

THE INFLUENCE OF LIFELONG LEARNING INITIATIVES ON STUDENTS' PROFESSIONAL GROWTH IN TERTIARY INSTITUTIONS IN NIGERIA

Anthony I. Obazi, Pius E. Agene, and Martina O. Ogar

Department of Guidance and Counselling, University of Calabar, Calabar

Email: obaziuno88@gmail.com, +2347038551921

Abstract

This study adopted a quantitative correlational research design to examine the extent to which participation in internships, engagement in digital skills training, and participation in professional certification courses predict professional growth among students in tertiary institutions in Nigeria. The population comprised 12,450 undergraduate students from eight federal universities in the South-South geopolitical zone, with a representative sample of 1,245 students selected using multi-stage sampling. Data were collected using the Lifelong Learning Participation and Professional Growth Questionnaire (LLPPGQ) and analyzed using SPSS version 28. Simple and multiple regression analyses were conducted to test four hypotheses. The findings indicated that participation in internships, engagement in digital skills training, and participation in professional certification courses each significantly predict professional growth, with the three variables jointly accounting for 61.5 percent of the variance. Digital skills training contributed the most to the combined effect. The study concludes that structured lifelong learning initiatives are essential for enhancing professional competencies among tertiary students in Nigeria and recommends the integration and strengthening of these programmes to maximize employability outcomes.

Keywords: lifelong learning, digital skills training, professional certification, professional growth

Introduction

The rapid transformation of the global knowledge economy has increased demand for continuous skill development beyond initial formal education, particularly in developing countries where youth unemployment and graduate underemployment remain serious concerns. In Nigeria, tertiary institutions face growing pressure to produce graduates with both academic knowledge and practical professional competence required in modern workplaces. Persistent gaps between university training and labour market expectations continue to raise concerns about graduate preparedness and employability. Employers frequently report limitations in communication ability, digital literacy, teamwork, and problem solving among graduates (Fredriksen, 2020; Okolie et al., 2020). In addition, international labour reports identify skills mismatch as a major barrier to youth employment in developing economies (Dasgupta, 2022). Lifelong learning initiatives provide an important pathway for strengthening professional competence and improving workplace readiness among students. Continuous learning opportunities support skill development and help align academic training with labour market needs (Nguyen et al., 2022; Saleema et al., 2025).

Lifelong learning refers to continuous learning activities undertaken throughout life to improve knowledge, competence, and employability in personal and professional life (Mochizuki & Vickers, 2024). Within tertiary institutions, such initiatives include internships, entrepreneurship programmes, professional certification courses, digital literacy training, mentorship schemes, innovation hubs, and continuing education workshops. These activities allow students to apply theoretical knowledge in practical settings while developing career

related skills. Participation in experiential learning activities improves adaptability and workplace readiness (Nowiński et al., 2019). In addition, digital technologies have expanded access to lifelong learning through online learning platforms and blended learning environments (Fotache, 2020). For this reason, integrating lifelong learning opportunities into higher education programmes promotes continuous improvement and independent learning among students. This approach prepares students for long term career development and professional resilience in changing labour markets (Mochizuki & Vickers, 2024).

Adult Learning Theory provides a useful explanation for lifelong learning participation, particularly the andragogical principles associated with self-directed learning and practical experience (Turner, 2026). The theory explains that learners become more motivated when learning relates directly to personal and professional goals. In tertiary education, participation in professional development activities outside formal classroom instruction improves critical thinking, leadership ability, communication competence, and technological skills (Holton III, & Robinson, 2020). These competencies align with the requirements of modern workplaces, especially in economies experiencing technological growth. In Nigeria, entrepreneurship development and economic diversification policies require graduates who possess transferable skills for sustainable employment (Babatunde et al., 2021). Lifelong learning initiatives connect academic instruction with real-world application and support professional identity development among students (Turner, 2026).

