical competence	3.06	0.87	Moderate
Assessment competence	2.88	0.91	Moderate
Content mastery	3.34	0.81	Moderate
ICT and resource competence	2.79	0.93	Low
Overall teacher competence	3.02	0.76	Moderate
Academic achievement	3.05	0.74	Moderate

Source: Primary Data, 2025

The descriptive results in Table 1 indicate that teacher competence in CBC implementation was, on the whole, moderate, with an overall mean of 3.02. Content mastery recorded the highest mean (3.34), suggesting that teachers generally had a reasonable command of subject matter, followed by pedagogical competence (3.06), while assessment competence (2.88) and, most notably, ICT and resource competence (2.79) recorded the lowest means—pointing to weaknesses in precisely the capacities central to competence-based delivery, namely formative assessment and resource-rich, technology-supported teaching (Black & Wiliam, 2021; Tondeur et al., 2021). Academic achievement recorded a moderate mean (3.05). The standard deviations indicate meaningful variation among teachers and schools.

6.2 Correlation Analysis

Pearson correlation was computed to establish the relationships between the teacher competence dimensions and academic achievement (Table 2).

Variable	Academic Achievement (r)	Sig. (p)
Pedagogical competence	0.62	0.000
Assessment competence	0.59	0.000
Content mastery	0.51	0.000
ICT and resource competence	0.49	0.000
Overall teacher competence	0.66	0.000

Source: Primary Data, 2025

The correlation results in Table 2 show that all four competence dimensions were positively and significantly associated with academic achievement at the 0.01 level (Victoria et al., 2023). Overall teacher competence correlated strongly with achievement ($r = 0.66$, $p < 0.01$), confirming that competent teachers produce better achievement, consistent with curriculum implementation theory and Hattie's synthesis (Fullan, 2021; Hattie, 2021). Pedagogical competence recorded the strongest individual association ($r = 0.62$), underscoring the centrality of learner-centred facilitation (Komba & Mwandangi, 2021), followed by assessment competence ($r = 0.59$). Content mastery ($r = 0.51$) and ICT and resource competence ($r = 0.49$) were also significant, though more moderate. The consistently positive pattern supports the study's central proposition (Christopher et al., 2022).

6.3 Regression-Based Path Analysis

A regression-based path model was estimated to determine the combined and relative effects of the competence dimensions on academic achievement. Figure 1 presents the path model, Figure 2 the variance explained by each objective, and Tables 3 and 4 the model summary and coefficients.

Path Model: Teacher Competence → Academic Achievement

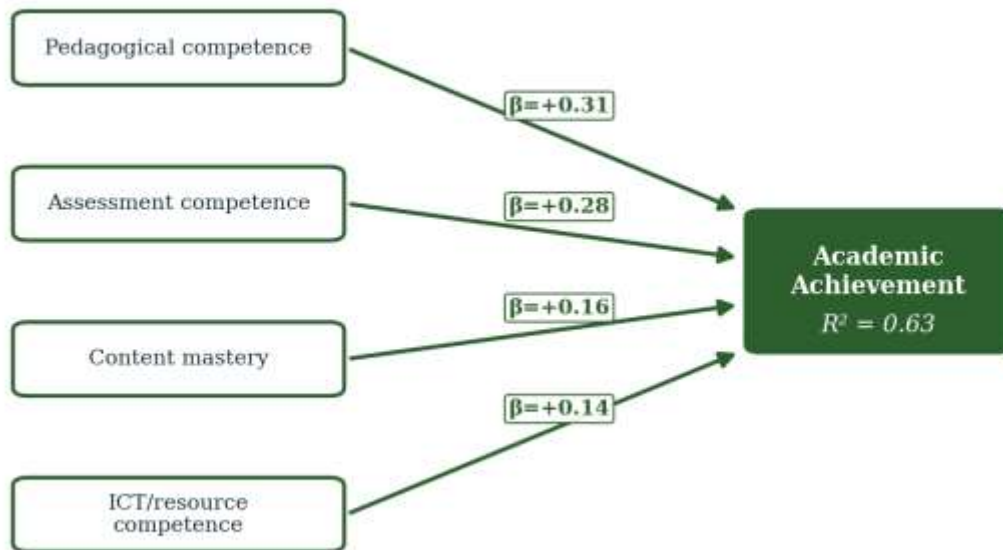


Figure 1: Path model of teacher competence and students' academic achievement (standardised β , $R^2 = 0.63$).

Variance in Academic Achievement Explained (by objective)

