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Beyond the Blame Game: An Evaluation of Teacher Competency, Assessment Practices, and the Extreme Grade Disparity in Ugandan Schools

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ABSTRACT: Background: *Uganda's education system exhibits extreme grade disparities where students within the same system demonstrate achievement levels ranging from excellence to complete failure, provoking debates that often attribute poor performance to teacher incompetence while overlooking complex systemic factors.* ***Objective:*** *This study evaluated the relationship between teacher competency, assessment practices, and grade disparities in Ugandan schools to identify systemic factors contributing to poor student performance beyond simplistic blame narratives.* ***Methods:*** *A mixed-methods convergent parallel design was conducted across 120 purposively selected secondary schools with 1,200 teachers, employing validated competency assessments, classroom observations, curriculum alignment analysis, and hierarchical linear modeling and structural equation modeling to examine direct and indirect pathways to student performance.* ***Results:*** *Teacher competency demonstrated significant positive correlations with student performance ($r=0.44$ to $r=0.61$), with pedagogical skills showing the strongest association ($\beta=0.34$, $p<0.001$), yet explained only 23.9% of performance variance through total effects including indirect pathways via assessment alignment and curriculum coverage. School-level factors exerted equal or greater influence, with school resources showing the largest total effect ($\beta=0.633$) and student-teacher ratios demonstrating substantial negative impact ($\beta=-0.223$). The hierarchical models revealed that 47.4% of performance variance existed between schools, with systemic factors explaining 66.2% of between-school differences, demonstrating that teacher competency operates within constraints imposed by resource availability, class sizes, and institutional contexts.* ***Conclusion:*** *Extreme grade disparities in Uganda emerge from complex interactions between teacher quality and systemic constraints rather than primarily from individual teacher inadequacy, necessitating coordinated reforms addressing resource inequities, class size reduction, and assessment capacity alongside teacher development.* ***Recommendation:*** *Implement integrated interventions that simultaneously strengthen resource allocation, reduce student-teacher ratios, and build assessment capacity within context-responsive professional development frameworks that address the systemic conditions constraining teacher effectiveness.*

Keywords: teacher competency, assessment practices, grade disparities, educational equity, systemic factors, hierarchical linear modeling

Introduction

The persistent phenomenon of extreme grade disparities in Ugandan schools, where students in the same educational system and often within the same school exhibit dramatically different achievement levels ranging from excellent performance to complete failure on standardized examinations, represents one of the most troubling indicators of educational system dysfunction and raises fundamental questions about teaching quality, assessment validity, and the factors that produce such variable outcomes (Awacorach et al., 2021; Pepin et al., 2017). The tendency toward simplistic blame attribution whether directed at students characterized as lazy or unmotivated, teachers portrayed as incompetent or uncaring, parents criticized as uninvolved or unsupportive, or system administrators accused of corruption or negligence obscures the complex interplay of factors that produce grade disparities and prevents development of effective interventions that address root causes rather than symptoms (Lameras & Arnab, 2022; Nzarirwehi & Atuhumuze, 2019). This evaluation moves beyond blame narratives to systematically examine teacher competency levels across Ugandan schools, interrogate assessment practices that may contribute to artificial grade inflation or deflation, and analyze the structural, pedagogical, and contextual factors that combine to produce the extreme achievement variations that characterize the country's education system (Ellis & Childs, 2019; Masaaba et al., 2021).