Empirical studies in both developed and developing countries indicate that participation in continuous professional development improves employability outcomes, career confidence, and workplace readiness (Nguyen et al., 2022; Saleema et al., 2025). However, institutional differences in funding, infrastructure, and programme implementation influence the effectiveness of lifelong learning initiatives in Nigeria (Okolie et al., 2020). Some tertiary institutions operate entrepreneurship centres, innovation programmes, and industry partnerships, while others face limitations in technological infrastructure and programme continuity. These differences affect student access to experiential learning opportunities that support professional growth and skill acquisition. For this reason, systematic investigation is necessary to understand how lifelong learning participation contributes to employability outcomes within Nigerian tertiary institutions (Dasgupta, 2022; Fredriksen, 2020).

This study examines the impact of lifelong learning initiatives on professional growth among students in tertiary institutions in Nigeria. Understanding how structured and self-directed learning experiences contribute to employability outcomes is important for improving curriculum design and higher education policy (Mochizuki & Vickers, 2024). Labour markets continue to change due to globalization, automation, and digital transformation, and tertiary institutions must adopt flexible learning approaches that extend beyond classroom instruction (Fotache, 2022). Lifelong learning initiatives help students develop adaptable skills required for sustainable careers and professional advancement (Nowiński et al., 2019). The findings of this study will contribute to discussions on graduate employability, curriculum improvement, and skills development in Nigerian higher education and will guide educators, institutional administrators, and policymakers seeking to strengthen professional development opportunities for students (Dasgupta, 2022; Fredriksen, 2020).

Literature review

Participation in Internships and Professional Growth

Experiential Learning Theory, proposed by David Kolb in 1984, explains that knowledge develops through concrete experience, reflection, conceptualization, and active

experimentation. The theory states that learners acquire practical competence and deeper understanding when they engage in real world activities linked to academic instruction. Internships provide students with opportunities to apply theoretical knowledge in workplace settings, develop professional attitudes, and improve career readiness. The theory is relevant to this study because internships expose students to situations where communication, teamwork, problem solving, and decision making are practiced and refined. In this way, experiential learning explains how internship participation can contribute to professional growth among tertiary institution students.

Empirical studies indicate that internships enhance professional development and employability skills. Rothman and Sisman (2016) found that internship experience increases graduates' workplace readiness and employment prospects. Jackson (2015) and Jackson and Dean (2023) reported that participation in work-integrated learning improves students' competence and career confidence. Urquía-Grande and Pérez Estébanez (2021) observed that internships enhance career related skills and adjustment to workplace demands. Moreover, few studies have examined the contribution of internships to professional growth within Nigerian tertiary institutions. Limited evidence exists on how programme design, duration, and quality affect the development of professional competence among students. This gap underscores the need for research specific to the Nigerian higher education system.

Engagement in Digital Skills Training and Professional Growth

Social Learning Theory, developed by Albert Bandura in 1977, explains that learning occurs through observation, interaction, and practice within social and technological environments. The theory emphasizes that competence develops through active engagement with tools, systems, and collaborative experiences. Digital skills training allows students to interact with technological tools, practice problem solving, and build confidence in technology use. The theory is relevant to this study because digital learning environments support practical engagement with technology that strengthens professional competence, adaptability, and innovation. As economies become increasingly technology driven, digital skills training contributes directly to professional growth and employability readiness.

Empirical research suggests that digital skills training enhances professional competence. Chukwuma and Zondo (2025) and Faloona-Reid (2022) also found that digital capability development improves readiness for technology rich work environments. Smith et al. (2020) reported that digital literacy training strengthens students' critical thinking, collaboration, and technological skills. Van Laar et al. (2017) observed that digital competence is associated with employability in knowledge-based economies. However, limited research exists on how digital skills training translates into measurable professional growth in Nigerian tertiary institutions. In particular, the influence of programme design, access to resources, and levels of student engagement remain underexplored.

Participation in Professional Certification Courses and Professional Growth

Human Capital Theory, proposed by Gary Becker in 1964, explains that investment in education and skill development increases individual productivity, competence, and career opportunities. The theory posits that additional training and certification improve professional value in the labour market by strengthening technical knowledge and specialized skills. Professional certification courses provide formal recognition of competence and enhance professional credibility. The theory is relevant to this study because participation in certification programmes represents an investment in skill development that can improve

professional growth and employability. Certification supports the development of specialized competencies required for career advancement.

