

Integrating Innovations into Teacher Education Through Curriculum, Research Reports and Findings in Nigeria

Idayat N. BALOGUN

Department of Social Sciences Education
Faculty of Education, University of Ilorin, Ilorin, Nigeria
balogun.in@unilorin.edu.ng

Babatunde A. ISIAKA

Department of Educational Management
Faculty of Education, University of Ilorin, Ilorin, Nigeria
isiaka.ba@unilorin.edu.ng

Abstract

The Nigerian education curriculum at the university level is often criticized by international and local experts in the field of curriculum for being theoretical rather than practical, this is because of the potential of many researchers to showcase the outcome of their research at various levels of education which would transform the society into a better position are always neglected. This unnoticed vacuum in education by many stakeholders can be filled by a conscientious creation and integration of new values, changes, innovations and implementation of such in Nigerian universities within a jiffy, particularly through teacher education. This will usher in the concept of edupreneurship (Education+Entrepreneurship) which all teacher educators currently need to enhance social and economic advantages. There is more to be incorporated into the teacher education curriculum if edupreneurship is to be properly launched and sustained in teacher education. There is a need to reconsider the purpose and goals of teacher education by encouraging the practical exhibition of the research reports and findings. This paper discusses the innovations involved in improving curriculum in teacher education as a product to improve the quality of teacher education and the role, the teacher educator would play in the realization of this goal using research reports and findings.

Keywords: Curriculum, Innovation, Research Findings, Research Report, Teacher Education.

Introduction

Calls for a radical change in the field of teacher education are no longer news, just as the call for blended learning becomes necessity in teaching and learning at all levels of education all over the world. Entrepreneurship skills are now the new opportunities to be provided for and embraced by stake holders in teacher education. Therefore, the combination of education and entrepreneurship has been interpreted to be a scheme called edupreneurship as an educational innovative for teacher educators and prospective teachers to develop innovative ideas, tools and platforms to showcase teaching and learning experiences beyond paper and memorisation of

concepts. Faster Capital (2024) defines edupreneurship as the act of creating and embracing innovative educational solutions, products or services. Therefore, Edupreneurs would be individuals who are not only educators but also entrepreneurs who have acquired knowledge and skills that would be such to develop sustainable and impactful ventures in the education sectors. Hence educators are expected to transfer the same ideas to the prospective teachers for comprehensive and sustainable edupreneurship teacher education programmes.

Many educational innovations are mostly emerging in various areas and many forms from developed nations of the world. According to the US Department of Education, there are innovations in the way education systems are organized and managed, exemplified by charter schools or school accountability systems. There are innovations in instructional techniques or delivery systems, such as the use of new technologies in the classroom. There are innovations in the way teachers are prepared, compensated and so on. Innovation can be directed toward progress in one, several, or all aspects of the educational system; theory and practice, curriculum, teaching and learning, policy, technology, institutions and administration, institutional culture, and teacher education. It can be applied in any aspect of education that can make a positive impact on learning and learners.

Among the opportunities edupreneurship has offered to address the educational gaps that exist in the foreign land include Teach for America, the programme recruits and trains passionate teachers to teach in low-income communities to impact the lives of educationally disadvantaged students. Through this innovation, many of such disadvantaged students now have access to quality education. Global Teacher Prize is another edupreneurship initiative by the Varkey Foundation recognizes enterprising teachers who have made a significant impact on their students and communities. This initiative not only celebrates the achievements of these categories of educators but educators around the world were brought together for collaboration and knowledge sharing among educators (Serdyukov, 2017). This and more could be replicated in Nigeria's teacher education system which would in turn facilitate the emerging opportunities in the field of education and entrepreneurship to make a positive impact on how education is delivered and acquired.

