

Integrating Entrepreneurial Skills in the Nigerian Teacher Education Programmes to Foster Edupreneurship

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Abstract

This theoretical paper clarifies the concept of edupreneurship, its relevance to teacher education, and developed a comprehensive framework outlining how edupreneurship can be integrated into teacher education programmes. It delves into how teacher education programmes can incorporate entrepreneurial skills and mindsets for educators to become edupreneurs. The paper proposes a framework with six major components (curriculum development, mentorship and networking, policy and support systems, practical training, technology integration, and impact and outcomes) for integrating edupreneurial skills in the Nigerian teacher education programmes. Finally, it proposes methods for evaluating and assessing the effectiveness of edupreneurship integration in teacher education programmes. The paper concludes by emphasising that all levels of Nigerian teacher education programmes need to be reimaged, reconfigured, reshaped, and reformed by fusing theoretical and practical hands-on skills for teacher educators and student teachers to develop entrepreneurial competencies and practices.

Keywords: Entrepreneurial skills, Teacher education, Effectiveness of edupreneurship integration, Framework for integrating entrepreneurial skills

Introduction

The Nigerian higher education curriculum has been criticised for its inadequacy to cater for the needs of 21st-century learners. The curriculum is deemed outdated and not aligned with 21st-century needs, leading to high unemployment rates among graduates, which had been blamed on the nation's colonial roots and subsequent inadequate reforms for 64 years since independence. Because the curriculum does not include enough practical skills, graduates have difficulty finding employment. Graduates from Nigerian higher educational institutions lack essential 21st-century skills like problem-solving, critical thinking, communication literacy, collaboration, and creativity skills, among others. There is an urgent need to overhaul the curriculum to include practical, modern content that prepares students for the real world. Prioritising the development of human capital and high-quality education is essential for the progress of a nation (Toluwalashe et al., 2022).

Several reforms had been ineffective in ensuring an improved higher educational system. For instance, the Nigerian Educational Reform Act of 2007, laudable with excellent conceptual ideas and provisions, envisaged wide-ranging reforms for the country's education. The Act incorporated skill components and development of the 21st century ability which have never been properly implemented as predicted by (Yusuf & Yusuf 2009).

Teacher education refers to the formal pre-service or in-service training designed to equip teachers with the knowledge, behaviours, skills and attitudes required for teaching to meet the diverse needs of their students and to deliver high-quality education. It consists of understanding subject matter subject content deeply and comprehensively, mastering teaching methods and strategies to effectively deliver content, and developing the right mindset and professional behaviours necessary for effective instructional delivery. Teacher education is meant to develop the cognitive, social, and moral domains of a teacher (UNESCO, 2024).

The Nigerian Core Curriculum Minimum Academic Standards (CCMAS) for education approved in December 2022 provides a standardised framework for educational programmes across Nigerian universities, ensuring consistency in academic quality. Unlike the previous Nigerian Basic Minimum Academic Standard (BMAS), while maintaining core standards, CCMAS allows institutions to innovate and adapt their curricula to meet specific needs and contexts. It encourages an interdisciplinary approach to provide a holistic education and emphasizes competency-based education, to foster the skills and knowledge students need to succeed in their fields. The CCMAS although designed to be globally relevant, through alignment with international educational standards and practices, is tailored to address local educational needs and challenges, making it relevant to the Nigerian context (National Universities Commission (NUC, 2023).

The high rate of unemployment among graduates from higher institutions in Nigeria and its attendant consequences of the increase in criminal activities and youth restfulness have assumed a frightening dimension. Higher educational institutions have been challenged to provide graduates with knowledge beyond the possession of academic qualifications alone. To address this problem, Nigerian higher institutions have introduced entrepreneurship studies, albeit as general courses in their curriculum, mostly without a clear framework. Edupreneurship in teacher education is crucial in addressing the evolving challenges faced by educators. Teacher educators and teacher education administrators need to provide leadership in the implementation of the edupreneurship programme.

In essence, integrating edupreneurship in teacher education can enhance adaptability, social consciousness, and leadership skills among educators to effectively meet the demands of modern educational landscapes (King, 2022).

Therefore, this paper proposes a conceptual framework for Edupreneurship in teacher education. A structured Edupreneurship framework for teacher education programmes can ensure systematic incorporation of the benefits to ensure that future educators are well-prepared to foster entrepreneurial mindsets in their classrooms. Such mindsets include critical thinking, innovation and creativity, practical skills development, lifelong learning, resilience and risks, economic opportunities, collaboration, and alignment with modern educational goals of preparing students for the 21st-century workforce demands (Haara & Jenssen, 2019).

This paper aims to create a robust theoretical foundation for integrating edupreneurship into teacher education, ultimately preparing serving and future educators to be innovative and entrepreneurial in their teaching practices. It challenges the existing theoretical and superficial practical teacher education that do not have the potentials to develop entrepreneurial mindsets and skills in educators.