Background

Uganda's education system exhibits paradoxical characteristics where universal primary education policies have dramatically expanded access and enrollment numbers while quality indicators suggest that many students progress through years of schooling without acquiring basic literacy and numeracy competencies, leading to situations where students reach secondary level ill-prepared for the curriculum demands they encounter (Mpaata & Mpaata, 2018; Yildiz et al., 2023). Teacher competency emerges as a critical variable in this context, with the teaching force in Uganda characterized by extreme heterogeneity including highly qualified educators with strong content knowledge and pedagogical training alongside teachers who themselves struggled academically and may possess only marginally better understanding of subject matter than their students, were trained in institutions that emphasized theory over practice and provided little authentic classroom experience, and receive minimal ongoing professional development or instructional support once deployed to schools (Paramita et al., 2024; Yeboah, 2020). Assessment practices in Ugandan schools reflect inherited colonial examination traditions that emphasize high-stakes national examinations at key transition points, creating teaching-to-the-test dynamics that prioritize memorization and examination technique over deep understanding, while continuous assessment practices within schools vary dramatically in quality with some teachers using assessments diagnostically to identify learning gaps and others employing assessments primarily as disciplinary tools or conducting assessments irregularly without using results to inform instructional adjustments (Fırat, 2020; Tiwari, 2019). The extreme grade disparities manifest not merely as normal distributions of achievement but as bimodal or multimodal patterns where substantial numbers of students achieve distinction-level grades while equally substantial numbers fail completely, suggesting that different students within the same system are receiving fundamentally different educational experiences rather than normal variation in learning outcomes from comparable instruction (Jiang et al., 2023; Mujuni et al., 2022a). These disparities correlate with predictable patterns including school type and resource level, where well-resourced urban schools and elite private institutions produce consistent excellence while rural schools and poorly resourced urban schools produce consistently poor outcomes with occasional high achievers who succeed despite rather than because of the educational environment; student socioeconomic background, where children from educated families with resources for supplementary materials and private tutoring achieve higher grades regardless of school quality; and teacher characteristics, where schools that manage to attract and retain competent teachers through better working conditions or higher pay demonstrate better outcomes even when serving disadvantaged populations (Park et al., 2017; Peter et al., 2023). The evaluation must therefore disentangle the relative contributions of teacher content knowledge, pedagogical skill, assessment validity and reliability, curriculum appropriateness, resource availability, student preparedness and home support, and systemic factors such as class sizes and instructional time allocation to understand not just that disparities exist but why they persist and what interventions might actually reduce them rather than merely redistributing which students succeed and which fail (Hadijah & Ali, 2024; Wadood et al., 2018).

Problem Statement

Uganda's education system exhibits alarming grade disparities, with the majority of students receiving failing or barely passing grades on national examinations while only a small fraction achieve excellent results. This pattern, persistent across years and examination cycles, provokes intense debate about its causes, with teachers frequently blamed for incompetence and students characterized as lazy or unmotivated (Gracious, 2024; Yusra & Silvianetri, 2022). However, this blame game obscures more complex systemic issues including assessment practices that may be inappropriately difficult or misaligned with curriculum delivery, examination systems designed more for filtering than learning assessment, inadequate teacher preparation programs, unsupportive working conditions that undermine teaching effectiveness, and curriculum designs that prioritize content coverage over deep learning (Gideon, 2023; Mujuni et al., 2022b). The extreme grade disparity raises fundamental questions about the purpose and design of Uganda's examination system: Is it meant to assess learning or to ration access to limited opportunities in higher education? Does the grading distribution reflect genuine learning deficits or assessment instrument problems? The fixation on teacher blame prevents honest examination of these deeper systemic issues.

Moreover, the grade disparity problem cannot be divorced from broader issues of educational resource distribution, pedagogical approaches, and assessment philosophy. Many Ugandan teachers work under extraordinarily difficult conditions: overcrowded classrooms with 100+ students, minimal instructional materials, absence of teaching aids, limited professional development opportunities, and examination systems that emphasize rote memorization over critical thinking (Samuel, 2024; Starkey et al., 2023). Assessment practices often test content that was inadequately covered due to time constraints, or employ question formats that are culturally unfamiliar or linguistically complex. The national examination system's high-stakes nature—where single test performances determine educational and career trajectories—creates immense pressure that may not yield accurate measurements of student learning. Additionally, the competency of teachers varies significantly based on their training institutions, specializations, and years of experience, yet the system treats them as uniformly responsible for outcomes. A comprehensive evaluation that moves beyond simplistic blame narratives to examine the interaction between teacher competency, assessment design, curriculum alignment, resource availability, and pedagogical practices is essential for developing effective interventions.

Main Objective

To evaluate the relationship between teacher competency, assessment practices, and grade disparities in Ugandan schools, moving beyond blame narratives to identify systemic factors that contribute to poor student performance.

Specific Objectives

1. To assess teacher competency levels across various dimensions including subject knowledge, pedagogical skills, assessment literacy, and classroom management in Ugandan schools.
2. To examine the alignment between curriculum expectations, teaching practices, and national examination assessment instruments and standards.
3. To identify systemic, institutional, and pedagogical factors beyond teacher competency that contribute to extreme grade disparities in Uganda's education system.

Research Questions

1. How do various dimensions of teacher competency (subject mastery, pedagogical skills, assessment literacy) relate to student performance outcomes in Ugandan schools?

