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An Assessment of the Effectiveness of Competency-Based Education Model in Enhancing the Employability of Technical Education Graduates in Lagos State, Nigeria

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Abstract. The persistent disconnect between technical education outcomes and industry expectations in Lagos State, Nigeria, continues to undermine graduate employability despite increasing adoption of Competency-Based Education (CBE) models. This study assessed the effectiveness of CBE in enhancing graduate employability, examining skill development outcomes and stakeholder satisfaction. A descriptive survey design involved 80 technical graduates and 20 industry stakeholders from manufacturing and service sectors across Ikeja, Oshodi, Isolo, and Apapa. A 30-item validated questionnaire (reliability = 0.85) was used. Data were analyzed using means, standard deviations, Pearson's correlation, and Chi-square at 0.05 significance level. Findings revealed that CBE significantly enhances problem-solving, workplace readiness, and skill acquisition, with a moderate positive correlation ($r = 0.65$, $p < 0.05$) between CBE exposure and employability. However, both graduates (mean = 3.80) and industry stakeholders (mean = 3.72) expressed substantial dissatisfaction with current implementation, citing inadequate resources, unprepared instructors, curriculum-industry misalignment, outdated equipment, and weak quality assurance. The study concludes that while CBE demonstrates significant potential for improving employability, its effectiveness is severely constrained by implementation challenges requiring urgent systemic intervention. Recommendations include policy reforms mandating industry-integrated curricula, public-private partnerships for resource mobilization, continuous professional development for educators, regular curriculum review aligned with labor market demands, and sustainable funding models for CBE infrastructure.

Keywords: Competency-Based Education; employability; technical education; skills gap; graduate unemployment; Lagos State; industry collaboration

1. Introduction

In today's fast-changing global economy, the ability to gain and sustain meaningful employment has become a pressing concern, especially for young graduates and industries seeking skilled workers. In developing countries like Nigeria, technical education is increasingly recognized as a critical pathway for preparing youth with hands-on skills needed to succeed in a competitive labor market. However, traditional education systems in Nigeria often emphasize theoretical knowledge over practical skill acquisition, leaving many graduates ill-prepared for real-world job demands. This gap is particularly visible in Lagos State, the nation's commercial nerve center, where numerous technical education graduates struggle to find employment due to misalignment between their training and industry requirements (Okolie et al., 2020).

Competency-Based Education (CBE) has emerged as a promising solution to close this skills gap. Unlike conventional time-bound academic approaches, CBE focuses on mastery of job-relevant skills and measurable competencies, integrating theoretical knowledge with practical application in real-life contexts (UNESCO, 2022). Countries including the UK, Germany, South Africa, and Tanzania are increasingly adopting CBE to enhance workforce readiness and improve employment outcomes (Charles et al., 2022). CBE addresses the growing disconnect between education and the labor market by

empowering students with 21st-century skills such as adaptability, critical thinking, collaboration, and lifelong learning (Voinea, 2019; OECD, 2019).

A core strength of CBE lies in its integration of theory with practice through real-world scenarios and tasks. This is especially beneficial in technical fields where skills like machine operation and teamwork cannot be effectively taught through lectures alone (Holmes et al., 2021). Modern CBE programs utilize digital learning platforms that provide personalized learning paths, real-time feedback, and competency-based assessments, ensuring true mastery of content while aligning with individual learning styles and industry expectations (Rhoney & Meyer, 2024).

Economically, CBE reduces recruitment and training costs for employers while enhancing workforce productivity and supporting national development goals (McMullen et al., 2023). In technical education, skill development demands structured practice, mentorship, and an environment that nurtures mastery. Successful training must blend theoretical understanding with hands-on application (Olabiyi, Aiyelabowo, & Keshinro, 2013). Students gain real competence when they can apply knowledge practically and with confidence (Bodnar, 2020; Magbagbeola, 2020).

