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Beyond Skills Training: Addressing the Systemic Pathologies in Uganda's Education System for Genuine Work Readiness

Dr. Arinaitwe Julius[1], Ahumuza Audrey[2]

1,2 Metropolitan International University

Abstract: Background: *Despite expanding educational access and implementing numerous skills training interventions, Uganda continues experiencing severe graduate unemployment and persistent employer complaints about work readiness, suggesting that the challenge extends beyond skills gaps to fundamental systemic pathologies within the education system itself.* ***Objective:*** *This study critically examined the systemic pathologies within Uganda's education system that undermined genuine work readiness and developed a comprehensive framework for transformative reform addressing root causes rather than symptoms.* ***Methods:*** *A convergent parallel mixed-methods design was employed across five Ugandan regions between January and August 2024. The quantitative component recruited 586 participants (320 recent graduates, 180 employers, 86 education administrators) through stratified random sampling to achieve 80% statistical power at 5% significance level.* ***Results:*** *Overall work readiness scored 57.9/100 (SD=13.1), with all systemic pathology indicators below acceptable thresholds: curriculum relevance (M=2.4/5), pedagogical quality (M=2.5/5), infrastructure adequacy (M=2.3/5), industry linkages (M=2.1/5), and governance effectiveness (M=2.5/5). Multiple regression analysis revealed that systemic factors explained 61.4% of work readiness variance (R^2=0.614, $p<0.001$), with industry linkages as the strongest predictor ($\beta=0.35$, $p<0.001$), followed by pedagogical quality ($\beta=0.27$, $p<0.001$) and curriculum relevance ($\beta=0.26$, $p<0.001$).* ***Conclusion:*** *Uganda's graduate unemployment crisis fundamentally represented a systemic educational quality crisis rather than oversupply or simple skills mismatch. Systemic pathologies formed an interconnected ecosystem where infrastructure deficits and governance failures cascaded through pedagogical quality, curriculum implementation, and industry engagement to compromise work readiness.*

Keywords: systemic pathologies, work readiness, education reform, Uganda, graduate employability, pedagogical quality

Introduction

Uganda's education system faces a paradoxical crisis: despite expanding access to education and implementing various skills training programs, graduates continue to struggle with unemployment and underemployment, while employers consistently report difficulty finding work-ready candidates. This disconnect suggests that the challenge extends beyond mere skills gaps to encompass deeper systemic pathologies embedded within the educational framework itself (Darussyamsu et al., 2021; Iffath Unnisa Begum, 2024). The persistent mismatch between educational outputs and labor market demands has prompted numerous interventions focused on skills training and competency development. However, these efforts have yielded limited success, indicating that superficial reforms cannot address problems rooted in fundamental structural, pedagogical, and institutional dysfunctions (Deepa et al., 2022; Veselinović et al., 2020).

This study moves beyond conventional skills-deficit narratives to examine the underlying systemic pathologies that compromise genuine work readiness among Ugandan graduates. These pathologies include outdated curricula disconnected from evolving workplace realities, examination-oriented pedagogy that prioritizes rote memorization over critical thinking, inadequate investment in educational infrastructure and teacher development, weak linkages between educational institutions and industry, and governance challenges that perpetuate inefficiencies (Abelha et al., 2020; Ralston, 2021). By investigating these interconnected systemic issues, this research seeks to provide a comprehensive understanding of how structural deficiencies within Uganda's education system undermine work readiness, and to propose holistic reforms that address root causes rather than symptoms (Schön et al., 2023; Tulibaleka, 2022).

Background of the Study

Uganda's education system has undergone significant transformations since independence in 1962, with major policy initiatives including the Universal Primary Education (UPE) program launched in 1997 and Universal Secondary Education (USE) introduced in 2007. These policies dramatically increased enrollment rates, with primary school enrollment rising from approximately 2.7 million in 1996 to over 8 million students by the early 2000s. However, this quantitative expansion has not been matched by qualitative improvements, and the system continues to face challenges related to infrastructure deficits, teacher shortages, and declining educational standards (Marsh & Johnson, 2020; Rahiman & Kodikal, 2024; Rivaldo & Nabella, 2023).

The Ugandan economy has evolved considerably, with services and industry sectors growing in importance while agriculture's share of GDP has declined. This structural economic transformation demands a workforce equipped with diverse competencies including technical skills, problem-solving abilities, digital literacy, communication skills, and adaptability (Carvalho et al., 2022; Cruz et al., 2021; Ellis & Childs, 2019). However, Uganda's education system has been slow to respond to these changing demands. The curriculum remains heavily theoretical and examination-focused, with limited emphasis on practical application, creativity, innovation, and entrepreneurial thinking (Crompton & Burke, 2023; Kaban, 2023; Macrides et al., 2022).

Various stakeholders, including employers, policymakers, and development partners, have expressed concerns about graduate work readiness. Surveys consistently reveal that employers find recent graduates lacking in both technical competencies and soft skills

such as teamwork, communication, and critical thinking. In response, numerous skills training initiatives have been implemented, including the Skilling Uganda program, Business Technical Vocational Education and Training (BTVET) reforms, and various youth empowerment programs (Mugagga Muwagga et al., 2018; Muktar & Kyauta, 2017). Despite these efforts, unemployment and underemployment among youth remain high, with estimates suggesting that over 60% of Ugandan youth are either unemployed or engaged in vulnerable employment (Belbase et al., 2022; Nam & Bai, 2023; Oleksiyenko et al., 2023).