Achieving and sustaining these types of laudable ideas become the responsibility of many stakeholders in Nigeria's teacher education system. Teachers, prospective teachers, professors, curriculum developers, researchers and policymakers are the central focus of this paper and are expected to innovate and showcase the connection between the theory and practice of teaching and

learning which has been in the curriculum of teacher education over decades as theories mainly. The time is ripe to connect and bring out the synergy among pedagogy (method and philosophy of instruction), andragogy (student-centred method directed at adult students) and heutagogy (self-directed and transformative education on learner's ability to take control of learning process). Ogundare, (2013) posited that curriculum represents the combination of a database from where what is to be taught or learned is derived, in other words, curriculum is the total experiences to which all learners at all levels of education must be exposed. this includes the content, the objectives method of instruction and so on. Therefore, this paper focused on sub-headings showcasing why teacher education should be accorded priority while simplifying how to integrate specific educational research findings in bringing about curriculum innovation for edupreneurship in Nigerian teacher education.

Types of Related Innovations on Educational System and the Missing Gap

An existing innovation in different areas of social, political, cultural, philosophical, and psychological was a complete system that has impacted the whole educational arena to date. The known examples in the listed order include the Equal Opportunities Act and Individuals with Disabilities Education Act; No Child Left Behind (NCLB); Moral, and Bilingual Education and Multiculturalism; Constructivism and Objectivism; and Cognitive Science, Multiple Intelligences, Maslow's hierarchy of needs, etc have made a drastic and significant mark in education. Others include the area of pedagogy that drives the infusion of the selected curriculum of Science, Technology, English, and Mathematics known as STEM. The latest developments that are gaining ground are computer-based learning, e-learning, and networked learning. Artificial Intelligence is not the 21st-century trending innovation in education all over the world for which Nigeria's education stakeholders are gradually settling. All of these innovations were brought into bear in different areas, but it is somewhat difficult to measure how each of these existing innovations has brought about the productivity of quality of teaching and learning. Serdyukov (2017) had earlier pointed out that many of these innovations placed too much focus on assessment and later eroded the critical aspects of education, for instance, an attempt to dwell too much on technology education may neglect the teachers and learners in the process, then on the STEM, young people's social, emotional and moral development are being ignored at the expense of music and arts. None of these previous innovations has also recognised the need to pay attention to a dysfunctional

society. Curriculum experts should then realize that curriculum remains a complex and continuous task which requires numerous stakeholders to undertake for successful execution. An aspect of educational research has not been accorded recognition in the role of contributing to curriculum development. This implies that educational researchers must follow scientific processes of research to avoid common errors in causal and personal investigation, these errors include incorrect observation, selective observation, overgeneralization, illogical reasoning, ego-driven understanding and so on. It is sufficient to put forward that, educational research can be described as a systematic inquiry established to contribute new knowledge in education, having employed multiple and rigorous processes while seeking solutions to social, cultural and educational challenges. There is a need to showcase the practical solutions to such problems, this is where an innovation in teacher education comes in and could form part of the edupreneurship (Formplus, 2022).

The essence of research in general therefore should contribute to finding solutions to curriculum inadequacies while applying a scientific procedure. Scientific educational research is therefore beneficial in the following ways. These include but are not limited to the fact that the knowledge of educational research can develop critical judgement, bring visible change from the learning experience, serve as a necessity to understand and evaluate the research findings in any area of specialization and be used to make a rational choice, to meet the academic degree and professional requirement of many institutions, and arouse the interest of inquisitiveness. This may be the reason, curriculum development is a process of social change through which new ideas are diffused, adopted and implemented. Therefore, teacher education and curriculum innovation are inseparable (Lawal, 2014).

From the foregoing, even if it is obvious that technological advancement can drive and accelerate the rise of edupreneurship, many educators should be more informed that continuous clamour for only technologies or deployment of Artificial Intelligence cannot transform Nigeria's education system. The skills, values, hard work, dedication, and resilience required of the teacher educators and the prospective teachers cannot be taken over by technology. The reason is to look inward to the aspect of research that has been neglected to bring about the desired impact in teacher education that will propel the changing landscape of teacher education. The knowledge of research is important because it is needed for academic degrees and the professional requirements of an edupreneur. Educational research and teaching are inseparable, this is because of the symbiotic

relationship between the two since research will always inject questioning practices as educators are not expected to dwell on the old or previous facts, rather, teaching and research should bother with searching for new facts, these can only be determined through the outcome of researches thereby contributing to knowledge about educational and social phenomena and practices. All these cumulate to preparing the prospective teachers and early researchers to contribute significantly to upgrading the existing form of education for 21st-century transformation.