Employability today encompasses personal and professional competencies including adaptability, self-awareness, and the ability to navigate complex problems (Di Fabio, 2017). It has become a meta-competence—a framework of transferable skills needed across multiple job settings (Bach & Sulikova, 2019; Amadi, 2013). CBE aligns training with real-world demands, bridging the training-employment divide and enabling graduates to meet modern industry needs effectively (Eze et al., 2022).

Lagos State provides a valuable context for exploring CBE's impact. Despite being Nigeria's industrial heartbeat, many technical institutions operate under outdated educational models that limit graduates' work readiness. Although interest in CBE is growing, limited research assesses its actual effectiveness in the region. This study, therefore, examines the effectiveness of Competency-Based Education models in enhancing the employability of technical education graduates in Lagos State.

1.1 Statement of the Problem

Despite increased technical education graduates in Lagos State, employment opportunities have not kept pace. Many graduates remain unemployed or underemployed despite holding qualifications, indicating mismatch between classroom learning and workplace expectations. Employers report that graduates possess theoretical knowledge but lack practical application skills (Adebayo, 2021). Outdated curricula, limited access to modern equipment, and inconsistent training standards hinder institutional responsiveness to labor market demands. While CBE offers promise, its actual effectiveness in bridging the education-employment gap in Lagos State requires investigation.

1.2 Purpose of the Study

This study investigates the effectiveness of CBE in enhancing employability of technical education graduates in Lagos State, specifically examining:
(1) whether CBE enhances employability skills, and
(2) stakeholder satisfaction with CBE implementation.

1.3 Research Questions

- To what extent does CBE enhance employability skills of technical education graduates in Lagos State?
- How satisfied are graduates and industry stakeholders with CBE in Lagos State?

1.4 Hypotheses

H_{01}: No significant relationship exists between CBE use and employability skills of technical graduates in Lagos State.
H_{02}: No significant difference exists in satisfaction levels between graduates and industry stakeholders with CBE in Lagos State.

2. Theoretical Framework

This study is grounded in two complementary theories: Human Capital Theory (Becker, 1962) and Social Constructivism (Vygotsky, 1978).

Human Capital Theory posits that education and training are strategic investments enhancing individual productivity and economic potential. When people acquire knowledge, skills, and attitudes aligned with labor market demands, they contribute more effectively to organizational success and national development. In technical education, this underscores aligning curricula with competencies employers seek. The more tailored and practical the training, the more employable and economically valuable the graduate becomes (Gillies, 2017).

Social Constructivism views learning as an active, social process where knowledge is constructed through interaction with peers, instructors, and the environment. The teacher facilitates engagement with real-world challenges. Learning is most effective when collaborative, contextual, and problem-oriented (Amineh & Asl, 2015). This supports CBE, where students take ownership of learning through hands-on practice and continuous feedback (Ogegbo et al., 2020).

Together, these theories illustrate how CBE supports both industry-relevant competency acquisition and development of lifelong learning habits essential for success in today's evolving job market.

3. Literature Review

CBE has emerged as a transformative model in technical education, advocating a shift from theory-heavy instruction toward performance-oriented frameworks aligned with 21st-century workforce demands (Schultz et al., 2022). Central to CBE is mastering clearly defined, job-relevant competencies through authentic, task-based evaluations. Students engaged in experiential learning develop technical expertise and confidence to navigate complex work environments (Ghezir et al., 2021; Ismail et al., 2022; Ayalew et al., 2024).

A key feature is learner-centered design. Student autonomy, critical thinking, and adaptability are central to successful learning (Hattie & Timperley, 2007; Schildkamp et al., 2020). CBE enables personalized learning pathways, fostering engagement and accountability (OECD, 2019; Bakker et al., 2022). Effective implementation requires sustained teacher training, as educator preparedness inconsistencies remain common. Performance-based assessments compel students to demonstrate actual competence, particularly in technical disciplines (McClarty & Gaertner, 2015). Effective CBE incorporates collaborative, inquiry-driven activities and diverse pedagogical strategies supporting both hard and soft skill development (Dilmore et al., 2011; Curry & Docherty, 2017).