Framework for Edupreneurship in Teacher Education

Fostering edupreneurship plays a crucial role in the development of entrepreneurial skills in student teachers. Edupreneurship will develop in them self-awareness abilities, thinking abilities, social abilities, academic abilities, occupational abilities, and entrepreneurship education. By integrating edupreneurship components into educational programmes, student teachers are equipped with communication, problem-solving, critical thinking, creativity, and decision-making skills. Through a combination of edupreneurship components, student teachers would acquire theoretical knowledge and also apply it practically thereby developing their entrepreneurial abilities to face the challenges of the contemporary global job market (Muthmainnah et al., 2022). This framework for integrating entrepreneurial skills in Nigerian teacher education programmes contains six major components with sub-components and sub-subcomponents, dovetailing to 36 sub-subcomponents. The six components are Curriculum Development; Practical Training; Mentorship and Networking; Technology Integration; Policy and Support Systems; and Impact and Outcomes. Each of the components has three sub-components, with each of the three sub-

components also having two components as depicted in Figure 1. These components, their sub-components, and the sub-divisions of the sub-components are further discussed after the Figure.

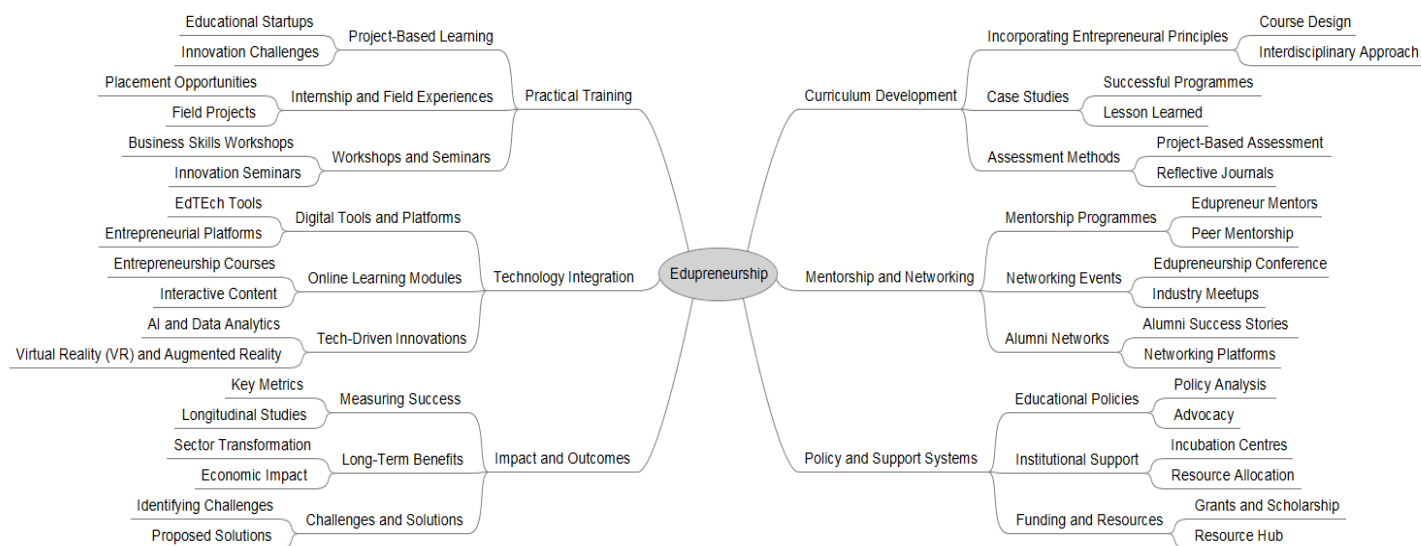


Figure 1: Elements of the Proposed Edupreneurship Programme

Curriculum Development

Curriculum development in edupreneurship plays a crucial role in fostering entrepreneurial talents and skills among student teachers. By incorporating entrepreneurial principles into course design through innovative and interdisciplinary approaches (Wei & Xiaoxing, 2023).

Incorporating Entrepreneurial Principles: Deals with incorporating entrepreneurial principles into teacher education programmes. It covers integrating the entrepreneurship mindset, skills, and practices into the training and development of future educators. It has two sub-components: course design and interdisciplinary approach (Ho, 2024).

Course Design: Design of courses that include real-world projects where students can apply entrepreneurial principles that cover business planning, financial literacy, marketing, innovation, developing educational products, and working on community-based projects, among others.

Interdisciplinary Approach: Deals with the design of cross-disciplinary courses that blend education with other disciplines like business, technology, and design like a course on “Social Studies and Entrepreneurship” covering both pedagogical theories and business models.

Case Studies: This deals with incorporating successful edupreneurs and educational startups case studies to help student teachers understand practical applications and challenges in the field. These are real examples of programmes successful integration of entrepreneurship in education (Ho, 2024).

Successful Programmes: student teachers can analyse programmes that have effectively integrated entrepreneurship. Students can explore how these edupreneurs have leveraged their expertise and entrepreneurial spirit to create innovative educational solutions with global or national impacts.

Lessons Learned: Identification of the key takeaways and best practices from these case studies. Successful edupreneurs offer valuable lessons that can inspire and guide others in the field of educational entrepreneurship. These edupreneurs have utilised online platforms, social media, and innovative teaching methods to reach and impact a global audience.

Assessment Methods: Deal with evaluating entrepreneurial skills in teacher candidates through the use of projects and real-world challenges to assess entrepreneurial skills and encourage teacher candidates to reflect on their entrepreneurial journey and learning.

Project-Based Assessments: Real-world projects involving the design of projects that require students to solve real-world education and entrepreneurship problems. Mentorship and feedback

provide access to mentors from the edupreneurship field who can offer guidance and feedback throughout the project for student teachers to refine their ideas and improve their projects. (Haara & Jenssen, 2019).