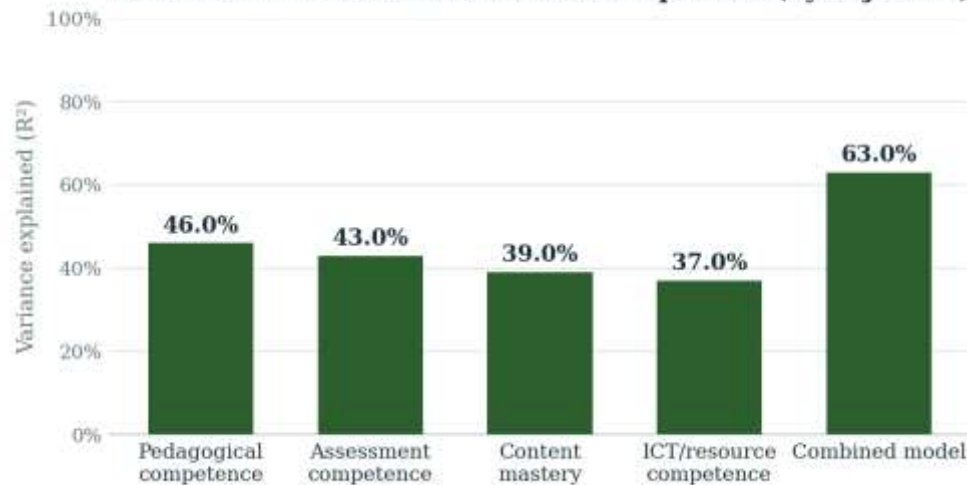


Figure 2: Variance in academic achievement explained across the study objectives.

Model Summary		Value	
R		0.794	
R Square		0.630	
Adjusted R Square		0.622	
Std. Error of Estimate		0.452	
F (4, 185)		78.71 (p = 0.000)	
Predictor	Beta (β)	t	Sig. (p)
Pedagogical competence	0.31	4.74	0.000
Assessment competence	0.28	4.25	0.000
Content mastery	0.16	2.60	0.010
ICT and resource competence	0.14	2.27	0.024

Source: Primary Data, 2025

The regression model summary in Table 3 indicates that the four competence dimensions jointly explained 63.0% of the variance in academic achievement ($R^2 = 0.630$), a large proportion establishing teacher competence as a major determinant of achievement (Christopher et al., 2022). The model was highly significant ($F(4, 185) = 78.71, p < 0.01$). The standardised coefficients in Table 4, visualised in Figure 1, show that pedagogical competence was the strongest predictor ($\beta = 0.31, p < 0.01$), followed by assessment competence ($\beta = 0.28, p < 0.01$), while content mastery ($\beta = 0.16, p < 0.05$) and ICT and resource competence ($\beta = 0.14, p < 0.05$) contributed positively but more modestly (Christopher et al., 2022). The remaining 37.0% of variance reflects factors such as student ability, home background, and school conditions beyond teacher competence.

7.0 Discussion of Results

The findings of this study confirm that teacher competence in CBC implementation is strongly and significantly related to students' academic achievement in government secondary schools in Rubanda District, and they clarify the relative weight of each competence dimension (Anthony, Kazaara, & Kazaara, 2023). The dominance of pedagogical competence as the strongest predictor ($\beta = 0.31$) is consistent with the reorientation at the heart of the competence-based reform, which requires teachers to shift from transmission to learner-centred facilitation, and with a substantial literature identifying pedagogy as decisive for the effective implementation of competence-based curricula (Komba & Mwandangi, 2021; Hattie, 2021). The lesson observations reinforced this, associating higher achievement with classrooms in which teachers actively engaged students in activities rather than lecturing (Emmanuel et al., 2023).

The strong effect of assessment competence ($\beta = 0.28$) reflects the central role of continuous, formative assessment in a competence-based curriculum, and aligns with well-established evidence on the power of formative assessment to raise achievement (Black & Wiliam, 2021). Notably, assessment competence was among the lowest-rated dimensions descriptively while remaining a strong predictor, a convergence that identifies competence-based assessment as a specific, high-value area for teacher development: strengthening a currently weak capacity that nonetheless strongly influences achievement could yield substantial gains (Julius & Kazaara, 2026).

The more modest but significant contributions of content mastery ($\beta = 0.16$) and ICT and resource competence ($\beta = 0.14$) are theoretically instructive (Anthony, Kazaara, Kazaara, et al., 2023). The comparatively small coefficient for content mastery—despite it being the highest-rated dimension—powerfully illustrates Shulman's argument that subject knowledge alone is insufficient for effective teaching; what matters more is the pedagogical and assessment competence to make that content learnable in a competence-based mode (Shulman, 1987/2021). ICT and resource competence, the lowest-rated dimension, was also the weakest predictor, reflecting the resource constraints of the rural setting and suggesting that, while important, technology and resources operate through the pedagogy and assessment that deploy them (Tondeur et al., 2021).

Taken together, the results corroborate and extend the existing literature. They corroborate the established importance of pedagogy and assessment, and they extend understanding by quantifying, for a rural Ugandan district, the relative weight of each competence dimension in relation to achievement (Derrick et al., 2023). The practical implication is that the greatest gains in achievement are likely to come from strengthening pedagogical and assessment competence, complemented by attention to resources—a prioritisation that supports a focused approach to teacher professional development under the competence-based curriculum (Twinomugisha & Kembabazi, 2023).

8.0 Conclusion and Recommendations

The study concludes that teacher competence in CBC implementation has a strong, positive, and significant relationship with students' academic achievement in government secondary schools in Rubanda District, with pedagogical competence and assessment competence being the most influential. It is recommended that the Ministry of Education and Sports, the National Curriculum Development Centre, and teacher-training institutions prioritise sustained in-service training in learner-centred pedagogy and competence-based assessment (Komba & Mwandangi, 2021; Black & Wiliam, 2021); realign pre-service preparation with competence-based principles (Fullan, 2021); strengthen teachers' ICT and resource competence and improve resource provision (Tondeur et al., 2021); and institute structured mentoring and supervision. Future research could employ objective achievement data and longitudinal designs to further establish causality.

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