The type of innovation that required embracing the research report and findings which have been neglected could be described as “modification of the process”, the process already on the ground is the previous research and the recent ones, a rigorous process of any research should come up with findings and reports, what happens and what we do with these report and findings is clear to both the previous and the current researchers. This type of innovation is required to change the structure, procedure and output of education in teacher education, thereby improving the quality of existing research and improving the new ones to scale edupreneurship.

Strategies for Successful Edupreneurship and Surmounting the Challenges

Any novel ideas for lifelong sustainability should have a roadmap for implementation which are however not devoid of challenges in the process. Teacher education is in dire need of effective innovation to fuse all the aspects of teacher education and translate it into practice. Strategies of the implementation of edupreneurship are presented and each of the strategies applies to all departments, units and specializations of all Faculty of Education members of any higher institution that produces the prospective teachers in the world. Siswanto et al (2023) submitted that it became necessary to do mapping and identify the strengths through a learning scheme as an important aspect of edupreneurship skills to be provided to educators and prospective teachers. Therefore, the following would serve as guides for a successful implementation of edupreneurship in the 21st century:

1. ***Understand the Need for the Service:*** It is imperative to first grasp the understanding of the needs and the service areas of the target audience so that a special value position for the business can be created appropriately, after which market research to identify the specific areas where the services are needed would be conducted. For example, an educational counsellor may find out that some individuals or educational institutions would need guidance and counselling services. In this context the type of research that could

contribute immensely here is market research, indeed research remains part and parcel of any edupreneur. Under this strategy three efforts are combined one, understand the market and the need for the service, identify the target audience and conduct market research to identify the specific challenges that the audience is facing. The audience could be students, parents, or educational institutions.

2. ***Identifying the Strengths and Differentiators:*** A potential edupreneur needs to identify their strengths and unique selling points by picturing in mind those things that set their educational products and services apart from the competition. A passionate social educator and an education manager may want to launch their innovative teaching methods and instructional practices, an educational technologist may decide to launch a cutting-edge technology hub or a team of highly qualified instructors for various fields. Whatever the strength may be, it is crucial to highlight these strengths and use them as the foundation for one value proposition. A typical example here is the continuous drive for the online interactive tutoring platforms and workshop series of Prof. M. A. Aibinu, a Professor of Mechatronic Engineering and a known acadopreneur has been showcasing his personalized study plans and a user-friendly interface that makes learning engaging and convenient for students and various audiences. His strength has sustained him in his research expertise such as Responsible Artificial Intelligence, Mechatronics System Development, Digital Signal and Image Processing and more.
3. ***Emphasize the Benefits and Outcomes:*** The next strategy is to communicate the benefits and outcomes that educational services can provide and how they will solve the identified problems of the target audience, for instance, science educators may launch a product which will highlight helping the students improve their academic performance or grades, gain essential skills and prepare them for future career opportunities and more. Emphasizing these benefits helps to persuade potential customers to patronise these products over others who can render the same services or products. An edupreneur in science education over the years has carved a niche market for themselves and has become a household name in value propositions. A mathematics educator may launch an app that helps students improve their maths skills and can showcase what their outcome will be like “Master Math and Boost your Grades”, “Achieve Academic Excellence in Maths” and the rest.