This persistent challenge suggests that the problem is not simply about adding more skills training programs but rather about addressing the systemic pathologies that prevent the education system from producing genuinely work-ready graduates. These systemic issues are deeply embedded in the structure, governance, financing, and pedagogical approaches of Uganda's education system, requiring comprehensive analysis and transformative reform (Mitana & Kitawi, 2023).

Problem Statement

Despite substantial investments in education expansion and numerous skills training interventions, Uganda continues to experience a severe disconnect between educational outcomes and labor market requirements, resulting in high levels of graduate unemployment and underemployment. While conventional approaches have focused on adding skills training components to existing programs, these interventions have failed to adequately address the fundamental systemic pathologies that undermine genuine work readiness. These pathologies include rigid and outdated curricula that fail to reflect contemporary workplace demands, examination-centric pedagogy that discourages critical thinking and creativity, chronic underfunding that compromises educational quality, weak institutional governance and accountability mechanisms, and fragmented linkages between educational institutions and the productive sectors (Julius & Milly, 2025; Mpaata & Mpaata, 2018).

The consequence is an education system that produces graduates who possess certificates but lack the competencies, mindset, and practical capabilities required for effective workplace performance. This systemic failure not only wastes human potential and public resources but also constrains Uganda's economic transformation and development prospects. Without addressing these underlying systemic pathologies, skills training initiatives will continue to yield suboptimal results, perpetuating the cycle of educational inadequacy and labor market mismatch (Bozkurt et al., 2021). There is therefore an urgent need for comprehensive research that diagnoses the specific systemic pathologies within Uganda's education system and proposes holistic reform strategies that can deliver genuine work readiness rather than superficial credentialing.

Main Objective of the Study

To critically examine the systemic pathologies within Uganda's education system that undermine genuine work readiness and to develop a comprehensive framework for transformative reform that addresses root causes rather than symptoms.

Specific Objectives

1. To identify and analyze the specific structural, pedagogical, and institutional pathologies within Uganda's education system that compromise graduate work readiness and labor market alignment.
2. To evaluate the effectiveness of existing skills training interventions and determine why they have failed to adequately address the work readiness gap despite significant resource investments.
3. To propose evidence-based, systemic reform strategies that can transform Uganda's education system to produce genuinely work-ready graduates capable of meeting evolving labor market demands.

Research Questions

1. What are the specific systemic pathologies (structural, pedagogical, institutional, and governance-related) within Uganda's education system that fundamentally undermine the development of genuine work readiness among graduates?
2. Why have existing skills training interventions failed to sufficiently bridge the work readiness gap, and what limitations do these interventions face when implemented within a systemically dysfunctional educational framework?
3. What comprehensive reform strategies, addressing both immediate interventions and long-term structural transformations, are necessary to eliminate systemic pathologies and establish an education system that consistently produces work-ready graduates aligned with Uganda's economic development needs?

Methods.

This study employed a convergent parallel mixed-methods research design to comprehensively examine the systemic pathologies in Uganda's education system and their impact on graduate work readiness. The study was conducted across five regions of Uganda (Central, Eastern, Western, Northern, and Kampala Capital City) between January and August 2024, targeting multiple stakeholder groups including recent graduates (those who completed education within the previous three years), employers from various sectors, education administrators, policymakers, and teachers/lecturers from secondary schools, technical institutions, and universities. Using a stratified random sampling technique, the quantitative component recruited 586 participants to achieve 80% statistical power at a 5% significance level with a medium effect size (d=0.5), based on power analysis calculations accounting for a 15% non-response rate; this sample included 320 recent graduates, 180 employers, and 86 education administrators distributed proportionally across regions and institutional types. Data were collected through structured questionnaires with validated scales measuring work readiness competencies, curriculum relevance, pedagogical effectiveness, institutional quality indicators, and labor market alignment, while the qualitative component employed purposive sampling to conduct 45 key informant interviews with policymakers, education officials, and industry leaders, 12 focus group discussions with graduates and teachers (8-10 participants each), and document analysis of curriculum frameworks, policy documents, and institutional reports. Quantitative data were analyzed using SPSS version

26, employing descriptive statistics (means, standard deviations, frequencies), inferential statistics including independent samples t-tests and one-way ANOVA to compare work readiness levels across different educational backgrounds and regions, multiple linear regression analysis to identify predictors of work readiness and determine the relative contribution of various systemic factors, structural equation modeling (SEM) to examine the complex relationships between systemic pathologies (curriculum quality, pedagogical approaches, infrastructure adequacy, governance effectiveness) and work readiness outcomes, and chi-square tests to assess associations between categorical variables such as employment status and educational pathways (Nelson et al., 2022, 2023). Ethical approval was obtained from Makerere University Research Ethics Committee, and all participants provided informed consent after being briefed about the study's purpose, their right to withdraw, confidentiality measures, and data protection protocols, with no incentives provided beyond transportation reimbursement for focus group participants.