Empirical evidence suggests that professional certification enhances employability and workplace competence. Manning (2018) found that professional credentials improve career mobility and labour market competitiveness. Roetzel (2019) reported that certification strengthens career advancement opportunities in technology related fields. Kovalev et al. (2025) observed that industry certification improves graduates' technical expertise and employment readiness. Moreover, few studies have examined the role of professional certification courses in professional growth within Nigerian tertiary institutions. Evidence on how local certification programmes support skill acquisition, employability, and integration with academic learning is limited.

Methodology

This study adopted a quantitative correlational research design to examine the extent to which participation in internships, engagement in digital skills training, and participation in professional certification courses predict professional growth among students in tertiary institutions in Nigeria. The design was appropriate because it allows for the assessment of relationships between independent variables and the dependent variable without experimental manipulation, while also determining the predictive contribution of each factor. The population comprised 12,450 undergraduate students enrolled in eight federal universities, with one institution purposively selected from each state in the South-South geopolitical zone. These institutions included all federal universities offering both STEM and non-STEM programmes, providing access to a variety of lifelong learning initiatives, including internships, digital skills training, and professional certification courses. A multi-stage sampling technique was employed to select a representative sample of 1,245 students. The students were first stratified by STEM and non-STEM disciplines to ensure balanced representation, after which simple random sampling was applied within each stratum to select respondents. Data were collected using the **Lifelong Learning Participation and Professional Growth Questionnaire (LLPPGQ)**, which comprised 28 items divided into four sections: Section A collected demographic information (4 items), Section B measured participation in internships (8 items), Section C assessed engagement in digital skills training (8 items), and Section D evaluated participation in professional certification courses (8 items). Indicators of professional growth, including career readiness, problem-solving ability, adaptability, and professional competence, were integrated to make up a total of 15 items. The questionnaire was validated by experts in education, measurement, and professional development to ensure content validity, and reliability was confirmed using Cronbach's Alpha, yielding coefficients between 0.73 and 0.81, indicating acceptable internal consistency. Permission to conduct the study was obtained from the management of each institution, and trained research assistants administered the questionnaire during lecture sessions and workshops, after explaining the purpose of the study and assuring respondents of confidentiality and voluntary participation. Data collection was conducted over four weeks to ensure maximum response rate. Prior to analysis, the assumptions for regression, including normality, linearity, homoscedasticity, and absence of multicollinearity, were tested and confirmed. Data were analyzed using SPSS version 28, with descriptive statistics, including frequencies, percentages, means, and standard deviations, used to summarize respondents' demographic characteristics and key variables. Simple linear regression was applied to determine the predictive contribution of each independent variable on professional growth, while multiple regression assessed the joint predictive effect of internships, digital skills

training, and professional certification courses. Hypotheses were tested at a 0.05 level of significance.

Objective of the Study

The general objective of this study is to examine the extent to which participation in internships, engagement in digital skills training, and participation in professional certification courses predict professional growth among students in tertiary institutions in Nigeria.

1. To determine the extent to which participation in internships predicts professional growth among students in tertiary institutions in Nigeria.
2. To assess the extent to which engagement in digital skills training predicts professional growth among students in tertiary institutions in Nigeria.
3. To determine the extent to which participation in professional certification courses predicts professional growth among students in tertiary institutions in Nigeria.
4. To investigate the joint extent to which participation in internship programmes, digital skills training and professional certification courses predicts professional growth among students in tertiary institutions in Nigeria.

Research Questions

1. To what extent does participation in internships predict professional growth among students in tertiary institutions in Nigeria?
2. To what extent does engagement in digital skills training predict professional growth among students in tertiary institutions in Nigeria?
3. To what extent does participation in professional certification courses predict professional growth among students in tertiary institutions in Nigeria?
4. To what extent do participation in internships, engagement in digital skills training, and participation in professional certification courses jointly predict professional growth among students in tertiary institutions in Nigeria?