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2. To what extent are national examination assessment practices aligned with curriculum delivery, teaching resources, and student learning opportunities?
3. What systemic reforms in teacher development, curriculum design, resource allocation, and assessment practices are necessary to reduce extreme grade disparities and improve learning outcomes?

Methodology

This study employed a mixed-methods convergent parallel design conducted across 120 purposively selected secondary schools in Uganda between March and September 2024, stratified by region (Central, Eastern, Northern, and Western) and school type (government-aided, private, and community schools). Using a power analysis with 80% statistical power, $\alpha = 0.05$, and an anticipated medium effect size ($f^2 = 0.15$), a minimum sample of 850 teachers was required; however, 1,200 teachers teaching core subjects (Mathematics, English, Science, and Social Studies) were recruited to account for potential non-response and ensure adequate representation across strata. Additionally, 240 head teachers, 360 students (three per school), and 48 district education officers were purposively sampled. Data collection instruments included a validated Teacher Competency Assessment Tool measuring subject knowledge (Cronbach's $\alpha = 0.87$), pedagogical skills ($\alpha = 0.84$), assessment literacy ($\alpha = 0.89$), and classroom management ($\alpha = 0.82$); semi-structured interviews; classroom observation protocols; and document analysis of examination papers, schemes of work, and student performance records from the Uganda National Examinations Board covering three academic years (2021-2023). Teacher competency was assessed through written tests, practical demonstrations, and portfolio reviews, while curriculum alignment was evaluated using Webb's Alignment Tool to compare intended curriculum, taught curriculum, and assessed curriculum across depth of knowledge levels.

Data analysis proceeded in three phases employing univariate, bivariate, and multivariate statistical methods. Univariately, descriptive statistics including means, standard deviations, frequencies, and percentages characterized teacher competency scores, grade distributions, and school characteristics, while normality was assessed using Shapiro-Wilk tests and visual inspections of Q-Q plots. Bivariately, Pearson correlation coefficients examined relationships between continuous variables (teacher competency scores and student performance), while independent t-tests and one-way ANOVA (with Tukey's HSD post-hoc tests) compared competency levels across school types and regions; chi-square tests assessed categorical associations between assessment practices and grade outcomes. For multivariate analysis, hierarchical linear modeling (HLM) was employed to account for the nested structure of data (teachers within schools within districts), with student performance (measured by mean school grades converted to continuous scores) as the dependent variable. The two-level HLM included teacher-level predictors (competency scores, years of experience, qualification level, assessment practices) at Level 1 and school-level predictors (resources, location, school type, student-teacher ratio) at Level 2 (Nelson et al., 2022, 2023). Model assumptions were rigorously tested: linearity through scatter plots of residuals versus predicted values, independence of errors through Durbin-Watson statistics, homoscedasticity via Breusch-Pagan tests, and multicollinearity through variance inflation factors (VIF < 5). Additionally, structural equation modeling (SEM) was conducted to examine direct and indirect pathways between teacher competency, assessment practices, curriculum alignment, and grade disparities, with model fit assessed using multiple indices (CFI > 0.95, TLI > 0.95, RMSEA < 0.06, SRMR < 0.08). Qualitative data from interviews were thematically analyzed using NVivo software through iterative coding processes, then triangulated with quantitative findings to provide comprehensive explanations of systemic factors contributing to grade disparities beyond individual teacher competency.

Results.

Table 1: Descriptive Statistics of Teacher Competency and Student Performance by School Type

Variable	Government-Aided (n=480)	Private (n=456)	Community (n=264)	Overall (N=1200)	F-value	p-value
Subject Knowledge (%)	68.4 ± 12.3	72.8 ± 10.7	61.2 ± 14.6	68.2 ± 12.9	42.67	<0.001***
Pedagogical Skills (%)	64.2 ± 11.8	70.1 ± 9.4	58.7 ± 13.2	65.1 ± 11.9	51.23	<0.001***
Assessment Literacy (%)	56.8 ± 13.4	63.2 ± 11.2	52.1 ± 15.1	57.9 ± 13.6	38.94	<0.001***
Classroom Management (%)	70.3 ± 10.2	74.6 ± 8.9	66.4 ± 12.1	70.8 ± 10.6	33.78	<0.001***
Composite Competency (%)	64.9 ± 9.8	70.2 ± 8.1	59.6 ± 11.4	65.5 ± 10.1	56.89	<0.001***
Mean School Performance (%)	52.3 ± 15.7	61.4 ± 12.3	43.8 ± 18.4	53.6 ± 16.2	68.45	<0.001***
Student-Teacher Ratio	45.7 ± 12.8	32.4 ± 8.6	54.3 ± 15.2	42.1 ± 14.7	127.34	<0.001***
Years of Experience	8.6 ± 5.4	6.8 ± 4.2	7.2 ± 5.8	7.7 ± 5.2	7.89	<0.001***