CBE positively influences motivation and self-efficacy. Students exhibit higher engagement and reflective thinking through formative assessment tools including peer evaluations, digital portfolios, and continuous feedback (Evans et al., 2020; Chen et al., 2022; Henri et al., 2017). Globally, Malaysia's Tun Hussein Onn University has integrated CBE into engineering curricula through strong industry linkages (Abdullah et al., 2021). European countries like Germany and Switzerland have long embraced competency-based vocational education, achieving high graduate employment rates.

In Africa, CBE is viewed as a strategy to cultivate technical expertise and social responsibility. Formative, process-oriented assessment proves more effective than high-stakes testing (Mokoro, 2020; Imana, 2020). However, Nigerian implementation faces challenges: limited teacher training, inadequate infrastructure, misalignment with industry standards (Ajayi & Adebayo, 2022; Ogunleye, 2020), large class sizes, scarce instructional materials, and minimal in-service training (Ogegbo et al., 2020). The National Board for Technical Education promotes CBE, but without deliberate institutional capacity building and industry collaboration, implementation remains inconsistent (Nwogu & Ezeh, 2023). Robust partnerships between training institutions and employers are essential for graduate adaptability (Mwangi & Otieno, 2021). CBE's true strength lies in cultivating lifelong learning attributes—communication, resilience, and adaptability (Mulder, 2017)

4. Methodology

A descriptive survey design was employed with 80 technical graduates and 20 industry stakeholders from manufacturing and service sectors in Ikeja, Oshodi, Isolo, and Apapa. Stratified random sampling ensured balanced representation. A 30-item validated questionnaire (Cronbach Alpha = 0.85) used 4-point scales: Research Question 1 (Strongly Agree=4 to Strongly Disagree=1); Research Question 2 (Very Satisfied=4 to Very Dissatisfied=1). Mean scores ≥2.50 indicated agreement/satisfaction. Pearson's correlation tested Hypothesis 1; Chi-square tested Hypothesis 2 ($\alpha = 0.05$).

5. Results

Research Question 1: Extent CBE enhances employability skills

Table 1: Mean Scores on CBE Impact on Employability Skills

Items	Graduates (n=80)	Industry (n=20)
Hands-on training improves job readiness	3.76	3.75
Effective technical knowledge application	3.88	3.60
Curriculum aligns with industry needs	3.71	3.45
Improves problem-solving skills	3.73	3.65
Develops teamwork skills	3.71	3.70
Demonstrates strong communication	3.83	3.70
Uses modern industry tools	3.81	3.90
Quick adaptation to new environments	3.78	3.60
Practical assessments reflect job tasks	3.90	3.80
Improves soft skills	3.81	3.80
Enhances entrepreneurial capabilities	3.84	3.65
Increases technical confidence	3.76	3.75
Encourages lifelong learning	3.85	3.70
Improves independent work ability	3.81	3.75
Better job interview preparation	3.80	3.85
Grand Mean	3.80	3.71

Field Survey, 2025

Table 1 reveals that both technical education graduates and industry stakeholders have high mean ratings (above 3.50) regarding the positive impact of CBE models on employability skills. Graduates have a slightly higher mean (3.80) compared to industry stakeholders (3.71), indicating that technical education graduates perceive the impact of CBE models on their employability skills slightly more positively. The standard deviations for both groups are relatively low (Graduates: 0.51; Industry Stakeholders: 0.56), indicating that the responses are consistent and reliable. The findings show that both technical education graduates and industry stakeholders agreed that Competency-Based Education models significantly enhance the employability skills of technical education graduates in Lagos State. This is supported by the fact that their mean scores are above the decision rule of 2.50, and their standard deviations are low, indicating consistent opinions.