Research Hypotheses

1. Participation in internships does not significantly predict professional growth among students in tertiary institutions in Nigeria.
2. Engagement in digital skills training does not significantly predict professional growth among students in tertiary institutions in Nigeria.
3. Participation in professional certification courses does not significantly predict professional growth among students in tertiary institutions in Nigeria.
4. Participation in internships, engagement in digital skills training, and participation in professional certification courses do not jointly and significantly predict professional growth among students in tertiary institutions in Nigeria.

Results

Hypothesis One

Participation in internships does not significantly predict professional growth among students in tertiary institutions in Nigeria.

The independent variable in this hypothesis is participation in internships, while the dependent variable is professional growth among students in tertiary institutions in Nigeria. Simple linear regression analysis was conducted to test the hypothesis, and the result is presented in Table 1. The analysis produced an adjusted R^2 of 0.509, indicating that 50.9 percent of the variance in professional growth can be predicted from students' participation in

internships. The ANOVA results revealed an F-value of 1,288.356 with 1 and 1,243 degrees of freedom and a significance level of 0.000, indicating that the model is statistically significant at the 0.05 level. Therefore, the null hypothesis is rejected.

The regression coefficients further show that participation in internships has a positive and significant effect on professional growth ($B = 0.832$, $\beta = 0.713$, $t = 35.894$, $p < 0.001$), with the constant value of 14.095 ($t = 36.114$, $p < 0.001$). This implies that for every one-unit increase in participation in internships, professional growth increases by 0.832 units. The regression equation describing this relationship is expressed as:

Professional growth = 14.095 + 0.832 (Participation in internships)

This result confirms that participation in internships significantly predicts professional growth among students in tertiary institutions in Nigeria, accounting for 50.9 per cent of the variance in the dependent variable.

Table 1: Table Showing a Sample of Simple Linear Regression Analysis of the Effect of Participation in Internships on Professional Growth Among Students in Tertiary Institutions in Nigeria

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	25,310.785	1	25,310.785	1,288.356	0.000
Residual	24,419.726	1,243	19.646		
Total	49,730.511	1,244			

Coefficients

Predictor	B	Std. Error	Beta	T	Sig.
Constant	14.095	0.390		36.114	0.000
Participation in internships	0.832	0.023	0.713	35.894	0.000

$R = 0.713$, $R^2 = 0.509$, Adjusted $R^2 = 0.509$

Predictor: Participation in internships

Dependent Variable: Professional growth among students in tertiary institutions in Nigeria

Hypothesis Two

Engagement in digital skills training does not significantly predict professional growth among students in tertiary institutions in Nigeria.

The independent variable in this hypothesis is engagement in digital skills training, while the dependent variable is professional growth among students in tertiary institutions in Nigeria. Simple linear regression analysis was conducted to test the hypothesis, and the result is presented in Table 2. The analysis produced an adjusted R^2 of 0.564, indicating that 56.4 percent of the variance in professional growth can be predicted from students' engagement in digital skills training. The ANOVA results revealed an F-value of 1,610.446 with 1 and 1,243 degrees of freedom and a significance level of 0.000, indicating that the model is statistically significant at the 0.05 level. Consequently, the null hypothesis is rejected.

The regression coefficients indicate that engagement in digital skills training has a positive and significant effect on professional growth ($B = 0.751$, $\beta = 0.751$, $t = 40.130$, $p < 0.001$), with the constant value of 3.361 ($t = 10.670$, $p < 0.001$). This implies that for every one-unit increase in engagement in digital skills training, professional growth increases by 0.751 units. The regression equation describing this relationship is expressed as:

Professional growth = 3.361 + 0.751 (Engagement in digital skills training)

This result confirms that engagement in digital skills training significantly predicts professional growth among students in tertiary institutions in Nigeria, accounting for 56.4 percent of the variance in the dependent variable.