4. ***Test and Clarify the Value Proposition:*** This requires an interactive process and should be the watchword, there is a need to create a unique value while testing the value proposition, this can be done with a small group of users for a start and for free, then gather feedback. The feedback would help to identify areas for improvement and refine messaging to better impact your target audience. Running a pilot programme could be a good idea under this strategy. For instance, A technology educator could facilitate an online learning platform with a selected group of students, and get their feedback on the user experience. Prof. M. O Yusuf, a Professor of Educational Technology and his team have showcased this to the lecturers in the Faculty of Education, University of Ilorin as faculty members and a dean, using a series of online learning platforms to encourage the lecturers to embrace blended learning in their teaching, getting the feedback on the lecturers on their experience, content quality, and the overall value they perceive from using the platform. The feedback has been used to make necessary adjustments and improvements on value propositions in this direction.
5. ***Consistency Communication of Value Proposition:*** The preceding strategies if adhered to would have brought a compelling value proposition, therefore it is important to sustain it by communicating it consistently across all the marketing opportunities and media. The 21st-century edupreneurs in any field are expected to embrace the use of websites, social media handles, email newsletters and signatures and any other platforms to engage with the target audience. For example, those in the field of technology can create a website homepage and others can consult to get this done to communicate their value propositions through a captivating and impactful messaging that reveals the briefing of the positive outcomes that the educational service has delivered for the audience. All the stated strategies are sufficient to start up as an edupreneur in any speciality of expertise in the field of education to create a unique value proposition in the education market. Following the aforementioned strategic steps and more can help in positioning educational services or products in an evolving competitive business in teacher education.

However, as beautiful as these strategies seem to be, some challenges have been projecting some potential edupreneurs to showcase their talent for launching the edupreneurship drive in teacher education, these challenges are connected and prominent around many sources, some may be tied

to funding, but there are other expended efforts embedded which may be frustrated. This is because all the strategic steps require certain expenses to get each strategy executed.

Researchers have been encouraged to invest time and effort into understanding the basics of grant acquisition to maximize chances of success (Aibinu, 2023). These obstacles have been preventing many well-trained and professional educators from showcasing their edupreneurship prowess. It has been a mirage in the literature when the question of why has technology not contributed much to the productivity of teaching and learning?. The literature has attributed it to productivity contradiction, which refers to the obvious contradiction between a remarkable advancement in computer power and the relatively staggered growth of productivity at the level of the whole economy (the bases for entrepreneurship), individual business enterprise and other specific applications. All these remain contradictions relating to technology and novel ideas application in education in general (Serdyukov, 2017). Rather than discussing the challenges, the possible solutions will be discussed under this subheading. In essence, for technology and other innovative ideas to thrive in teacher education the following strategies should be a roadmap to overcoming the bottleneck of edupreneurship ventures.

1. Assessing Financial Situation: Evaluating the existing financial situation is paramount for any edupreneur before embarking on an edupreneur venture. Many aspiring edupreneur currently would do this on their savings and investment or any other sources of funds available to them. Doing this would give a clear understanding and direction of how much expenses to invest in a new venture and the additional funding needed.

2. Preparedness and Readiness to Bootstrap: This is a tough decision and sacrifice to venture into edupreneurship and to attract customers and audiences for value proposition. Bootstrapping is a means of advancing in business without financial assistance. FasterCapital (2024) presents it as starting and growing one's business using one's resources and revenue and is presented as a great option to overcome financial bottlenecks and maintain control of the business without necessarily running the venture in debt, thereby providing a solid foundation for one's business. Therefore, bootstrapping requires careful budgeting and resourcefulness to leverage personal savings, utilizing airtime and data with low interest rates to kick-start an edupreneurial business is not a bad idea.