*Note: Values presented as Mean ± SD; ***p<0.001; Tukey's HSD post-hoc tests indicated significant differences between all school type pairs for all competency dimensions*

The one-way ANOVA results revealed statistically significant differences across all teacher competency dimensions and student performance outcomes among the three school types ($p<0.001$ for all comparisons). The effect sizes, calculated using eta-squared (η^2), ranged from 0.038 for classroom management to 0.091 for composite competency, indicating small to medium practical significance. Private schools demonstrated the highest mean scores across all competency dimensions, with composite competency scores averaging 70.2% (SD=8.1), followed by government-aided schools at 64.9% (SD=9.8), and community schools at 59.6% (SD=11.4).

The Tukey's HSD post-hoc comparisons confirmed that these differences were significant between all pairwise comparisons ($p<0.01$), suggesting systematic disparities in teacher quality across school types. Notably, assessment literacy exhibited the lowest mean scores across all school types (overall M=57.9%, SD=13.6) and the highest variability (CV=23.5%), indicating this as a critical area of weakness. The Shapiro-Wilk tests indicated acceptable normality for most distributions ($W>0.96$, $p>0.05$), though slight negative skewness was observed in classroom management scores (skewness=-0.34), suggesting a ceiling effect. Levene's test for homogeneity of variance was significant for subject knowledge ($F=8.67$, $p<0.001$) and assessment literacy ($F=12.34$, $p<0.001$), prompting the use of Welch's ANOVA as a robustness check, which confirmed the original findings.

Discussion of Findings

The findings demonstrated a clear hierarchical pattern in teacher competency levels that corresponded with school type, reflecting broader systemic inequities in Uganda's education system. Private schools' superior performance across all competency dimensions could be attributed to several interconnected factors: more competitive teacher recruitment processes, better remuneration enabling retention of qualified staff, lower student-teacher ratios (M=32.4 versus 54.3 in community schools), and greater access to professional development opportunities. The particularly low assessment literacy scores across all school types (ranging from 52.1% to 63.2%) was especially concerning, as this dimension directly influenced the validity and reliability of classroom-based assessments and teachers' ability to interpret and utilize examination feedback. This deficit suggested that teachers may have lacked the technical competence to construct assessments aligned with curriculum objectives or national examination standards, potentially contributing to the disconnect between classroom instruction and examination performance.

The substantial standard deviations observed across all competency measures, particularly in community schools (SD ranging from 12.1 to 15.1), indicated considerable within-group heterogeneity, suggesting that school type alone was insufficient to explain competency variations. The significant correlation between student-teacher ratio and school performance ($r=-0.58$, $p<0.001$) pointed to resource constraints as a fundamental limiting factor, particularly in community schools where teachers managed classes averaging 54 students. These descriptive patterns established the foundation for subsequent multivariate analyses to disentangle the relative contributions of individual teacher competency versus systemic factors in explaining grade disparities, moving beyond simplistic narratives that attribute poor performance solely to teacher inadequacy.

Table 2: Bivariate Correlations Between Teacher Competency Dimensions, Assessment Practices, and Student Performance

Variable	1	2	3	4	5	6	7	8
1. Subject Knowledge	1.00							
2. Pedagogical Skills	0.64***	1.00						
3. Assessment Literacy	0.57***	0.69***	1.00					
4. Classroom Management	0.48***	0.62***	0.53***	1.00				
5. Composite Competency	0.87***	0.91***	0.84***	0.75***	1.00			
6. Assessment Alignment Score	0.42***	0.51***	0.68***	0.39***	0.59***	1.00		
7. Student Performance	0.51***	0.58***	0.49***	0.44***	0.61***	0.56***	1.00	
8. Student-Teacher Ratio	-0.38***	-0.42***	-0.31***	-0.46***	-0.47***	-0.44***	-0.58***	1.00

Additional Variables	Student Performance (r)	p-value
Years of Experience	0.18***	<0.001
Teacher Qualification Level	0.34***	<0.001
Frequency of Formative Assessment	0.41***	<0.001
Curriculum Coverage (%)	0.52***	<0.001
School Resources Index	0.63***	<0.001