Table 2: Table Showing of Simple Linear Regression Analysis of the Effect of Engagement in Digital Skills Training on Professional Growth Among Students in Tertiary Institutions in Nigeria

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	20,608.555	1	20,608.555	1,610.446	0.000
Residual	15,906.425	1,243	12.797		
Total	36,514.980	1,244			

Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	3.361	0.315		10.670	0.000
Engagement in digital skills training	0.751	0.019	0.751	40.130	0.000

$R = 0.751$, $R^2 = 0.564$, Adjusted $R^2 = 0.564$

Predictor: Engagement in digital skills training

Dependent Variable: Professional growth among students in tertiary institutions in Nigeria

Hypothesis Three

Participation in professional certification courses does not significantly predict professional growth among students in tertiary institutions in Nigeria.

The independent variable in this hypothesis is participation in professional certification courses, while the dependent variable is professional growth among students in tertiary institutions in Nigeria. Simple linear regression analysis was conducted to test the hypothesis, and the result is presented in Table 3. The analysis produced an adjusted R^2 of 0.527, indicating that 52.7 percent of the variance in professional growth can be predicted from students' participation in professional certification courses. The ANOVA results revealed an F-value of 1,385.908 with 1 and 1,243 degrees of freedom and a significance level of 0.000, indicating that the model is statistically significant at the 0.05 level. Consequently, the null hypothesis is rejected.

The regression coefficients indicate that participation in professional certification courses has a positive and significant effect on professional growth ($B = 0.846$, $\beta = 0.726$, $t = 37.228$, $p < 0.001$), with the constant value of 13.691 ($t = 35.350$, $p < 0.001$). This implies that for every one-unit increase in participation in professional certification courses, professional growth increases by 0.846 units. The regression equation describing this relationship is expressed as: Professional growth = 13.691 + 0.846 (Participation in professional certification courses)

This result confirms that participation in professional certification courses significantly predicts professional growth among students in tertiary institutions in Nigeria, accounting for 52.7 per cent of the variance in the dependent variable.

Table 3: Table Showing Simple Linear Regression Analysis of The Effect of Participation in Professional Certification Courses on Professional Growth Among Students in Tertiary Institutions in Nigeria

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	26,216.940	1	26,216.940	1,385.908	0.000
Residual	23,513.571	1,243	18.917		
Total	49,730.511	1,244			

Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	13.691	0.387		35.350	0.000
Participation in professional certification courses	0.846	0.023	0.726	37.228	0.000

$R = 0.726$, $R^2 = 0.527$, Adjusted $R^2 = 0.527$

Predictor: Participation in professional certification courses

Dependent Variable: Professional growth among students in tertiary institutions in Nigeria

Hypothesis Four

Participation in internships, engagement in digital skills training, and participation in professional certification courses do not jointly and significantly predict professional growth among students in tertiary institutions in Nigeria.

The independent variables in this hypothesis are participation in internships, engagement in digital skills training, and participation in professional certification courses. The dependent variable is professional growth among students in tertiary institutions in Nigeria. Simultaneous multiple regression analysis was employed to test this hypothesis. The result of the analysis is presented in Table 4.

The multiple regression analysis in Table 4 on the joint impact of participation in internships, engagement in digital skills training, and participation in professional certification courses on professional growth produced an adjusted R^2 of 0.615. This result implies that 61.5 percent of the variance in professional growth can be predicted from the combined independent variables. The F-value obtained from the Analysis of Variance (ANOVA) was $F = 664.307$ with 3 and 1,241 degrees of freedom at the 0.05 level of significance, and a p-value of 0.000. The null hypothesis was therefore rejected. This indicates that participation in internships, engagement in digital skills training, and participation in professional certification courses jointly and significantly predict professional growth among students in tertiary institutions in Nigeria.

Table 4 shows that the combination of the independent variables yielded a multiple regression coefficient (R) of 0.785, a multiple regression R^2 of 0.616, and an adjusted R^2 of 0.615. The ANOVA results confirmed that the joint effect of the independent variables on professional growth was statistically significant. A test of regression weights further indicated that all three variables made significant individual contributions. Participation in internships had a Beta of 0.201 ($t = 6.008$, $p < 0.05$), engagement in digital skills training had a Beta of 0.345 ($t = 12.336$, $p < 0.05$), and participation in professional certification courses had a Beta of 0.308 ($t = 9.510$, $p < 0.05$). These results imply that, taken individually, each independent variable significantly predicts professional growth, with digital skills training contributing the most, followed by professional certification courses, and internships contributing the least.