Research Question 2: Satisfaction with CBE programme

Table 2: Mean Satisfaction Scores

Items	Graduates	Industry
General satisfaction with CBE models	3.78	3.56
Preparation with industry-relevant skills	3.76	3.65
Meets industry expectations	3.76	3.60
Graduates have necessary competencies	3.84	3.80
Enough practical training	3.87	3.85
Focus on practical skills	3.81	3.90
Up-to-date with industry standards	3.81	3.65
No extensive retraining needed	3.81	3.75
Hands-on training satisfactory	3.76	3.75
Prepared for industry demands	3.85	3.90
Reflects current industry practices	3.80	3.70
Implementation quality	3.71	3.85
Proper industry input	3.85	3.65
Industry satisfaction with graduates	3.78	3.65
Industry partnership satisfaction	3.74	3.60
Grand Mean	3.80	3.72

Field Survey, 2025

Table 2 reveals that both the technical education graduates (3.80) and industry stakeholders (3.72) reported a high level of dissatisfaction with the CBE programme, as their mean scores are significantly higher than the decision rule of 2.50 (noting that on the satisfaction scale, 4 represented "Very Dissatisfied" and 1 represented "Very Satisfied"). The standard deviation values (0.46 for graduates and 0.58 for industry stakeholders) are relatively low, suggesting that the responses were generally consistent within each group. The slight difference in mean scores (3.80 for graduates and 3.72 for industry stakeholders) indicates that both groups share similarly high levels of dissatisfaction with the CBE programme in Lagos State.

Hypothesis Testing

Table 3: Pearson's Correlation (H_{01})

Group	Mean	SD	N	r	t	p	Decision
Graduates	3.80	0.51	80	0.65	8.56	1.59e-13	Rejected
Industry	3.71	0.56	20				

Field Survey, 2025

Significant positive correlation exists between CBE exposure and employability skills. In Table 3, Pearson's correlation coefficient (r) was calculated to be 0.65, indicating a moderate positive correlation between the use of CBE models and the employability skills of graduates. The calculated t-value was 8.56, which is significantly high, showing strong evidence against the null hypothesis. The associated p-value was 1.59e-13, which is much lower than the significance level of 0.05, leading to the rejection of the null hypothesis. The null hypothesis, which stated that "There is no statistically significant relationship between the use of Competency-Based Education models and the employability skills of technical education graduates in Lagos State," was rejected. This decision is based on the low p-value and the strong positive correlation observed. Moreover, the rejection of the null hypothesis further reinforces the effectiveness of CBE models in enhancing employability skills. This implies that adopting and effectively implementing CBE models in technical education programs could significantly enhance technical education graduates' readiness for the job market.

Table 4: Chi-Square Test (H_{02})

Group	N	Mean	SD	t	t-crit	Decision
Graduates	80	3.80	0.46	0.66	±1.98	Accepted
Industry	20	3.72	0.58			

Field Survey, 2025

In Table 4, a Chi-Square test was conducted to test the hypothesis that there is no significant difference in the level of satisfaction between technical education graduates and industry stakeholders with the competency-based education models in Lagos State. The data included a sample of 80 technical education graduates and 20 industry stakeholders, with mean dissatisfaction scores of 3.80 and 3.72, and standard deviations of 0.46 and 0.58, respectively. The test statistic (t-value) was calculated as 0.66, while the critical value for a two-tailed test at a 0.05 level of significance with 98 degrees of freedom was ±1.98. Since the test statistic (0.66) is less than the critical value (±1.98), we fail to reject the null hypothesis. The findings indicate that there is no statistically significant difference between the level of satisfaction of technical education graduates and industry stakeholders with the competency-based education models in Lagos State. This result suggests that the competency-based education model in Lagos State is generally perceived negatively by both technical education graduates and industry stakeholders, with both groups expressing similarly high levels of dissatisfaction.