Reflective Journals: These might include regular entries where student teachers are encouraged to maintain regular journal entries reflecting on their learning experiences, challenges, and insights gained from their projects for continuous self-assessment and personal growth (Haara & Jenssen, 2019).

Practical Training

Practical training is a core aspect of teacher education programmes and plays a crucial role in enhancing the quality of teachers and their performance. Through practical training in teacher education programmes, countries and institutions can nurture innovation, creativity, and professional competence among pre-service and serving teachers (Nielsen, 2010).

Project-Based Learning: Project-based learning deals with designing projects where teacher candidates develop educational products or services. Project-Based Learning (PBL) has been proven effective in promoting entrepreneurship in teacher education programmes. Furthermore, the dynamics of applying PBL in creating startups demonstrate how students can successfully launch businesses through hands-on project experiences (Santoso et al., 2023).

Educational Startups: Student teachers create mock educational startups, developing business plans and prototypes. Project-based entrepreneurial learning (PBEL) has shown significant potential in educational startups within teacher education programmes, fostering entrepreneurial competencies and STEM skill development (DeCoito & Briona, 2023; Santoso et al., 2023).

Innovation Challenges: Entails the organisation of hackathons or innovation challenges to focus on educational solutions. Innovation challenges and hackathons can serve as effective project-based learning tools, fostering creativity and skill development among educators and students. These approaches encourage interdisciplinary collaboration, problem-solving, and the integration of modern technologies into educational practices, enhancing the learning experience and promoting practical skills (DeCoito & Briona, 2023; Santoso et al., 2023).

Internships and Field Experiences: These provide opportunities for hands-on experience in educational startups or innovative schools. Internships and field experiences provide practical training in teacher education, providing student teachers with hands-on experience and a deeper understanding of the teaching profession (Breisacher, 2024; Olaniran & Perumal, 2021).

Placement Opportunities: Placement opportunities in teacher education can be instrumental in developing edupreneurship by exposing student teachers to practical experiences, innovative teaching methods, and real-world challenges. During placements, teacher candidates can observe and participate in innovative teaching and management practices (Breisacher, 2024; Olaniran & Perumal, 2021).

Field Projects: Field projects can be an excellent way to foster an edupreneurship mindset among student teachers by allowing them to engage with real-world problems, encouraging them to think creatively and develop practical solutions. Field projects include developing educational apps that address specific learning needs or challenges, and projects focused on integrating sustainability into educational practices and curricula. (DeCoito & Briona, 2023).

Workshops and Seminars: Workshops and seminars are formal and short-term frequently used professional development activities designed to enhance the skills, knowledge, and effectiveness of student teachers (pre-service and in-service) activities. Workshops are interactive sessions focusing on specific topics or skills and often include hands-on activities, group discussions, and practical exercises (De Grave et al., 2014).

Business Skills Workshops: Business skills workshops can focus on essential business skills that are crucial for edupreneurs dealing with financial literacy with student teachers learning how to manage budgets, understand financial statements, and make informed financial decisions. It covers business planning dealing with creating business plans, setting goals, and developing strategies for educational ventures (De Grave et al., 2014).

Innovation Seminars: Invitation of guest speakers from the edupreneurship field to share their experiences. Innovation seminars can inspire creativity and innovative thinking among student teachers dealing with design thinking to help students develop user-centred educational solutions. Also, idea pitching sessions where student teachers can pitch their innovative ideas and receive feedback from peers and mentors (Breisacher, 2024).

Mentorship and Networking

Mentorship and networking are important in developing student teachers' edupreneurial attitudes. It ensures guidance and support as experienced mentors provide valuable insights to help student teachers navigate challenges and make informed decisions. Networking allows student teachers to access a wealth of resources, like teaching materials, funding opportunities, and professional development programmes. Networking exposes student teachers to diverse

perspectives on different teaching methods, entrepreneurial strategies, and educational technologies (Breisacher, 2024; DeCoito & Briona, 2023).

Mentorship Programmes: Experienced edupreneur mentors with a passion for teaching, edupreneurship, and mentoring can provide student mentees with training on effective educational entrepreneurship. Student teachers who have demonstrated leadership with entrepreneurial potential can be chosen to mentor others after exposure to training on mentorship skills, like communication, problem-solving, and empathy (Alemdar et al., 2022; Bowman, 2014).

Edupreneur Mentors: Pair teacher candidates with successful edupreneurs for guidance and support. This can be through workshops and seminars, assisting mentees in developing business plans for their educational ventures and creating innovation labs where mentees can experiment with new teaching methods, and technologies (Alemdar et al., 2022; Bowman, 2014).

Peer Mentorship: Encourage peer-to-peer mentorship within the programme. This will involve scheduling regular meetings for mentees to discuss progress and challenges with their peer mentors. Peer mentors can work with their mentees on projects to foster a collaborative learning environment (Alemdar et al., 2022; Bowman, 2014).

Networking Events: Networking events allow student teachers to collaborate and share resources, connect with peers, exchange ideas, and engage in meaningful discussions. Networking events connect educators, student teachers, edupreneurs, and other stakeholders in the education sector for professional development, collaboration, and the exchange of ideas (Alemdar et al., 2022; Poth, 2023).