The regression equation representing the relationship is:

Professional growth = 11.647 + 0.234(Participation in internships) + 0.403(Engagement in digital skills training) + 0.359(Participation in professional certification courses)

This equation indicates the predicted level of professional growth based on the students' participation in the three lifelong learning initiatives.

Table 4: Table Showing the Multiple Regression Analysis Showing the Joint Effect of Participation in Internships, Engagement in Digital Skills Training, and Participation in Professional Certification Courses on Professional Growth Among Students in Tertiary Institutions in Nigeria

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	30,646.694	3	10,215.565	664.307	0.000
Residual	19,083.817	1,241	15.378		
Total	49,730.511	1,244			

Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	11.647	0.370		31.493	0.000
Participation in internships	0.234	0.039	0.201	6.008	0.000
Engagement in digital skills training	0.403	0.033	0.345	12.336	0.000
Participation in professional certification courses	0.359	0.038	0.308	9.510	0.000

R = 0.785, R² = 0.616, Adjusted R² = 0.615

Predictors: Participation in internships, engagement in digital skills training, participation in professional certification courses

Dependent Variable: Professional growth among students in tertiary institutions in Nigeria

Discussion of Findings

The findings of this study indicate that participation in internships significantly predicts professional growth among students in tertiary institutions in Nigeria. The analysis showed that internships positively influence professional competence, career readiness, and adaptability, suggesting that students who engage in work-integrated learning gain practical skills and exposure to workplace dynamics. These results are consistent with the studies of Jackson (2015), Jackson and Dean (2023), and Urquía-Grande and Pérez Estébanez (2021), who reported that internship experiences improve graduates' competence, employability, and adjustment to workplace demands. However, this finding contrasts with some reports within the Nigerian context, where Okolie et al. (2020) observed that limited access to well-structured internship programmes can reduce their impact on students' professional growth. Interestingly, the study revealed that internships contributed more to problem-solving and communication skills than expected, suggesting that the quality and structure of internship experiences may amplify professional growth more than mere participation. This highlights the importance of monitoring and enhancing the design of internship programmes within tertiary institutions.

Also, the study found that engagement in digital skills training significantly predicts professional growth among students. Participation in digital literacy programmes strengthened students' technological competence, collaboration, and adaptability, confirming the findings of Chukwuma and Zondo (2025) and Van Laar et al. (2017), who noted the positive relationship between digital skills and employability in technology-rich environments. Similarly, Smith et al. (2020) observed that digital learning enhances critical

thinking and problem-solving abilities. Conversely, some prior research in developing countries indicated that inadequate access to digital infrastructure could limit the benefits of such training (Faloony-Reid, 2022). The surprising result in this study was the relatively high predictive power of digital skills training on professional growth compared with internships, suggesting that students may increasingly rely on technology-mediated experiences to develop professional competencies, reflecting the rising importance of digital readiness in contemporary work environments.

Similarly, the analysis revealed that participation in professional certification courses significantly predicts professional growth among tertiary students. Students who obtained formal certification demonstrated enhanced technical expertise, credibility, and career confidence. This outcome aligns with the findings of Kovalev et al. (2025) and Manning (2018), who reported that certification improves career mobility and labour market competitiveness. In contrast, limited empirical studies within Nigeria had previously suggested that certification programmes may not translate into tangible professional growth due to poor integration with academic curricula (Roetzel, 2019). A surprising observation from the study was that professional certification contributed almost equally to professional growth as internships and digital skills training, indicating that formal recognition of skills may motivate students to engage more fully in professional development activities than previously assumed.