*Note: N=1200; ***p<0.001; All correlations were Pearson product-moment correlations; Two-tailed significance tests*

Statistical Interpretation

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The bivariate correlation analysis revealed a complex network of relationships between teacher competency dimensions, assessment practices, and student performance outcomes. All teacher competency dimensions demonstrated statistically significant positive correlations with student performance at the $p<0.001$ level, with pedagogical skills showing the strongest association ($r=0.58$, 95% CI [0.54, 0.62]), followed by composite competency ($r=0.61$, 95% CI [0.57, 0.65]) and subject knowledge ($r=0.51$, 95% CI [0.46, 0.56]). The high intercorrelations among competency dimensions (ranging from $r=0.48$ to $r=0.69$) suggested multicollinearity concerns that necessitated careful variable selection in subsequent regression models.

Variance inflation factors (VIFs) calculated for these predictors ranged from 2.34 to 3.87, below the conventional threshold of 5, indicating acceptable levels of multicollinearity for inclusion in multivariate models. Assessment alignment score exhibited moderate to strong correlations with both assessment literacy ($r=0.68$) and student performance ($r=0.56$), providing empirical support for the theoretical proposition that curriculum-instruction-assessment coherence was crucial for student success. The negative correlation between student-teacher ratio and student performance ($r=-0.58$, $p<0.001$) was among the strongest observed, with the 95% confidence interval [-0.62, -0.54] excluding zero by a substantial margin, underscoring the detrimental impact of overcrowded classrooms. Notably, years of teaching experience demonstrated a relatively weak correlation with student performance ($r=0.18$), suggesting that experience alone, without quality or relevance, contributed minimally to effectiveness.

Discussion of Findings

The correlation patterns illuminated several critical insights into the mechanisms linking teacher competency to student outcomes while simultaneously revealing the importance of contextual factors. The moderate correlations between individual teacher competency dimensions and student performance ($r=0.44$ to $r=0.58$) indicated that while teacher quality mattered, it explained only 19-34% of the variance in student outcomes, leaving substantial variance attributable to other factors. This finding challenged deficit-oriented narratives that placed primary responsibility for poor performance on individual teachers, suggesting instead that systemic constraints significantly attenuated the impact of teacher competency.

The particularly strong correlation between pedagogical skills and student performance, exceeding that of subject knowledge, aligned with contemporary educational research emphasizing that knowing how to teach may be as important as knowing what to teach. The robust association between assessment literacy and assessment alignment ($r=0.68$) was theoretically coherent, as teachers with stronger assessment competencies were better positioned to design classroom assessments that matched curriculum standards and examination expectations. However, the moderate correlation between assessment alignment and student performance ($r=0.56$) suggested that even when assessments were well-aligned, other barriers prevented students from achieving mastery, potentially including insufficient instructional time, inadequate learning resources, or socioeconomic challenges affecting student readiness.

Table 3: Hierarchical Linear Model Results Predicting Student Performance

Fixed Effects	**Model 1 (Null)**	**Model 2 (Teacher-Level)**	**Model 3 (Full Model)**
Intercept	53.62*** (1.24)	28.43*** (2.87)	18.76*** (3.42)
Teacher-Level Predictors			
Subject Knowledge		0.18** (0.06)	0.12* (0.05)
Pedagogical Skills		0.34*** (0.07)	0.26*** (0.06)
Assessment Literacy		0.09 (0.06)	0.06 (0.05)
Classroom Management		0.12* (0.05)	0.08 (0.05)
Years of Experience		0.14* (0.06)	0.11* (0.05)
Teacher Qualification (Degree vs Diploma)		3.24*** (0.78)	2.18** (0.68)
Assessment Alignment Score		0.28*** (0.05)	0.19*** (0.04)
Formative Assessment Frequency		1.86** (0.54)	1.23* (0.48)
School-Level Predictors			
Student-Teacher Ratio			-0.32*** (0.04)
School Resources Index			0.41*** (0.06)
School Type (Private vs Gov't)			4.67*** (1.12)
School Type (Community vs Gov't)			-3.42** (1.28)
Urban Location			3.89*** (0.98)
Curriculum Coverage (%)			0.24*** (0.05)
Random Effects			
School-level variance (τ_{00})	124.67***	89.34***	42.18***
Teacher-level variance (σ^2)	138.45	102.67	87.32
ICC	0.474	0.465	0.326
Model Fit			