3. Seek Grants and Scholarship: This solution to edupreneurial venture is a direction that could be followed to sustain educational entrepreneurs. There are numerous grants and scholarships available for edupreneurship as the awareness campaign continues through physical and online educational seminars and workshops provided at the Faculty, University and different education organizational and individual levels. These funding opportunities if explored can provide a significant boost to business finances and help overcome financial challenges. Research and application for grants are the tools to be employed for grants offered by government agencies home and abroad, educational institutions and nonprofit organizations that align with the educational venture of which the grants and scholarships are sought. FasterCapital (2024) gave a prominent Bill & Melinda Gates Foundation as that which consistently offers grants for educational outcomes for underserved communities. Also, Responsible Artificial Intelligence RAI UK international partnerships offer funding to develop international partnerships with world-leading organizations and research centres in the domain of responsible artificial intelligence (RAI) for society deployment and use of AI in a responsible way. International Development Research Centre (IDRC) offers grant opportunities for supporting teacher professional development, agency and well-being all of these and more are verifiable examples related to edupreneurship in teacher education programs which cannot be accessed unless research is involved. At the local level Federal Government of Nigeria leveraging Artificial Intelligence (AI) hunted for top Nigerian researchers across the globe to create a National Artificial Intelligence (AI) Strategy building on the already done work by the National Information Technology Development Agency (NITDA). All the information was put together based on the literature and the number of trainings, seminars, and workshops the writers attended on Grantsmanship, both online and physical.

4. Collaboration with Strategic Partners: Another important strategic solution to challenges of edupreneurial venture is to stop working in isolation, by collaborating with organizations, groups and individuals who share a common vision and mission giving it as a condition for effective grantsmanship, researchers are being encouraged to collaborate with others to showcase their expertise to address gaps in their already acquired knowledge and training. Furthermore, collaboration can foster the overall quality and scope of researchers' ventures leading to more comprehensive and impactful outcomes (Aibinu, 2023). For example, a researcher could collaborate with an institution of learning to develop educational programmes and partners for sponsorship or scholarships. These kinds of partnerships offer financial credibility to edupreneurial

ventures of different researchers in the Faculty of Education and the University of Ilorin Nigeria. In addition, an edupreneur can foster collaboration with schools and institutions of learning showcasing the value and innovation to offer as a partner. For example, teachers in public and private schools can be targeted for capacity training to improve their teaching pedagogy and instructional practices. This type of collaboration can facilitate mutual benefit.

In all of the stages put forward, the educational curriculum should capture the activities for both the teachers and students to enrich the curriculum contents of relevant areas in education. With this, every learner gets to know what research entails and how it can be translated to edupreneurial skills in teacher education programmes, this will communicate to them as prospective teachers that research cannot be separated from the total experiences they are exposed to, thereby they are equipped with the knowledge of conducting quality research which will in turn contribute to the future curriculum in teacher education.

Importance of Educational Research for Innovation in Teacher Education

In all of the earlier sub-headings of this chapter, it will be very clear to every educational researcher that educational research and the philosophy of education in Nigeria should be channelled to influence teacher education curriculum development and implementation in Nigeria. This can further be clarified by pointing out the following importance of educational innovation:

1. Educational research facilitates knowledge advancement across different fields of study this can be a source of curriculum enrichment and implementation
2. Answers are provided to practical educational challenges by using scientific methods, this could be interpreted as methodological innovation in education that can facilitate better prospective teacher learning.
3. Educational research helps students' application of knowledge and skills. This is better achieved when the students are consistently exposed to the rudiment of their needs through curriculum implementation thereby alleviating the learners' constraint in the analysis of needs.
4. Educational research improves learning and increases knowledge, skills and understanding that drives the skills to find solutions to problems.
5. It empowers teacher educators with data to help in the area of teaching and learning for strategic and effective teacher education curriculum

6. Findings from educational research are useful in policy reformulation to solve specific educational problems thereby contributing to changing the system (Formplus, 2022).