Edupreneurship Conferences: Teacher education edupreneurship conferences focus on integrating entrepreneurial principles into teaching practices and preparing students teachers and educators to engage in educational innovation. Involves activities like workshops, keynote speeches, sessions on creative teaching methods, integrating entrepreneurship into the curriculum, and networking sessions (Alemdar et al., 2022; Olaniran & Perumal, 2021).

Industry Meetups: Facilitate meetups with industry professionals and potential investors with local meetups where student teachers can interact with successful edupreneurs, share ideas, and collaborate on projects. Together educators, student teachers, and edupreneurs can exchange ideas, share resources, and support each other in entrepreneurial activities (Breisacher, 2024).

Alumni Networks: Alumni networks provide spaces for educators to connect, exchange ideas, share valuable resources, engage in meaningful discussions, and provide mentorship and

networking opportunities. Alumni mentorship programmes might include mentor matching where student teachers are paired with alumni who have experience in edupreneurship and regular meetings where alumni can share their experiences, offer advice, and help student teachers develop their entrepreneurial skills (Breisacher, 2024).

Alumni Success Stories: Alumni success stories for edupreneurship in teacher education involve former students who have successfully integrated entrepreneurial principles into their educational careers sharing their stories with student teachers. Through alumni panels and webinars alumni can share their entrepreneurial journeys, discuss challenges, and provide tips for success (Breisacher, 2024).

Networking Platforms: Creation of online platforms for alumni to ensure connection, sharing of experiences, and collaboration between alumni and student teachers. The alumni network can also provide access to valuable resources such as funding opportunities, business tools, and professional networks (Breisacher, 2024).

Technology Integration

Integrating technology into teacher education programmes can prepare future educators to develop an edupreneurial mindset and foster entrepreneurial skills in their students, thereby ensuring a more innovative and adaptable education system. The Technological Pedagogical Content Knowledge (TPACK) framework helps educators blend technology with pedagogy and content knowledge, by making it easier to design and deliver lessons that incorporate entrepreneurial skills is often used to guide technology integration in teacher education (Keane, 2015; Kurt, 2019; Yusuf et al., 2021).

Digital Tools and Platforms: Technological tools will not only enhance the learning experience but also equip student teachers with the skills to leverage technology in their teaching practices effectively. Technology integration skills can foster edupreneurship in student teachers to use learning management system tools to create personalised learning environments; use online course platforms to create and sell online courses; and use collaborative tools to facilitate communication and collaboration through chat, video meetings, and file sharing (Breisacher, 2024; Edupreneur Staff, 2023; Žagar et al., 2024).

EdTech Tools: Digital tools and platforms include learning management systems (LMS), online course platforms, collaboration tools, content creation tools, assessment tools, social learning

platforms, project management tools, and audio and video creation tools (Breisacher, 2024; Keane, 2015; Žagar et al., 2024).

Entrepreneurial Platforms: Entrepreneurial platforms play a significant role in edupreneurship by providing tools and resources for educators to create, manage, and scale their educational ventures. Notable platforms can be used for designing, creating, marketing, and selling interactive and engaging online courses, and project funding and validation (Edupreneur Staff, 2023; Žagar et al., 2024).

Online Learning Modules: This involves using the needed steps and utilising the right tools to create interactive and engaging online courses on entrepreneurship for educators. Creating online courses on edupreneurship for educators involves defining the course objective, outcomes, and target audience; developing the course structure and content; selecting a platform; content creation; engagement and interaction; assessment and feedback; marketing and outreach; and continuous improvement (Schumacher & Eimler, 2023).

Entrepreneurship Courses: Online entrepreneurship education is crucial for developing employability and entrepreneurial skills among student teachers. This will involve diverse teaching methods, integration across subjects, use of technology, professional development, collaboration and networking, assessment and feedback, and having a supportive environment (European Union, 2014)

Interactive Content: Interactive content is a powerful tool in teacher education for fostering edupreneurship. This can be ensured through simulations and role-playing using business simulation tools and role-playing games, project-based learning using collaborative project tools, and digital storytelling platforms (DeCoito & Briona, 2023).

Tech-Driven Innovations: Integrating tech-driven Innovative technologies, teacher education programmes can create dynamic and engaging learning environments to foster entrepreneurial skills and mindsets in student teachers. Exploring how these technologies can drive educational innovation and entrepreneurship will transform teacher education for developing student-teacher edupreneural capacities (Martin, 2023; Rahman et al., 2023).

AI and Data Analytics: Artificial intelligence can tailor educational content to individual needs, helping educators develop personalised learning plans for their students. The predictive analytics aspect of AI can help educators predict trends and outcomes based on data analysis to make informed decisions about curriculum design and teaching strategies. The data analytics tools can

track and analyse the performance of educators and students, providing insights into areas of improvement and success (Martin, 2023; Rahman et al., 2023).

Virtual Reality (VR) and Augmented Reality (AR): Virtual reality and augmented reality create immersive environments where educators can experience real-world entrepreneurial scenarios. Interactive simulations can enable the creation of interactive 3D worlds and objects, making abstract entrepreneurial concepts more tangible and engaging (Martin, 2023; Rahman et al., 2023).