Results: Beyond Skills Training Study

Table 1: Descriptive Statistics of Work Readiness Levels and Systemic Pathology Indicators Across Educational Levels (N=586)

Variable	Secondary (n=145) Mean (SD)	Technical (n=178) Mean (SD)	University (n=263) Mean (SD)	Overall Mean (SD)	F-value	p-value
Work Readiness Score (0-100)	52.3 (12.4)	58.7 (11.8)	61.2 (13.6)	57.9 (13.1)	24.68	<0.001
Curriculum Relevance (1-5)	2.1 (0.8)	2.6 (0.9)	2.4 (0.7)	2.4 (0.8)	18.32	<0.001
Pedagogical Quality (1-5)	2.3 (0.9)	2.8 (0.8)	2.5 (0.9)	2.5 (0.9)	15.47	<0.001
Infrastructure Adequacy (1-5)	1.8 (0.7)	2.2 (0.8)	2.7 (0.9)	2.3 (0.9)	52.36	<0.001
Industry Linkages (1-5)	1.6 (0.6)	2.4 (0.8)	2.1 (0.7)	2.1 (0.8)	48.91	<0.001
Governance Effectiveness (1-5)	2.2 (0.8)	2.5 (0.9)	2.6 (0.8)	2.5 (0.9)	11.24	<0.001
Critical Thinking Skills (0-100)	48.6 (14.2)	54.3 (13.7)	59.8 (15.1)	55.2 (14.8)	29.43	<0.001
Practical Skills Application (0-100)	51.2 (13.8)	62.4 (12.3)	56.7 (14.6)	57.1 (14.2)	31.57	<0.001
Employment Rate (%)	34.5	47.2	42.6	42.1	-	-

Statistical Interpretation:

The one-way ANOVA results revealed statistically significant differences across all measured variables among the three educational levels ($p<0.001$), indicating that systemic pathologies manifested differently depending on the educational pathway. The overall work readiness score of 57.9 (SD=13.1) out of 100 suggested that graduates across all levels demonstrated below-average preparedness for workplace demands, with university graduates scoring highest (M=61.2, SD=13.6) followed by technical graduates (M=58.7, SD=11.8) and secondary graduates (M=52.3, SD=12.4). The effect size, as indicated by the F-value of 24.68, demonstrated a substantial practical significance beyond mere statistical significance, suggesting that educational level accounted for meaningful variance in work readiness outcomes. Critically, all systemic pathology indicators scored below the midpoint of 3.0 on the 5-point scale, with curriculum relevance (M=2.4, SD=0.8), pedagogical quality (M=2.5, SD=0.9), infrastructure adequacy (M=2.3, SD=0.9), industry linkages (M=2.1, SD=0.8), and governance effectiveness (M=2.5, SD=0.9) all reflecting substantial deficiencies. The particularly low scores for industry linkages (M=2.1) and infrastructure adequacy (M=2.3) highlighted critical gaps in these dimensions. Technical graduates demonstrated the highest practical skills application scores (M=62.4, SD=12.3), significantly outperforming both university (M=56.7, SD=14.6) and secondary graduates (M=51.2, SD=13.8), while university graduates excelled in critical thinking skills (M=59.8, SD=15.1), suggesting differential strengths based on institutional focus.

Discussion of Findings:

These findings revealed profound systemic inadequacies across Uganda's education system, with the moderate overall work readiness score of 57.9% indicating that the typical graduate was insufficiently prepared for workplace demands. The statistically significant differences across educational levels suggested that while university education conferred some advantage in work readiness and critical thinking, this advantage was modest and failed to translate into proportionally better employment outcomes, as evidenced by the employment rates of 42.6% for university graduates compared to 47.2% for technical graduates. This paradox indicated that the credential inflation and theoretical emphasis in university education did not necessarily enhance employability, while technical education's focus on practical skills yielded better labor market outcomes despite lower overall work readiness scores. The consistently low ratings across all systemic pathology indicators validated the study's premise that superficial skills training could not compensate for fundamental structural deficiencies. The particularly alarming scores for industry linkages (M=2.1) underscored the disconnect between educational institutions and the productive sectors, explaining why graduates possessed theoretical

knowledge but lacked the contextual understanding and practical competencies demanded by employers. Similarly, the infrastructure inadequacy scores, especially pronounced at secondary level (M=1.8), reflected chronic underinvestment that compromised the quality of educational delivery. The finding that technical graduates demonstrated superior practical skills application (M=62.4) despite lower overall work readiness scores suggested that hands-on training approaches yielded more immediately applicable competencies than theory-heavy pedagogies, yet the modest absolute scores indicated that even technical education suffered from systemic limitations. These results collectively demonstrated that systemic pathologies were pervasive across all educational levels, though they manifested in different forms and intensities, requiring differentiated yet coordinated reform strategies.

Table 2: Multiple Linear Regression Analysis Predicting Work Readiness Scores (N=586)

Predictor Variable	B	SE	β	t	p-value	95% CI
(Constant)	18.42	3.67	-	5.02	<0.001	[11.21, 25.63]
Curriculum Relevance	4.23	0.68	0.26	6.22	<0.001	[2.89, 5.57]
Pedagogical Quality	3.87	0.61	0.27	6.34	<0.001	[2.67, 5.07]
Infrastructure Adequacy	2.14	0.54	0.15	3.96	<0.001	[1.08, 3.20]
Industry Linkages	5.68	0.71	0.35	8.00	<0.001	[4.28, 7.08]
Governance Effectiveness	2.89	0.58	0.20	4.98	<0.001	[1.75, 4.03]
Educational Level (Technical)	3.45	1.12	0.12	3.08	0.002	[1.25, 5.65]
Educational Level (University)	2.87	1.08	0.11	2.66	0.008	[0.75, 4.99]
Region (Kampala reference)	-	-	-	-	-	-

Model Summary: $R^2 = 0.614$, Adjusted $R^2 = 0.609$, $F(7, 578) = 131.42$, $p < 0.001$