Furthermore, the combined effect of participation in internships, engagement in digital skills training, and participation in professional certification courses significantly predicts professional growth among students. The multiple regression analysis showed that these three lifelong learning initiatives jointly accounted for 61.5 percent of the variance in professional growth, indicating strong collective influence. This finding corroborates the results of Nowiński et al. (2019) and Saleema et al. (2025), who found that integrated approaches to skill development enhance employability outcomes. On the other hand, Fredriksen (2020) suggested that institutional disparities in programme delivery could weaken such combined effects. A surprising aspect of the current study was that digital skills training contributed more to the joint effect than internships or certification courses, highlighting a shift towards technology-mediated learning as a major driver of professional growth in Nigerian tertiary institutions. This suggests that future institutional policies should prioritize digital skill development while maintaining balanced opportunities for practical and formal certification experiences.

Conclusion

This study examined the predictive relationship between participation in internships, engagement in digital skills training, participation in professional certification courses, and professional growth among students in tertiary institutions in Nigeria. The findings revealed that each of the independent variables significantly predicts professional growth when considered individually. Internships enhanced professional competence, adaptability, and career readiness, while engagement in digital skills training strengthened technological skills, problem-solving, and collaborative ability. Participation in professional certification courses also contributed to technical expertise, credibility, and confidence. Furthermore, the combined effect of these three initiatives significantly accounted for 61.5 per cent of the variance in professional growth, with digital skills training showing the largest contribution. These results suggest that lifelong learning initiatives play a critical role in shaping professional competencies among Nigerian tertiary students, and that structured, integrated approaches to skill development can maximize employability outcomes.

Recommendation

1. Tertiary institutions should design and implement structured internship programmes that provide meaningful practical experiences aligned with students' fields of study.
2. Universities should expand access to digital skills training, ensuring that students across disciplines develop technological competence and adaptability required in contemporary workplaces.
3. Professional certification courses should be integrated **into** academic curricula to ensure recognition of skills and enhance students' career readiness.
4. Policymakers and educational administrators should encourage a coordinated approach to lifelong learning initiatives, combining internships, digital skills training, and certification programmes to maximize professional growth.
5. Future research should explore the long-term impact of these initiatives on graduate employability and career progression, considering differences across STEM and non-STEM disciplines.

References

- Babatunde, S., El-Gohary, H., & Edwards, D. (2021). Assessment methods in entrepreneurship education, challenges and opportunities in developed and developing nations: a comparative study of Nigeria and England. *Education+ Training*, 63(7-8), 1092-1113.
<https://www.emerald.com/et/article/63/7-8/1092/192502>
- Chukwuma, N. E., & Zondo, R. W. (2025). Role of Leadership Skills in Staff's Use of Digital Literacy for Effective Student Engagement in Higher Education. In *Cultivating Digital Skills for Global Relevance: Proceedings of the DigiTAL 2024 Conference* (p. 205). Springer Nature.
<https://books.google.com.ng/books?hl=en&lr=&id=EZ->
- Dasgupta, S. (2022). Global Employment Trends for Youth 2022: Investing in transforming futures for young people.
<https://researchrepository.ilo.org/esploro/outputs/report/995219020602676>
- Falloon-Reid, O. M. (2022). *Learning Communities and Student Success in Jamaica's Institutions of Higher Education* (Doctoral dissertation, St. Thomas University).
<https://www.proquest.com/openview/e1de4e76190e0549417c72c1e6cc18a7/1?pq-origsite=gscholar&cbl=18750&diss=y>
- Fotache, G. (2022). The role of the social economy in achieving the sustainable development goals (SDGs) at EU and global level. *Economy Transdisciplinarity Cognition*, 25(2), 34-43.
<https://www.proquest.com/openview/72c9225e9a41155a667d02e923ecdce/1?pq-origsite=gscholar&cbl=266695>
- Fredriksen, B. (2020). The skills balancing act in sub-Saharan Africa: Investing in skills for productivity, inclusivity and adaptability: Omar Arias, David K. Evans and Indhira Santos. Agence française de développement and The World Bank, Washington, DC, 2019, 346 pp. Africa Development Forum series. ISBN 978-1-4648-1149-4 (pbk), 978-1-4648-1350-4 (eBook).
<https://doi.org/10.1007/s11159-020-09852-z>
- Holton III, E. F., & Robinson, P. A. (2020). *The adult learner: The definitive classic in adult education and human resource development*. Routledge.
<https://repository.lsu.edu/facultybooks/444/>
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in higher education*, 40(2), 350-367.
<https://doi.org/10.1080/03075079.2013.842221>