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-2 Log Likelihood	8,947.32	8,634.21	8,402.56
AIC	8,953.32	8,660.21	8,432.56
BIC	8,969.45	8,712.67	8,521.34
Pseudo R² (Level 1)	---	0.258	0.369
Pseudo R² (Level 2)	---	0.283	0.662

*Note: N=1200 teachers in 120 schools; Values are unstandardized coefficients with standard errors in parentheses; *p<0.05, **p<0.01, ***p<0.001; ICC = Intraclass Correlation Coefficient*

The hierarchical linear modeling results demonstrated the progressive reduction of unexplained variance as teacher-level and school-level predictors were introduced into the model. The null model (Model 1) revealed substantial clustering of student performance within schools, with an intraclass correlation coefficient (ICC) of 0.474, indicating that 47.4% of the total variance in student performance was attributable to between-school differences. This high ICC justified the use of multilevel modeling and suggested that single-level regression approaches would have violated independence assumptions and produced biased standard errors. Model 2, incorporating teacher-level predictors, significantly improved model fit ($\Delta\chi^2=313.11$, df=8, $p<0.001$) and explained 25.8% of within-school variance and 28.3% of between-school variance.

Among teacher-level predictors, pedagogical skills emerged as the strongest predictor ($\beta=0.34$, $p<0.001$), indicating that a one-unit increase in pedagogical skills was associated with a 0.34 percentage point increase in student performance, holding other variables constant. Assessment literacy, surprisingly, did not reach statistical significance ($\beta=0.09$, $p=0.14$), though its effect was mediated through assessment alignment score ($\beta=0.28$, $p<0.001$), suggesting an indirect pathway. The full model (Model 3) demonstrated substantial improvement in explanatory power ($\Delta\chi^2=231.65$, df=6, $p<0.001$), with school-level predictors explaining an additional 66.2% of between-school variance, reducing the ICC to 0.326. School-level factors, particularly student-teacher ratio ($\beta=-0.32$, $p<0.001$), school resources index ($\beta=0.41$, $p<0.001$), and school type, exerted strong effects that partially attenuated the coefficients of teacher-level predictors. The residual diagnostics indicated acceptable model fit: residuals were approximately normally distributed (Shapiro-Wilk W=0.989, $p=0.067$), and homoscedasticity assumptions were reasonably met (Breusch-Pagan $\chi^2=18.34$, $p=0.104$). The final model explained 36.9% of within-school variance and 66.2% of between-school variance, leaving 33.8% and 63.1% respectively unexplained, indicating other unmeasured factors remained influential.

The hierarchical linear modeling results provided nuanced evidence that teacher competency, while significant, operated within a complex system where school-level factors exerted equal or greater influence on student performance. The attenuation of teacher-level predictor coefficients from Model 2 to Model 3 illustrated how systemic constraints moderated the impact of teacher quality. For instance, pedagogical skills' coefficient decreased from 0.34 to 0.26 when school-level factors were included, suggesting that even highly skilled teachers working in under-resourced schools with large class sizes faced significant obstacles to translating their competence into student achievement. The finding that student-teacher ratio was among the strongest predictors ($\beta=-0.32$) had important policy implications: reducing class size from 54 students (community school average) to 32 students (private school average) would be associated with a predicted 7.04 percentage point increase in student performance, controlling for all other factors.

This effect size exceeded that of improving individual teacher pedagogical skills by one standard deviation (approximately 2.88 percentage points), suggesting that resource allocation may yield greater returns than teacher training alone. The significant positive effect of the school resources index ($\beta=0.41$) reinforced this interpretation, as access to textbooks, laboratory equipment, and instructional materials appeared foundational to effective teaching and learning. The persistence of school type effects even after controlling for teacher competency and resources (private schools scoring 4.67 points higher than government schools) suggested the presence of unmeasured factors such as school leadership quality, institutional culture, or student selection effects. The non-significance of assessment literacy as a direct predictor, contrasted with the significance of assessment alignment score, suggested that knowledge of assessment principles required translation into practice through aligned assessment design to impact student outcomes. The substantial residual variance, particularly at the school level (33.8%), indicated that factors beyond those measured—such as community socioeconomic status, parental education, student nutrition and health, regional educational infrastructure, and policy implementation quality—played crucial roles in determining student performance.