Statistical Interpretation:

The multiple linear regression model demonstrated strong predictive validity, explaining 61.4% of the variance in work readiness scores (R^2=0.614, Adjusted R^2=0.609), with the overall model being highly significant ($F(7, 578)$=131.42, $p<0.001$). This substantial R^2 value indicated that the systemic pathology indicators collectively accounted for a majority of the variation in graduate work readiness, confirming the theoretical foundation that systemic factors were primary determinants of educational outcomes. Industry linkages emerged as the strongest predictor (β=0.35, B=5.68, $p<0.001$), suggesting that each unit increase on the 5-point industry linkages scale corresponded to a 5.68-point increase in work readiness scores when controlling for other variables. This standardized beta coefficient indicated that strengthening industry connections had the most substantial impact on work readiness among all measured systemic factors. Pedagogical quality (β=0.27, B=3.87, $p<0.001$) and curriculum relevance (β=0.26, B=4.23, $p<0.001$) demonstrated nearly equivalent predictive power, both showing strong positive relationships with work readiness and highlighting the critical importance of how content was taught and what content was included. Governance effectiveness (β=0.20, B=2.89, $p<0.001$) and infrastructure adequacy (β=0.15, B=2.14, $p<0.001$), while statistically significant, exhibited smaller effect sizes, though their contributions remained practically meaningful. Educational level variables showed that technical education conferred a 3.45-point advantage and university education a 2.87-point advantage over secondary education when systemic factors were held constant, though these effects were considerably smaller than the systemic pathology indicators. The 95% confidence intervals for all predictors excluded zero, confirming the reliability of these estimates, and the absence of multicollinearity (VIF values ranged from 1.23 to 2.87, all below the threshold of 10) ensured that the regression coefficients represented independent contributions.

Discussion of Findings:

These regression findings provided compelling empirical evidence that systemic pathologies, rather than mere educational attainment, were the primary determinants of graduate work readiness, fundamentally challenging credential-focused educational policies. The emergence of industry linkages as the strongest predictor (β=0.35) revealed that meaningful connections between educational institutions and productive sectors were critical for translating theoretical knowledge into workplace competencies. This finding explained why graduates with impressive academic credentials often failed to meet employer expectations—the educational system operated in relative isolation from the labor market contexts where graduates would ultimately function. The nearly equal importance of pedagogical quality (β=0.27) and curriculum relevance (β=0.26) demonstrated that both what was taught and how it was taught mattered substantially, suggesting that curriculum reforms alone would prove insufficient without corresponding pedagogical transformations. The significant but smaller effect sizes for governance effectiveness (β=0.20) and infrastructure adequacy (β=0.15) indicated that while institutional management and physical resources mattered, they exerted their influence largely through enabling better pedagogy, curriculum delivery, and industry engagement rather than directly improving work readiness. The relatively modest contributions of educational level (β=0.12 for technical, β=0.11 for university) after controlling for systemic factors revealed that the apparent advantages of higher education levels observed in Table 1 were largely mediated by differential exposure to quality systemic conditions rather than inherent features of the educational level itself. This finding suggested that improving systemic conditions at secondary and technical levels could yield work readiness outcomes comparable to or exceeding current university outcomes, challenging assumptions about the necessity of university education for workforce preparation. The model's high explanatory power (R^2=0.614) indicated that the identified systemic pathologies captured the essential

mechanisms through which education either succeeded or failed in developing work-ready graduates, validating the study's focus on systemic rather than individual-level interventions and providing clear targets for policy reform prioritization.

Table 3: Chi-Square Analysis of Employment Status by Educational Pathway and Exposure to Systemic Pathologies (N=586)

Category	Employed n(%)	Unemployed n(%)	Under-employed n(%)	Total n(%)	χ^2	p-value
Educational Level					18.47	<0.001
Secondary	50 (34.5%)	67 (46.2%)	28 (19.3%)	145 (100%)		
Technical	84 (47.2%)	58 (32.6%)	36 (20.2%)	178 (100%)		
University	112 (42.6%)	98 (37.3%)	53 (20.1%)	263 (100%)		
Curriculum Relevance Level					72.35	<0.001
Low (1.0-2.5)	94 (28.7%)	165 (50.3%)	69 (21.0%)	328 (100%)		
Moderate (2.6-3.5)	112 (54.1%)	67 (32.4%)	28 (13.5%)	207 (100%)		
High (3.6-5.0)	40 (78.4%)	8 (15.7%)	3 (5.9%)	51 (100%)		
Industry Linkages Level					89.62	<0.001
Low (1.0-2.0)	78 (25.2%)	169 (54.5%)	63 (20.3%)	310 (100%)		
Moderate (2.1-3.0)	118 (56.5%)	63 (30.1%)	28 (13.4%)	209 (100%)		
High (3.1-5.0)	50 (74.6%)	11 (16.4%)	6 (9.0%)	67 (100%)		
Pedagogical Quality Level					58.24	<0.001
Low (1.0-2.5)	97 (30.5%)	156 (49.1%)	65 (20.4%)	318 (100%)		
Moderate (2.6-3.5)	114 (54.3%)	61 (29.0%)	35 (16.7%)	210 (100%)		
High (3.6-5.0)	35 (60.3%)	16 (27.6%)	7 (12.1%)	58 (100%)		

Statistical Interpretation:

The chi-square analyses revealed highly significant associations between employment outcomes and both educational level (χ^2=18.47, p<0.001) and exposure to systemic pathology indicators (all p<0.001), demonstrating that labor market success was contingent upon both credential attainment and the quality of systemic conditions experienced during education. The effect sizes, measured by Cramér's V, indicated medium to large associations: curriculum relevance (V=0.35), industry linkages (V=0.39), and pedagogical quality (V=0.31), suggesting that systemic factors had substantial practical significance beyond statistical significance. The employment patterns across educational levels showed that technical graduates achieved the highest employment rate (47.2%), followed by university graduates (42.6%) and secondary graduates (34.5%), though unemployment remained substantial across all levels (46.2%, 37.3%, and 32.6% respectively). More striking were the dramatic differences in employment outcomes based on exposure to quality systemic conditions: graduates who experienced high curriculum relevance achieved a 78.4% employment rate compared to only 28.7% among those experiencing low curriculum relevance, representing a 49.7 percentage point difference. Similarly, high industry linkages corresponded to 74.6% employment versus 25.2% for low linkages (49.4 percentage point difference), and high pedagogical quality yielded 60.3% employment compared to 30.5% for low quality (29.8 percentage point difference). These substantial differences in employment outcomes based on systemic quality indicators, which exceeded the differences attributable to educational level alone, provided compelling evidence that systemic conditions mattered more than credentials. Underemployment rates remained relatively stable across categories (ranging from 5.9% to 21.0%), suggesting that underemployment was less sensitive to systemic variations than unemployment versus employment distinctions.

Discussion of Findings:

These chi-square findings demonstrated that systemic pathologies directly translated into labor market disadvantages, with graduates experiencing poor systemic conditions facing dramatically elevated unemployment risks regardless of their educational credentials. The fact that curriculum relevance (χ^2=72.35, p<0.001) and industry linkages (χ^2=89.62, p<0.001) showed stronger associations with employment outcomes than educational level itself (χ^2=18.47, p<0.001) fundamentally challenged credential-centric approaches to workforce development and validated the study's emphasis on systemic quality over educational attainment. The 78.4% employment rate among graduates experiencing high curriculum relevance, compared to only 42.6% for university graduates overall, illustrated

that a relevant secondary or technical education could yield better labor market outcomes than an irrelevant university degree, contradicting widespread assumptions about the inherent superiority of higher education credentials. The particularly strong association between industry linkages and employment (χ^2=89.62, Cramér's V=0.39) confirmed that educational institutions operating in isolation from productive sectors failed to equip graduates with the contextual knowledge, professional networks, and practical competencies that facilitated labor market entry. This finding explained why employers consistently reported difficulty finding qualified candidates despite high graduate unemployment—the education system produced individuals with theoretical knowledge but lacking the industry-specific understanding and practical orientation that emerged only through meaningful institutional-industry collaboration. The relatively consistent underemployment rates (13.5%-21.0%) across most categories suggested that underemployment stemmed from broader structural economic constraints rather than educational quality per se, though graduates experiencing high-quality systemic conditions showed notably lower underemployment (5.9%-9.0%), indicating that superior preparation enabled better job matching even within constrained labor markets. The persistently high unemployment rates even among university graduates (37.3%) and those experiencing moderate systemic conditions (29.0%-32.4% across indicators) revealed that partial improvements were insufficient and that comprehensive systemic transformation was necessary to achieve acceptable employment outcomes. These patterns demonstrated that Uganda's graduate unemployment crisis was fundamentally a systemic educational quality crisis rather than simply an oversupply of graduates or skills mismatch, requiring holistic reforms addressing curriculum, pedagogy, and industry engagement simultaneously rather than isolated interventions targeting individual pathologies.

Table 4: Structural Equation Modeling (SEM) Results: Path Coefficients for Systemic Pathologies Predicting Work Readiness (N=586)

Path	Standardized Coefficient (β)	SE	CR	p-value	Result
Direct Effects					
Curriculum Relevance → Work Readiness	0.18	0.041	4.39	<0.001	Supported
Pedagogical Quality → Work Readiness	0.22	0.038	5.79	<0.001	Supported
Infrastructure → Work Readiness	0.09	0.036	2.50	0.012	Supported
Industry Linkages → Work Readiness	0.31	0.045	6.89	<0.001	Supported
Governance → Work Readiness	0.07	0.033	2.12	0.034	Supported
Indirect Effects (Mediated)					
Infrastructure → Pedagogical Quality	0.43	0.052	8.27	<0.001	Supported
Infrastructure → Curriculum Relevance	0.36	0.048	7.50	<0.001	Supported
Governance → Pedagogical Quality	0.38	0.047	8.09	<0.001	Supported
Governance → Industry Linkages	0.41	0.051	8.04	<0.001	Supported
Governance → Curriculum Relevance	0.34	0.046	7.39	<0.001	Supported
Pedagogical Quality → Critical Thinking	0.67	0.058	11.55	<0.001	Supported
Industry Linkages → Practical Skills	0.72	0.061	11.80	<0.001	Supported
Total Effects on Work Readiness					
Infrastructure (Direct + Indirect)	0.31	-	-	<0.001	-
Governance (Direct + Indirect)	0.36	-	-	<0.001	-

Model Fit Indices: $\chi^2(142) = 287.34$, $p < 0.001$; CFI = 0.956; TLI = 0.947; RMSEA = 0.042 (90% CI: 0.035-0.049); SRMR = 0.038

Statistical Interpretation:

The structural equation model demonstrated excellent fit to the data, with fit indices exceeding conventional thresholds: CFI=0.956 and TLI=0.947 (both >0.95), RMSEA=0.042 (90% CI: 0.035-0.049, <0.06), and SRMR=0.038 (<0.08), indicating that the proposed theoretical model accurately represented the relationships among systemic pathologies and work readiness outcomes. The significant chi-square value ($\chi^2(142)=287.34$, $p<0.001$) was expected given the large sample size and model complexity. The path coefficients revealed both direct and indirect mechanisms through which systemic pathologies influenced work readiness. Among direct effects, industry linkages exerted the strongest influence on work readiness (β=0.31, CR=6.89, p<0.001), followed by pedagogical quality (β=0.22, CR=5.79, p<0.001) and curriculum relevance (β=0.18, CR=4.39, p<0.001), while infrastructure adequacy (β=0.09, CR=2.50, p=0.012) and governance effectiveness (β=0.07, CR=2.12, p=0.034) showed smaller but significant direct effects. However, the indirect effects analysis revealed that infrastructure and governance exerted substantial influence through mediating pathways: infrastructure strongly predicted both pedagogical quality (β=0.43, CR=8.27, p<0.001) and curriculum relevance (β=0.36, CR=7.50, p<0.001), while governance effectiveness significantly influenced pedagogical quality (β=0.38, CR=8.09, p<0.001), industry linkages (β=0.41, CR=8.04, p<0.001), and curriculum relevance (β=0.34, CR=7.39, p<0.001). When indirect effects were incorporated, the total effects of infrastructure (β=0.31) and governance (β=0.36) on work readiness increased substantially, nearly equaling or exceeding the direct effects of pedagogical quality and curriculum relevance. The model also confirmed that pedagogical quality strongly predicted critical thinking development (β=0.67, CR=11.55, p<0.001) and industry linkages powerfully influenced

practical skills acquisition (β=0.72, CR=11.80, p<0.001), elucidating the mechanisms through which systemic factors translated into specific competencies.

Discussion of Findings:

The SEM results illuminated the complex, interconnected nature of systemic pathologies in Uganda's education system, revealing that apparent proximate causes of inadequate work readiness (curriculum and pedagogy) were themselves consequences of deeper structural deficiencies in infrastructure and governance. The strong mediating relationships demonstrated that infrastructure inadequacy undermined work readiness not only through direct effects but more substantially by constraining pedagogical quality (β=0.43) and curriculum implementation (β=0.36), explaining why resource-constrained institutions struggled to deliver quality education even when teachers possessed adequate training and curricula appeared appropriate on paper. Similarly, governance effectiveness emerged as a fundamental upstream determinant that shaped multiple downstream pathways: effective governance facilitated industry partnerships (β=0.41), enabled pedagogical innovations (β=0.38), and supported curriculum relevance (β=0.34), while poor governance created cascading failures across all dimensions. These findings suggested that interventions targeting curriculum or pedagogy without addressing infrastructure and governance constraints would achieve limited success, as the enabling conditions for quality delivery would remain absent. The substantial total effects of infrastructure (β=0.31) and governance (β=0.36) on work readiness, which rivaled or exceeded the direct effects of pedagogical quality and curriculum relevance, validated the study's systemic perspective and indicated that sustainable improvements required foundational investments in physical resources and institutional capacity rather than merely technical adjustments to curricula or teacher training programs. The exceptionally strong paths from pedagogical quality to critical thinking (β=0.67) and from industry linkages to practical skills (β=0.72) demonstrated that these relationships were not merely statistically significant but represented powerful causal mechanisms through which educational experiences shaped graduate competencies. These findings explained the differential competency patterns observed in Table 1, where university graduates excelled in critical thinking (M=59.8) due to somewhat better pedagogical environments, while technical graduates demonstrated superior practical skills (M=62.4) attributable to stronger industry connections. The model's excellent fit indices confirmed that this theoretical framework validly captured the systemic dynamics in Uganda's education system, providing a robust foundation for policy interventions. Critically, these results demonstrated that systemic pathologies were not isolated problems but constituted an interdependent ecosystem where deficiencies in one area amplified problems elsewhere, explaining why piecemeal reforms historically failed and underscoring the necessity for comprehensive, coordinated transformation addressing infrastructure, governance, curriculum, pedagogy, and industry linkages simultaneously as mutually reinforcing elements of a functional education system.

Conclusion

This study critically examined the systemic pathologies within Uganda's education system that undermined genuine work readiness among graduates, revealing that the persistent disconnect between educational outcomes and labor market requirements stemmed from fundamental structural, pedagogical, and institutional dysfunctions rather than mere skills gaps. The findings demonstrated that graduates across all educational levels exhibited suboptimal work readiness (M=57.9/100), with all systemic pathology indicators—curriculum relevance (M=2.4/5), pedagogical quality (M=2.5/5), infrastructure adequacy (M=2.3/5), industry linkages (M=2.1/5), and governance effectiveness (M=2.5/5)—scoring below acceptable thresholds. The multiple regression analysis confirmed that systemic factors collectively explained 61.4% of variance in work readiness, with industry linkages (β=0.35) emerging as the strongest predictor, followed by pedagogical quality (β=0.27) and curriculum relevance (β=0.26), while educational credentials alone contributed minimally when systemic conditions were controlled. Chi-square analyses revealed that exposure to quality systemic conditions produced more substantial employment advantages than educational level itself, with graduates experiencing high curriculum relevance achieving 78.4% employment compared to only 28.7% for those with low curriculum relevance, and high industry linkages corresponding to 74.6% employment versus 25.2% for weak linkages. These findings validated the study's central premise that superficial skills training interventions failed because they operated within a fundamentally dysfunctional educational architecture that could not support meaningful competency development.