Policy and Support Systems

Edupreneurship development in teacher education programmes requires robust policy and support systems for an enabling environment for innovation, impact, and sustainability. Educational policies and institutional support are important in promoting edupreneurship among educators and student teachers. Context-specific frameworks and policies with sectoral focuses can ensure the development of quality entrepreneurial ecosystems which can enhance the nurturing of sustainable entrepreneurship teacher education which can drive educational and economic growth (Brüne & Lutz, 2020).

Educational Policies: Educational policies can either support or hinder the development of edupreneurship in teacher education programmes. Incentivizing innovation, curriculum integration, professional development, creating supportive ecosystems, and assessment and accreditation can support edupreneurship through educational policies (Brüne & Lutz, 2020).

Policy Analysis: Examining the existing policies that support or hinder Edupreneurship involves systematically evaluating the formulation, implementation, and impact of the existing teacher education documents and national and institutional policies. This analysis identifies strengths, weaknesses, opportunities, and threats (SWOT) related to edupreneurship in teacher education programmes (Brüne & Lutz, 2020; European Union, 2014).

Advocacy: Promoting policies that foster entrepreneurial education is vital for nurturing innovation, creativity, and economic growth. Several strategic actions may include raising awareness through public campaigns and success stories; engaging stakeholders through collaboration, forums and workshops; policy research and analysis through evidence-based advocacy and policy briefs; and lobbying and advocacy by engaging policymakers and legislative proposals (Brüne & Lutz, 2020; European Union, 2014).

Institutional Support: Teacher education institutions can play a pivotal role in fostering entrepreneurship by incorporating courses on entrepreneurship, innovation, and business

management and encouraging students to engage in entrepreneurial projects that solve real-world problems in the teacher education curriculum. Networking opportunities through partnerships with local businesses and industries to provide students with networking opportunities and real-world experience and organisation of events like hackathons, pitch competitions, and workshops to foster a culture of innovation (Meghashree & Bhatta, 2023; Oksanen et al., 2023; UNESCO, 2020).

Incubation Centers: These include innovation labs where students can experiment with new ideas and technologies. It also involves the encouragement of research on edupreneurship education and its impact on teaching practices. The incubation centres also provide resources, workspace, and support for student-teacher-led startups (Meghashree & Bhatta, 2023; Oksanen et al., 2023; UNESCO, 2020).

Resource Allocation: In the development of edupreneurship in teacher education, institutional resource allocation plays a crucial role in optimizing educational outcomes. There is a need for a holistic approach through strategic resource allocation to foster a culture of innovation and entrepreneurship in teacher education programmes (Meghashree & Bhatta, 2023; Oksanen et al., 2023; UNESCO, 2020).

Funding and Resources: Financial support like non-repayable grants and funds for edupreneurs to develop their innovative educational projects is important. Seed funding as initial capital is provided to support the early-stage development of edupreneurial ventures, scholarships as financial aid provided to students pursuing studies related to entrepreneurial education, and crowdfunding platforms for edupreneurs to raise funds from many people (European Union, 2014; Meghashree & Bhatta, 2023; UNESCO, 2020).

Grants and Scholarships: Grants are non-repayable funds provided to edupreneurs to develop their innovative educational projects. Institutions' research grants can be targeted specifically for edupreneurial projects. Institutions can also facilitate access to government grants and funding programmes aimed at edupreneurship initiatives. Scholarships for aspiring edupreneurs can help them get the training and resources needed to turn educational business ideas into educational services or products (European Union, 2014; Meghashree & Bhatta, 2023).

Resource Hubs: Create hubs with access to funding, mentorship, and networking opportunities. Include provision of access to the latest technology and tools needed for educational innovation, and research facilities and labs where edupreneurs can test and develop their ideas (European Union, 2014; Meghashree & Bhatta, 2023; UNESCO, 2020).

Impact and Outcomes

Edupreneurship in teacher education can have significant impacts and outcomes, for educators, student teachers, and other stakeholders. It engenders enhanced teaching practices, increases student motivation and engagement, development of entrepreneurial skills, provides long-term career benefits, and has impacts on institutions, as institutions that support edupreneurship often cultivate a culture of innovation and continuous improvement, and tend to have stronger ties with the community, as they often collaborate with local businesses and organisations (Haara & Jenssen, 2019; Muhammad et al., 2022)

Measuring Success: Measuring the success of edupreneurship initiatives in teacher education is crucial to understanding their impact and outcomes. Key components and methods for measuring success can focus on student outcomes like entrepreneurial skills and career readiness, educational impact like teaching practices and student engagement, and institutional metrics focusing on programme participation and project success rates, among others (Brüne & Lutz, 2020; Haara & Jenssen, 2019).

Key Metrics: Key metrics for measuring the impact and outcomes of edupreneurship in teacher education can be teacher or educator-related, student-related; institutional-related, or community and societal impact-related (Brüne & Lutz, 2020; Haara & Jenssen, 2019).

Longitudinal Studies: Longitudinal studies can be conducted to assess the long-term impact of edupreneurship on students' careers and educational outcomes, and also to track the success of alumni who participated in entrepreneurial programs, including their contributions to the education sector (Brüne & Lutz, 2020; Haara & Jenssen, 2019).

Long-Term Benefits: Edupreneurship in teacher education offers long-term benefits by developing students' life skills, entrepreneurial mindset, and innovative capabilities, leading to enhanced adaptability, problem-solving, communication, and critical thinking skills among student teachers. The implementation of edupreneurship programmes can foster self-confidence, leadership, and risk-taking abilities among students, preparing them for the demands of the workforce (Muthmainnah et al., 2022).