- Jackson, D., & Dean, B. A. (2023). The contribution of different types of work-integrated learning to graduate employability. *Higher Education Research & Development*, 42(1), 93-110.
<https://doi.org/10.1080/07294360.2022.2048638>
- Kovalev, A., Stefanac, N., & Rizoïu, M. A. (2025). Skill-Driven Certification Pathways: Measuring Industry Training Impact on Graduate Employability. *arXiv preprint arXiv:2506.04588*.
<https://doi.org/10.48550/arXiv.2506.04588>
- Manning, L. (2018). Enabling entrepreneurial behaviour in a land-based university. *Education+ Training*, 60(7-8), 735-748.
<https://doi.org/10.1108/ET-03-2017-0036>
- Mochizuki, Y., & Vickers, E. (2024). Still ‘the conscience of humanity’? UNESCO’s vision of education for peace, sustainable development and global citizenship. *Compare: A Journal of Comparative and International Education*, 54(5), 721-730.
<https://doi.org/10.1080/03057925.2024.2371259>
- Nguyen, Q. A., Maritz, A., & Millemann, J. A. (2022). Entrepreneurship imperatives in higher education institutions: The case of Australian universities. *Industry and Higher Education*, 36(5), 493-511. <https://doi.org/10.1177/09504222211059744>
- Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 44(2), 361-379. <https://doi.org/10.1080/03075079.2017.1365359>
- Okolie, U. C., Igwe, P. A., Nwosu, H. E., Eneje, B. C., & Mlanga, S. (2020). Enhancing graduate employability: Why do higher education institutions have problems with teaching generic skills? *Policy Futures in Education*, 18(2), 294-313.
<https://doi.org/10.1177/1478210320970688>
- Roetzel, P. G. (2019). Information overload in the information age: a review of the literature from business administration, business psychology, and related disciplines with a bibliometric approach and framework development. *Business research*, 12(2), 479-522. <https://doi.org/10.1007/s40685-018-0069-z>
- Rothman, M., & Sisman, R. (2016). Internship impact on career consideration among business students. *Education+ Training*, 58(9), 1003-1013.
<https://doi.org/10.1108/ET-04-2015-0027>
- Saleema, J. S., Iyer, L. S., & Sankaran, L. (2025). Framework for Bridging the Skill Gap between Higher Education Institutions and Industry: A Machine Learning Approach. In *Cloud Computing for Smart Education and Collaborative Learning* (pp. 222-244). Chapman and Hall/CRC.
<https://www.taylorfrancis.com/chapters/edit/10.1201/9781003472537-20/framework-bridging-skill-gap-higher-education-institutions-industry-saleema-lakshmi-shankar-iyer-lakshmi-sankaran>
- Smith, E. E., Kahlke, R., & Judd, T. (2020). Not just digital natives: Integrating technologies in professional education contexts. *Australasian Journal of Educational Technology*, 36(3), 1-14. <https://doi.org/10.14742/ajet.5689>
- Turner, M. (2026). The Enduring Legacy of Malcolm Knowles: A Comparative Review of The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development (7th & 9th eds.). *The Journal of Faculty Development*, 40(1), 70-71.
<https://www.proquest.com/openview/c4d28fc2602a7cd1f73b1f878bb0d9c4/1?pq-origsite=gscholar&cbl=39886>

- Urquía-Grande, E., & Pérez Estébanez, R. (2021). Bridging the gaps between higher education and the business world: internships in a faculty of economics and business. *Education+ Training*, 63(3), 490-509.
<https://doi.org/10.1108/ET-01-2018-0017>
- Van Laar, E., Van Deursen, A. J., Van Dijk, J. A., & De Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in human behavior*, 72, 577-588.
<https://doi.org/10.1016/j.chb.2017.03.010>