Table 4: Structural Equation Model Results - Direct and Indirect Pathways to Student Performance

Pathway	**Standardized Coefficient (β)**	**SE**	**z-value**	**p-value**	**95% CI**
Direct Effects on Student Performance					
Teacher Competency → Performance	0.247***	0.042	5.88	<0.001	[0.165, 0.329]
Assessment Alignment → Performance	0.312***	0.038	8.21	<0.001	[0.238, 0.386]
School Resources → Performance	0.384***	0.041	9.37	<0.001	[0.304, 0.464]

Student-Teacher Ratio → Performance	-0.223***	0.036	-6.19	<0.001	[-0.294, -0.152]
Curriculum Coverage → Performance	0.189***	0.034	5.56	<0.001	[0.122, 0.256]
Direct Effects on Mediating Variables					
Teacher Competency → Assessment Alignment	0.523***	0.039	13.41	<0.001	[0.447, 0.599]
Teacher Competency → Curriculum Coverage	0.418***	0.042	9.95	<0.001	[0.336, 0.500]
School Resources → Teacher Competency	0.367***	0.044	8.34	<0.001	[0.281, 0.453]
School Resources → Assessment Alignment	0.291***	0.041	7.10	<0.001	[0.211, 0.371]
School Resources → Curriculum Coverage	0.356***	0.040	8.90	<0.001	[0.278, 0.434]
Student-Teacher Ratio → Teacher Competency	-0.198***	0.038	-5.21	<0.001	[-0.273, -0.123]
Student-Teacher Ratio → Curriculum Coverage	-0.267***	0.037	-7.22	<0.001	[-0.339, -0.195]
Indirect Effects on Student Performance					
Teacher Competency → Alignment → Performance	0.163***	0.024	6.79	<0.001	[0.116, 0.210]
Teacher Competency → Coverage → Performance	0.079***	0.017	4.65	<0.001	[0.046, 0.112]
School Resources → Competency → Performance	0.091***	0.018	5.06	<0.001	[0.056, 0.126]
School Resources → Alignment → Performance	0.091***	0.015	6.07	<0.001	[0.062, 0.120]
School Resources → Coverage → Performance	0.067***	0.015	4.47	<0.001	[0.038, 0.096]
Total Effects on Student Performance					
Teacher Competency (Total)	0.489***	0.046	10.63	<0.001	[0.399, 0.579]
School Resources (Total)	0.633***	0.051	12.41	<0.001	[0.533, 0.733]
Model Fit Indices					
χ^2 (df=42)	67.84			p=0.008	
CFI	0.967				
TLI	0.958				
RMSEA	0.041				[0.023, 0.058]
SRMR	0.036				
AIC	12,456.73				

*Note: N=1200; ***p<0.001; Model includes correlated errors between school-level variables; Standardized solutions reported*

The structural equation modeling analysis provided a comprehensive examination of the direct, indirect, and total effects of teacher competency and systemic factors on student performance, while accounting for the complex interdependencies among predictor variables. The model demonstrated acceptable to good fit across multiple indices: the comparative fit index (CFI=0.967) and Tucker-Lewis index (TLI=0.958) both exceeded the 0.95 threshold for good fit, the root mean square error of approximation (RMSEA=0.041, 90% CI [0.023, 0.058]) fell well below the 0.06 cutoff, and the standardized root mean square residual (SRMR=0.036) was substantially below the 0.08 criterion. The chi-square test was significant (χ^2=67.84, df=42, p=0.008), though this was expected given the large sample size and the test's sensitivity to minor deviations from perfect fit. The direct effect of teacher competency on student performance was statistically significant but moderate (β=0.247, p<0.001), explaining approximately 6.1% of the variance in student outcomes when considered in isolation.

However, the total effect of teacher competency, incorporating indirect pathways through assessment alignment (β=0.163) and curriculum coverage (β=0.079), reached β=0.489 (p<0.001), nearly doubling the direct effect and explaining approximately 23.9% of variance. School resources demonstrated the largest total effect (β=0.633, p<0.001), operating both directly (β=0.384) and through multiple indirect pathways via teacher competency (β=0.091), assessment alignment (β=0.091), and curriculum coverage (β=0.067). The standardized coefficients indicated that a one standard deviation increase in school resources was associated with a 0.633 standard deviation increase in student performance, the strongest effect observed in the model. Modification indices and residual covariances were examined for potential model misspecifications, revealing no substantial localized areas of strain (all modification indices <10), suggesting the hypothesized model adequately captured the relationships among variables.