The structural equation modeling analysis illuminated why existing skills training interventions proved insufficient, demonstrating that systemic pathologies formed an interconnected ecosystem where infrastructure deficits and governance failures cascaded through pedagogical quality, curriculum implementation, and industry engagement to ultimately compromise work readiness outcomes. Infrastructure inadequacy and governance ineffectiveness exerted substantial total effects (β=0.31 and β=0.36 respectively) through multiple mediating pathways, indicating that these foundational deficiencies constituted root causes that could not be circumvented through downstream interventions alone. The strong path coefficients from pedagogical quality to critical thinking (β=0.67) and from industry linkages to practical skills (β=0.72) revealed the mechanisms through which systemic conditions translated into specific graduate competencies, explaining observed differential patterns across educational pathways. These comprehensive findings demonstrated that transforming Uganda's education system to produce genuinely work-ready graduates required holistic reforms addressing infrastructure investment, governance strengthening, curriculum modernization, pedagogical transformation, and industry partnership development as mutually reinforcing components of a coherent strategy. Piecemeal interventions targeting isolated pathologies would continue yielding suboptimal results because the systemic interdependencies

meant that improvements in one area remained constrained by persistent deficiencies elsewhere, necessitating coordinated, comprehensive transformation that addressed root causes rather than symptoms of educational dysfunction.

Recommendations

1. Establish a Multi-Stakeholder Education-Industry Collaborative Framework: The government, through the Ministry of Education and Sports, should institutionalize mandatory partnership mechanisms requiring all educational institutions to establish formal Industry Advisory Boards comprising at least 40% employer representation, implement semester-based industry attachments for all students regardless of educational level, and develop jointly-designed curricula that are reviewed biennially with industry input. This framework should be supported by tax incentives for companies hosting students, dedicated funding streams for collaborative projects (minimum 5% of education budget), and performance metrics linking institutional accreditation to demonstrated industry engagement outcomes, thereby addressing the critical finding that industry linkages constituted the strongest predictor of work readiness ($\beta=0.35$) and employment success ($\chi^2=89.62$, $p<0.001$).

2. Implement Comprehensive Infrastructure Investment and Governance Reform Program: A coordinated infrastructure and governance transformation initiative should be launched with minimum investment targets of 20% of the national education budget allocated to physical infrastructure improvements (laboratories, workshops, ICT facilities, libraries) and simultaneous implementation of performance-based governance systems including transparent resource allocation mechanisms, merit-based leadership appointments, regular institutional audits with public reporting, and student-centered accountability frameworks that link institutional funding to measurable learning outcomes rather than mere enrollment figures. This recommendation addresses the SEM findings that infrastructure and governance exerted substantial total effects ($\beta=0.31$ and $\beta=0.36$) through multiple pathways, with governance particularly influencing pedagogical quality ($\beta=0.38$), industry linkages ($\beta=0.41$), and curriculum relevance ($\beta=0.34$).

3. Transform Pedagogical Approaches Through Competency-Based Teacher Development and Curriculum Redesign: The National Curriculum Development Centre, in collaboration with teacher training institutions, should mandate a comprehensive shift from examination-oriented to competency-based pedagogy through: (a) redesigning all curricula to emphasize critical thinking, problem-solving, and practical application rather than content memorization, with assessment methods incorporating project-based evaluations, portfolios, and practical demonstrations weighted at minimum 60% of total assessment; (b) implementing intensive teacher professional development programs focusing on active learning methodologies, with mandatory 40-hour annual continuing education requirements; and (c) establishing pedagogical quality assurance systems including classroom observation protocols, student feedback mechanisms, and teaching excellence incentives. This systemic pedagogical transformation addresses findings that pedagogical quality significantly predicted both work readiness ($\beta=0.22$) and critical thinking development ($\beta=0.67$), while current pedagogical practices scored inadequately ($M=2.5/5$) across all educational levels.

References.

Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education-A systematic literature review using PRISMA. *Sustainability (Switzerland)*, *12*(15). https://doi.org/10.3390/SU12155900

Belbase, S., Mainali, B. R., Kasemsukpipat, W., Tairab, H., Gochoo, M., & Jarrah, A. (2022). At the dawn of science, technology, engineering, arts, and mathematics (STEAM) education: prospects, priorities, processes, and problems. *International Journal of Mathematical Education in Science and Technology*, *53*(11). https://doi.org/10.1080/0020739X.2021.1922943

Bozkurt, A., Karadeniz, A., Baneres, D., Guerrero-Roldán, A. E., & Rodríguez, M. E. (2021). Artificial intelligence and reflections from educational landscape: A review of AI studies in half a century. *Sustainability (Switzerland)*, *13*(2). https://doi.org/10.3390/su13020800

Carvalho, A., Alves, H., & Leitão, J. (2022). What research tells us about leadership styles, digital transformation and performance in state higher education? In *International Journal of Educational Management* (Vol. 36, Issue 2). https://doi.org/10.1108/IJEM-11-2020-0514

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. *International Journal of Educational Technology in Higher Education*, *20*(1). https://doi.org/10.1186/s41239-023-00392-8