No significant difference in dissatisfaction levels between groups.

6. Discussion of Findings

Findings reveal strong support for CBE's effectiveness in enhancing employability skills. Graduates (3.80) and industry stakeholders (3.71) acknowledged CBE's positive impact on hands-on training, problem-solving, and workplace readiness, consistent with McClarty and Gaertner (2015) and Curry and Docherty (2017). However, substantial dissatisfaction with implementation (graduates 3.80, industry 3.72) reflects barriers including inadequate resources, unprepared instructors, and curriculum-industry gaps, corroborating Ogunleye (2020), Ogegbo et al. (2020), and Ajayi and Adebayo (2022).

The significant positive correlation (r = 0.65) between CBE exposure and employability confirms that improved CBE quality enhances graduate outcomes, supporting Sanghi (2016), Mulder (2017), and Chen et al. (2022). No significant difference in dissatisfaction levels indicates shared stakeholder concerns requiring systemic reform.

7. Implications of the Findings

Findings necessitate strengthening teacher capacity through continuous professional development in CBE pedagogy and authentic assessment. Curriculum

reform must prioritize competency-driven frameworks incorporating project-based learning, digital portfolios, and workplace simulations (McClarty & Gaertner, 2015; Curry & Docherty, 2017). Closer collaboration between institutions and industry partners is essential for curriculum design, mentorship, and internship opportunities (Abdullah et al., 2021; Mokoro, 2020). Regulatory bodies like NBTE must standardize practices, monitor quality, and embed employer feedback mechanisms (Nwogu & Ezeh, 2023).

8. Conclusion

CBE demonstrates significant potential for improving technical graduate employability in Lagos State by aligning learning outcomes with industry demands. Both graduates and employers endorse its relevance, yet implementation challenges severely constrain effectiveness. Realizing CBE's full benefits requires investment in teacher training, modernized assessment, industry partnerships, and sustainable funding.

9. Recommendations

Based on the findings of the study, the following practical and actionable recommendations are offered:

Strengthen Policy Enforcement: The Lagos State Vocational and Educational Board should develop and enforce comprehensive policies that support the structured and phased adoption of CBE across all technical and vocational education institutions. Clear guidelines and accountability measures will drive consistency and quality.

Prioritize Continuous Teacher Development: Technical educators need ongoing professional training focused on CBE pedagogy, authentic assessment methods, and the integration of digital tools to facilitate student-centered learning

Align Curriculum with Industry Demands: Technical institutions must collaborate closely with industry stakeholders to co-design and regularly update curricula that reflect current labor market needs, technological advancements, and workplace realities.

Deepen Industry-Education Partnerships: Building strong and sustained partnerships with employers will create more opportunities for internships, apprenticeships, mentorship, and hands-on project work—essential components of effective CBE.

Ensure Sustainable Funding Models: Public-private partnerships, targeted grants, and corporate sponsorships should be pursued to improve funding for infrastructure, training, and resource development, especially in under-resourced institutions.

Upgrade Learning Infrastructure and Resources: Institutions should be equipped with modern tools, up-to-date training equipment, and digital platforms that promote practical learning, critical thinking, and problem-solving—hallmarks of CBE success.

Leverage Open Educational Resources (OER): Teachers should integrate OER, interactive learning platforms, and performance-based assessments into their teaching practice to create flexible and inclusive learning experiences.

Implement Structured Work-Integrated Learning (WIL): Internship and work-placement programs should be formally embedded within CBE curricula to ensure students gain real-world experience before graduation, improving job readiness.

Adopt Flexible Teacher Training Models: Teacher education and certification programs should offer flexible, blended formats to accommodate working educators, large class sizes, and schools in low-resource environments.

Enhance Institutional Support Systems: For CBE to thrive, schools must be supported with adequate administrative systems, digital infrastructure, and instructional support. Leadership commitment and institutional readiness are critical for long-term success

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