Sector Transformation: Edupreneurship in teacher education can lead to a transformative shift across multiple sectors, extending far beyond the classroom. It fosters an innovative educational environment, drives the creation of new businesses, enhances community development, and boosts economic growth. It affects institutional culture as schools fostering entrepreneurial thinking

become hubs of innovations, and training in entrepreneurial skills for educators leads to continuous improvement and adaptability (Brüne & Lutz, 2020; Zhao, 2012).

Economic Impact: Economic transformation is ensured through workforce development as educational programmes that emphasise entrepreneurship produce graduates with skills that match the needs of the modern economy. It impacts creating an environment for innovation and competitiveness as countries with strong entrepreneurial education systems become more competitive in the global market (Brüne & Lutz, 2020; Zhao, 2012).

Challenges and Solutions: Edupreneurship in teacher education comes with several challenges. Some key challenges include curriculum constraints, resource limitations, cultural and perceptual barriers, assessment challenges, student resistance, and lack of institutional support (Brüne & Lutz, 2020; Langston, 2020; Okeke, 2014).

Identifying Challenges: The existing curriculum is packed programmes are heavily theoretical lacking practical hands-on components. Limited budgets restrict the availability of resources needed to support entrepreneurial initiatives and there is a shortage of instructors. Traditional educational institutions and educators may resist changes. It can be difficult to measure the success of entrepreneurial education and student teachers may not be interested in entrepreneurship. There may be a lack of visible role models regarding edupreneurship, and institutions may lack incubation centres and mentorship programmes (Brüne & Lutz, 2020; Langston, 2020; Okeke, 2014).

Proposed Solutions: Addressing the challenges of integrating entrepreneurship in teacher education demands a holistic multi-faceted approach. Firstly, institutions can revise curricula to include practical edupreneurial components and provide professional development for lecturers to be equipped with the necessary skills. Secondly, securing additional funding and resources, such as grants and partnerships, can alleviate financial constraints for the implementation of edupreneurship. Additionally, engaging students through diverse, inclusive approaches and support systems like mentorship programmes, hackathons, and incubation centres can enhance the integration of edupreneurship. Building strong partnerships with governmental agencies, community organisations, religious organisations, and industries can foster collaboration and resource sharing for edupreneurship in teacher education. In addition, promoting a culture of innovation within educational institutions can encourage experimentation and acceptance of new teaching methodologies among educators and student teachers. Lastly, collaboration stakeholder

engagement and policy advocacy can enhance edupreneurship (Langston, 2020; Okeke, 2014; Rahman et al., 2023).

Conclusion

The contemporary teacher education programme in Nigerian schools and most countries in sub-Saharan Africa cannot cater for the 21st-century educational needs of student teachers. There is a need for total transformation so that educators can be job creators through the provision of educational services and products. There is a need to re-imagine and reconfigure teacher education curricula and teaching methods to meet contemporary challenges. Using the 4Rs framework there is the need to re-imagine, reconfigure, reshape, and reform teacher education programmes at all levels to provide theoretical knowledge and practical hands-on skills for teacher educators through entrepreneurship educators for them to develop responsible entrepreneurial competencies and practices. Through the edupreneurship component of teacher, education teacher educators and student teachers can develop entrepreneurial mindsets, competencies, and skills, to be productive and responsible citizens. This will entail innovative pedagogical approaches like multi-disciplinary, collaborative learning, problem-based learning, experiential learning, inquiry-based learning, technology-enabled and technology-enhanced learning, and mind mapping, among others.

References

- Alemдар, M., Cappelli, C. J., Gale, J., & Boice, K. L. (2022). An exploratory study of STEM teachers' mentorship networks. *International Journal of STEM Education*, 9(1), 64. <https://doi.org/10.1186/s40594-022-00383-7>
- Bowman, M. (2014). Teacher mentoring as a means to improve schools. *BU Journal of Graduate Studies in Education*, 6(1), 47–51.
- Breisacher, J. (2024, January 12). How to become one successful edupreneur (and why you should). *Student-Centered World*. <https://www.studentcenteredworld.com/edupreneur/>
- Brüne, N., & Lutz, E. (2020). The effect of entrepreneurship education in schools on entrepreneurial outcomes: A systematic review. *Management Review Quarterly*, 70(2), 275–305. <https://doi.org/10.1007/s11301-019-00168-3>
- Burns, M. (2018, August 6). Six strategies to improve teacher training workshops | Blog | Global Partnership for Education [GPE Transforming Education]. <https://www.globalpartnership.org/blog/six-strategies-improve-teacher-training-workshops>
- Cui, J. (2021). The impact of entrepreneurship curriculum with teaching models on sustainable development of entrepreneurial mindset among higher education students in China: The