The structural equation modeling results fundamentally reframed the relationship between teacher competency and student performance by revealing that teacher effects were substantially mediated by assessment practices and curriculum implementation, and were themselves influenced by systemic resource availability. The finding that teacher competency's total effect (β=0.489) was nearly twice its direct effect (β=0.247) demonstrated that teachers' impact on student learning operated primarily through their ability to design aligned assessments and ensure comprehensive curriculum coverage, rather than through some ineffable quality of "good teaching" operating independently of these measurable practices. This insight suggested that professional development interventions should focus not only on building teacher knowledge and skills in abstract terms, but specifically on translating competencies into concrete instructional practices that ensure curriculum fidelity and assessment validity.

The particularly strong pathway from teacher competency to assessment alignment (β=0.523) corroborated earlier findings that assessment literacy, while not directly predictive of performance, was crucial for ensuring coherence between classroom instruction and examination expectations. The predominance of school resources as the strongest predictor (total β=0.633) provided compelling evidence that material conditions established the enabling environment within which teacher competency could be actualized. The pathways showed that resources influenced outcomes both directly—presumably through student access to textbooks, learning materials, and adequate facilities—and indirectly by supporting teacher effectiveness (β=0.367), facilitating assessment alignment (β=0.291), and enabling curriculum coverage (β=0.356). These indirect effects suggested that under-resourced schools created a cascade of constraints that simultaneously limited teacher development opportunities, forced compromises in assessment quality, and prevented complete curriculum implementation.

The negative effects of student-teacher ratio operated similarly through multiple pathways, directly impeding student learning (β=-0.223) while also constraining teacher competency development (β=-0.198) and curriculum coverage (β=-0.267), presumably because teachers managing large classes had less time for individual student attention, formative feedback, and the instructional pacing necessary to cover all content. The structural model thus illustrated how systemic factors and teacher competency were not independent or competing explanations for grade disparities, but rather were dynamically interrelated, with systemic conditions fundamentally shaping the extent to which teacher competency could translate into student achievement. The substantial unexplained variance (approximately 60% based on the R^2 for endogenous variables) indicated that additional factors not captured in the model—including student socioeconomic status, prior academic preparation, parental education and involvement, nutritional and health status, language of instruction issues, and broader community educational culture—remained important determinants of student performance.

CONCLUSION

This evaluation systematically examined teacher competency, assessment practices, and grade disparities across 120 Ugandan secondary schools, revealing that while teacher competency significantly influences student performance, its impact is substantially mediated by systemic factors including school resources, class sizes, assessment alignment, and curriculum coverage. The findings demonstrated that teacher competency dimensions—particularly pedagogical skills—correlate positively with student outcomes, yet explain only 23.9% of performance variance when accounting for indirect pathways, while school-level factors such as resource availability (total effect β=0.633) and student-teacher ratios (β=-0.223) exert equal or greater influence.

The hierarchical linear modeling and structural equation modeling analyses conclusively established that extreme grade disparities in Uganda cannot be attributed primarily to individual teacher inadequacy, but rather emerge from complex interactions between teacher quality and systemic constraints that limit curriculum implementation, compromise assessment validity, and prevent effective instructional delivery. Assessment literacy emerged as a critical weakness across all school types (M=57.9%), though its impact operated indirectly through assessment alignment rather than as a direct predictor of performance. These findings necessitate a fundamental shift from blame-oriented narratives toward comprehensive systemic reforms that address resource inequities, reduce class sizes, strengthen curriculum support structures, and build assessment capacity alongside teacher professional development, recognizing that sustainable improvement in student learning outcomes requires coordinated interventions targeting both human capital development and the material and structural conditions within which teaching and learning occur.

RECOMMENDATIONS

Implement Integrated Resource Allocation and Class Size Reduction Initiatives: Given that school resources demonstrated the strongest total effect on student performance (β=0.633) and student-teacher ratios showed significant negative impacts (β=-0.223), the Ministry of Education and Sports should prioritize coordinated interventions that simultaneously address material resource deficits and class size challenges, particularly in community and government-aided schools.

Develop Comprehensive Assessment Capacity Building Programs: The consistently low assessment literacy scores across all school types (52.1% to 63.2%) and the critical mediating role of assessment alignment (β=0.312 direct effect on performance) necessitate systematic professional development programs focused specifically on assessment design, curriculum alignment, and formative assessment practices.

Establish Context-Responsive Teacher Development Systems: Recognizing that teacher competency operates within and is constrained by systemic factors, professional development programs should be redesigned to address the specific challenges teachers face in under-resourced, high-enrollment contexts rather than delivering generic training.

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