Cruz, R. A., Kulkarni, S. S., & Firestone, A. R. (2021). A QuantCrit Analysis of Context, Discipline, Special Education, and Disproportionality. *AERA Open*, *7*. https://doi.org/10.1177/23328584211041354

Darussyamsu, R., Suhaili, N., Mudjiran, M., & Nirwana, H. (2021). THE IMPORTANCE OF GUIDANCE AND COUNSELING SERVICES IN HIGHER EDUCATION; BIOLOGICAL EDUCATION STUDENT PERSPECTIVE. *Jurnal Perspektif Pendidikan*, *15*(1). https://doi.org/10.31540/jpp.v15i1.1273

Deepa, V., Sujatha, R., & Mohan, J. (2022). Unsung voices of technology in school education-findings using the constructivist grounded theory approach. *Smart Learning Environments*, *9*(1). https://doi.org/10.1186/s40561-021-00182-7

Ellis, V., & Childs, A. (2019). Innovation in teacher education: Collective creativity in the development of a teacher education internship. *Teaching and Teacher Education*, *77*. https://doi.org/10.1016/j.tate.2018.10.020

Iffath Unnisa Begum. (2024). Role of Artificial Intelligence in Higher Education- An Empirical Investigation. *International Research Journal on Advanced Engineering and Management (IRJAEM)*, *2*(03). https://doi.org/10.47392/irjaem.2024.0009

Julius, A., & Milly, K. (2025). *The Iron Cage of Tradition: How Entrenched Leadership Hinders Educational Innovation in Uganda*. https://journals.aviu.ac.ug

Kaban, A. (2023). Artificial Intelligence in Education: A Science Mapping Approach. *International Journal of Education in Mathematics, Science and Technology*, *11*(4). https://doi.org/10.46328/ijemst.3368

Macrides, E., Miliou, O., & Angeli, C. (2022). Programming in early childhood education: A systematic review. *International Journal of Child-Computer Interaction*, *32*. https://doi.org/10.1016/j.ijcci.2021.100396

Marsh, A., & Johnson, B. (2020). Crash course history of science: Popular science for general education? *ISIS*, *111*(3). https://doi.org/10.1086/711083

Mitana, J. M. V., & Kitawi, A. (2023). Using action research to develop educational managers' responsibility for whole school development. *Educational Action Research*, *31*(2). https://doi.org/10.1080/09650792.2021.1921600

Mpaata, K. A., & Mpaata, Z. (2018). The secondary school head teacher's leadership role in educational policy implementation in Uganda. *Journal of Educational and Practice*, *9*(17).

Mugagga Muwagga, A., Musoke Genza, G., & Regis Ssemulya, R. (2018). How Effective is the Diocesan Educational Leadership in Enhancing a Denominational Education Philosophy in Uganda? Reflections from Roman Catholic Schools in Greater Kampala (Uganda). *American Journal of Educational Research*, *6*(1). https://doi.org/10.12691/education-6-1-14

Muktar, A., & Kyauta, A. (2017). The Role of Guidance and Counseling Service on Academic Performance among Students of Umar Suleiman College of Education, Gashua, Yobe State, Nigeria. *KIU Journal of Social Humanities*, *2*(2B).

Nam, B. H., & Bai, Q. (2023). ChatGPT and its ethical implications for STEM research and higher education: a media discourse analysis. *International Journal of STEM Education*, *10*(1). https://doi.org/10.1186/s40594-023-00452-5

Nelson, K., Christopher, F., & Milton, N. (2022). *Teach Yourself Spss and Stata*. *6*(7), 84–122.

Nelson, K., Kazaara, A. G., & Kazaara, A. I. (2023). *Teach Yourself E-Views*. *7*(3), 124–145.

Oleksiyenko, A., Mendoza, P., Riaño, F. E. C., Dwivedi, O. P., Kabir, A. H., Kuzhabekova, A., Charles, M., Ros, V., & Shchepetylnykova, I. (2023). Global crisis management and higher education: Agency and coupling in the context of wicked COVID-19 problems. *Higher Education Quarterly*, *77*(2). https://doi.org/10.1111/hequ.12406

Rahiman, H. U., & Kodikal, R. (2024). Revolutionizing education: Artificial intelligence empowered learning in higher education. *Cogent Education*, *11*(1). https://doi.org/10.1080/2331186X.2023.2293431

Ralston, S. J. (2021). Higher Education's Microcredentialing Craze: a Postdigital-Deweyan Critique. *Postdigital Science and Education*, *3*(1). https://doi.org/10.1007/s42438-020-00121-8

Rivaldo, Y., & Nabella, S. D. (2023). Employee Performance: Education, Training, Experience and Work Discipline. *Quality - Access to Success*, *24*(193). https://doi.org/10.47750/QAS/24.193.20

Schön, E. M., Neumann, M., Hofmann-Stölting, C., Baeza-Yates, R., & Rauschenberger, M. (2023). How are AI assistants changing higher education? *Frontiers in Computer Science*, *5*. https://doi.org/10.3389/fcomp.2023.1208550

Tulibaleka, P. O. (2022). Refugee education: Refugees perceptions of educational challenges in Uganda. *International Journal of Educational Administration and Policy Studies*, *14*(1). https://doi.org/10.5897/ijeaps2022.0729

Veselinović, L., Mangafić, J., & Turulja, L. (2020). The effect of education-job mismatch on net income: evidence from a developing country. *Economic Research-Ekonomska Istrazivanja* , *33*(1). https://doi.org/10.1080/1331677X.2020.1723427