- moderating role of the entrepreneurial climate at the institution. *Sustainability*, 13(14), 7950. <https://doi.org/10.3390/su13147950>
- Darwish, H. (2019). Open educational resources (OER) edupreneurship business models for different stakeholders. *Education and Information Technologies*, 24(6), 3855–3886. <https://doi.org/10.1007/s10639-019-09962-8>
- De Grave, W., Zanting, A., Mansvelder-Longayroux, D. D., & Molenaar, W. M. (2014). Workshops and seminars: Enhancing effectiveness. In Y. Steinert (Ed.), *Faculty Development in the Health Professions* (pp. 181–195). Springer Netherlands. https://doi.org/10.1007/978-94-007-7612-8_9
- DeCoito, I., & Briona, L. K. (2023). Fostering an entrepreneurial mindset through project-based learning and digital technologies in STEM teacher education. In S. Kaya-Capocci & E. Peters-Burton (Eds.), *Enhancing entrepreneurial mindsets through STEM education* (Vol. 15, pp. 195–222). Springer International Publishing. https://doi.org/10.1007/978-3-031-17816-0_9
- Edupreneur Staff. (2023, February 14). *Edupreneurship: The ultimate guide*. Edupreneur. <https://edupreneurr.com/edupreneurship-the-ultimate-guide/>
- European Union. (2014). *Entrepreneurship education: A guide for educators*. European Union. <https://ec.europa.eu/docsroom/documents/7465/attachments/1/translations/en/renditions/pdf>
- Haara, F. O., & Jenssen, E. S. (2019). The influence of pedagogical entrepreneurship in teacher education. In F. O. Haara & E. S. Jenssen, *Oxford Research Encyclopedia of Education*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190264093.013.754>
- Harris, E., & Curry, K. (2016). *Cultivating an edupreneurial mindset* [Edupreneur Academy]. *Edupreneurial Mindset*. <https://edupreneuracademy.org/resources/research/cultivating-an-edupreneurial-mindset/>
- Hill, L. (2012, August 10). The value of workshops and continuing education for teachers [Revenue Streams Professional Development Opinions]. The EvoLLLution. <https://evollution.com/opinions/the-value-of-workshops-and-continuing-education-for-teachers>
- Hill, T., Lickteig, A., & Schwerdtfeger, S. (2020). Field-based experiences in teacher preparation: From private schools to Paraguay. 13(1), 54–91.
- Ho, C. S. M. (2024). Cross-disciplinary challenges: Navigating power dynamics in advocating an entrepreneurial STEM curriculum. *Research in Science Education*, 54(3). <https://doi.org/10.1007/s11165-024-10172-7>
- Ismail, A. B., & Sawang, S. (2020). Entrepreneurship education, pedagogy and delivery. In S. Sawang (Ed.), *Entrepreneurship Education* (pp. 1–10). Springer International Publishing. https://doi.org/10.1007/978-3-030-48802-4_1
- Keane, K. J. (2015). *Reflecting on technology integration in teacher education programs* [Northeastern University]. <https://doi.org/10.17760/D20194010>

- King, F. (2022). Supporting teachers to lead by learning and learn by leading. *Professional Development in Education*, 48(3), 361–363. <https://doi.org/10.1080/19415257.2022.2082699>
- Kurt, S. (2019, September 16). TPACK: Technological pedagogical content knowledge framework [Framework & Theories]. *Educational Technology*. <https://educationaltechnology.net/technological-pedagogical-content-knowledge-tpack-framework/>
- Lagos Business School. (2019, January 30). The Nigerian archaic academic curriculum and the need for a review. Lagos Business School - Pan-Atlantic University. <https://www.lbs.edu.ng/lbsinsight/the-nigerian-archaic-academic-curriculum-and-the-need-for-a-review/>
- Langston, C. (2020). Entrepreneurial educators: Vital enablers to support the education sector to reimagine and respond to the challenges of COVID-19. *Entrepreneurship Education*, 3(3), 311–338. <https://doi.org/10.1007/s41959-020-00034-4>
- Martin, E. (2023, October 6). The future of elearning: How AR, VR, and AI are changing the game. *eLearning Industry*. <https://elearningindustry.com/future-of-elearning-how-ar-vr-and-ai-are-changing-the-game>
- Meghashree, D., & Bhatta, N. (2023). Institutional support for motivating and incubating entrepreneurial ventures: A systematic review of the literature and development of conceptual model. *Journal of Management and Entrepreneurship*, 17(3), 11–20.
- Meyers, A. (2022, January 23). The education business model canvas. *Human-Centered Change and Innovation*. <https://bradenkelley.com/2022/01/the-education-business-model-canvas/>
- Morselli, D. (2019). The assessment of entrepreneurial education. In D. Morselli, *The change laboratory for teacher training in entrepreneurship education* (pp. 17–36). Springer International Publishing. https://doi.org/10.1007/978-3-030-02571-7_2
- Muhammad, N., Che Razak, R., Che Rusuli, M. S., & Hashim, M. Z. (2022). The influence of entrepreneurial behavior among student entrepreneurs: A conceptual framework. *International Journal of Academic Research in Business and Social Sciences*, 12(10), Pages 841-854. <https://doi.org/10.6007/IJARBS/v12-i10/14988>
- Muthmainnah, M., Al Yakin, A., Massyat, M., Lulaj, E., & Bayram, G. E. (2022). Developing students' life skills through edupreneurship in the digital era. In S. Grima, E. Özen, & H. Boz (Eds.), *The new digital era: Digitalisation, emerging risks and opportunities* (Contemporary studies in economic and financial analysis (Vol. 109A, pp. 169–190). Emerald Publishing Limited. <https://doi.org/10.1108/S1569-37592022000109A011>
- National Universities Commission (NUC). (2023, August 1). CCMAS: Education (new) - 2023. NUC CCMAS. <https://nuc-ccmas.ng/download/ccmas-education/>
- Nielsen, S. (2010). Vocational education and training teacher training. In *International Encyclopedia of Education* (pp. 503–512). Elsevier. <https://doi.org/10.1016/B978-0-08-044894-7.00808-3>

- Okeke, F. C. (2014). Entrepreneurship education in Nigeria: Prospects, challenges and strategies. *Multidisciplinary Journal of Research Development*, 22(2), 1–11.
- Oksanen, L., Oikkonen, E., & Pihkala, T. (2023). Adopting entrepreneurship education: Teachers' professional development. *Entrepreneurship Education and Pedagogy*, 6(2), 276–298. <https://doi.org/10.1177/25151274221091698>
- Olaniran, S. O., & Perumal, J. (2021). Edupreneurship: Preparing young education graduates beyond the classroom teaching. *Multicultural Education*, 7(8), 469–479.
- Poth, R. D. (2023, July 28). Building your professional learning network. Edutopia. <https://www.edutopia.org/article/professional-learning-networks-teachers/>
- Rahman, Md. M., Basher, M. A., & Ramadani, V. (2023). Entrepreneurship education through innovative teaching techniques: A systematic review using ADO model. In A. Bexheti, H. Abazi-Alili, L.-P. Dana, V. Ramadani, & A. Caputo (Eds.), *Economic recovery, consolidation, and sustainable growth* (pp. 459–476). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-42511-0_30
- Rust, C. (1998). The impact of educational development workshops on teachers' practice. *International Journal for Academic Development*, 3(1), 72–80. <https://doi.org/10.1080/1360144980030110>
- Santoso, R. T. P. B., Priyanto, S. H., Junaedi, I. W. R., Santoso, D. S. S., & Sunaryanto, L. T. (2023). Project-based entrepreneurial learning (PBEL): A blended model for startup creations at higher education institutions. *Journal of Innovation and Entrepreneurship*, 12(1), 18. <https://doi.org/10.1186/s13731-023-00276-1>
- Schumacher, S., & Eimler, S. C. (2023). Creativity in Entrepreneurship Education: Insights from online ideation courses. In J. H. Block, J. Halberstadt, N. Högsdal, A. Kuckertz, & H. Neergaard (Eds.), *Progress in entrepreneurship education and training* (pp. 449–464). Springer International Publishing. https://doi.org/10.1007/978-3-031-28559-2_29
- Toluwalashe, S., Adeyinka, E., Tufayl, A., & Alabi, H. K. (2022, September 24). Playing the catch-up game: Relevance of the Nigerian higher education system in the wake of the 21st century [LinkedIn]. Insight from the Community. <https://www.linkedin.com/pulse/playing-catch-up-game-relevance-nigerian-higher-education-soyemi>
- UNESCO. (2020). *Entrepreneurial learning for TVET institutions: A practical guide*. United Nations Educational, Scientific and Cultural Organization. https://unevoc.unesco.org/pub/entrepreneurial_learning_guide_en.pdf
- UNESCO. (2023, March 1). Teacher education and learning outcomes [Unesco IIEP Learning Portal]. UNESCO's International Institute for Educational Planning. <http://learningportal.iiep.unesco.org/en/issue-briefs/improve-learning/teacher-education-and-learning-outcomes>
- UNESCO. (2024). Teacher education. Unesco Institute for Statistics. <https://uis.unesco.org/en/glossary-term/teacher-education>

- Wei, L., & Xiaoxing, Q. (2023). Curriculum system design based on curriculum modular teaching—Take the course ‘innovation and entrepreneurship’ as an example. *Education Journal*, 12(3), 109–113. <https://doi.org/10.11648/j.edu.20231203.15>
- Weiss, B., Möller, S., Wechsung, I., & Kühnel, C. (2011). Quality of Experiencing Multi-Modal Interaction. In W. Minker, G. G. Lee, S. Nakamura, & J. Mariani (Eds.), *Spoken Dialogue Systems Technology and Design* (pp. 213–230). Springer New York. https://doi.org/10.1007/978-1-4419-7934-6_9
- Yusuf, M. O., Ahmed, Talatu Fahdilal, Ansah, Seth Dade, & Yusuf, Hamdallat Taiwo. (2021). Gender Influence on Student Teachers’ Perceptions of the Constructs of Technological Pedagogical Content Knowledge (TPACK) in Nigerian Universities. *Journal of Educational and Psychological Studies [JEPS]*, 15(4), 533–544. <https://doi.org/10.53543/jeps.vol15iss4pp533-544>
- Yusuf, M. O., & Yusuf, H. T. (2009). Educational reforms in Nigeria: The potentials of information and communication technology (ICT). *Educational Research and Review* Vol. 4 (5), Pp. 225-230, May, 2009, 4(5), 225–230.
- Žagar, M., Šorić, K., Antičić, N., & Samardžija, J. (2024). The platform for education on digital entrepreneurship. In M. E. Auer, U. R. Cukierman, E. Vendrell Vidal, & E. Tovar Caro (Eds.), *Towards a hybrid, flexible and socially engaged higher education* (Vol. 911, pp. 124–132). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-53382-2_12
- Zhao, Y. (2012). *World class learners: Educating creative and entrepreneurial students*. Corwin.