Integrating Educational Research and Findings to Entrepreneurial Skills Development in Teacher Education in Nigeria

The earlier sub-headings of this paper have communicated to teacher educators that conducting research precedes educational innovation to produce a positive effect in teaching and learning, this is because it would serve as an instrument for an innovative teacher and learner. Research serves as a preliminary assessment of the implementation of any ideas, this is an indication that no innovation exists in a vacuum. Therefore, efforts to cultivate entrepreneurial skills can be made through the educational process in the form of training for teachers, or through the instructional practices in the classroom for teacher training. Altogether, efforts to develop entrepreneurship must be directed to inspire the spirit of entrepreneurship, self-confidence, and hard work to improve the individual economic status and the national economy (Lubis2018). The crux of this sub-heading is to put out the post hoc of the study to dish out the fact that, the benefits of educational research findings may be more than allowing the research report to end on a bookshelf. In other words, after arriving at valid findings of a research conducted. It can be used to contribute meaningfully to educational innovation. Often, the emphasis is on what knowledge the study contributes to the literature and the gap the study fills, it is time for educational researchers to go beyond this and develop a new idea that helps to do the teaching job in a new way. Therefore, how could researchers sell the new ideas to stakeholders in education and beyond? Using the findings of the research conducted can bring about innovation. However, even if educational research is being funded by university lecturers with a display of varying capacities for research (Oladele et al., 2020).

These challenges are surmountable by bringing out the benefits and pointers that are perceived that could be instrumental but are not sufficiently tapped. Research findings and reports could be explored to raise productivity and efficiency of teaching and learning. Thus, for educational research to remain relevant there is a need to make a considerable contribution to educational quality. The purpose of conducting educational research must be demonstrated practically; doing this requires additional efforts and skills from the teacher educator. Literature has established that research on high-quality and impactful educational systems all over the world

clearly show that teacher quality is fundamental to educational success (Serdyukov, 2017). The basic purpose of research is to find the solution to problems through the application of the scientific procedure. If this is what research is all about. The skills to drive the applicability of the research findings are already present in teacher educators and should be properly annexed to showcase the inherent entrepreneurship skills of teacher educators. An individual who has entrepreneurial skills are expected to demonstrate the ability to identify problems and find ways to find solutions. Edupreneurship skills are therefore the skills that equip teacher educators to find solutions to problems, using new initiatives and efforts from within (Siswanto, et al, 2023). This is why the calls for efforts to enhance the development of edupreneurship skills of teacher educators and prospective teachers in the 21st century are in the right direction.

In essence, teacher educators and prospective teachers are saddled with the responsibilities to be well prepared to embrace edupreneurship skills, the preparations are required for both teachers and prospective teachers for practicability, realizability and attainability of the earlier research findings. The recent study of Elliot, et al, (2020) was on an entrepreneurship education monitoring programme for women in STEM, there study revealed that an experienced individual with a high level of education will be more ready to innovate for change in society, thereby possessing the ability to seize entrepreneurial opportunities. In a recent research, Siswanto, et al (2023) carried out their study on investigating the existence of entrepreneurship skills in teachers and their trainees, the findings of their study indicated that entrepreneurship skills of the teachers and their trainees need more improvement, particularly in the innovative aspect. For this reason, the following are suggested as pointers to improve the entrepreneurship skills in teacher education:

1. A researcher has the responsibility to reach out to communicate the findings of the research to the participants so that they are acquainted with the findings of the study, in this regard, participants can get to know their potential and work or build on it, to facilitate the usefulness of the inherent potentials.
2. Copies of the research report can be dropped to the educational institutions where the research is being carried out for feedback. Many people who have access to the report get to know about the findings, this can sensitize the readers to the need to play their part in the developmental process.

3. To source for the cooperation of the appropriate authorities to make the findings of the research feasible to the populace in terms of workshops and seminars. This by extension can lead to collaborations of different kinds as reiterated in the preceding sub-heading
4. The approach to requesting the research report should be exploited as the key vehicle for bringing about improvement in Nigerian teacher education. This will give room for a periodical curriculum review of the Nigeria's' educational system, thereby facilitating the standard in the curriculum.

When efforts are made toward these directions, educational research reports and findings remain significant in facilitating edupreneurship ventures and the development of Nigeria.

Conclusion

Every successful business requires different strategies, and entrepreneurial skill is an innovation to be adopted to do the teaching job in a new way. Edupreneurship depicts the ability, talent, self-confidence, emotional intelligence, and resilience inherent in a trained teacher to actualize new ideas either alone or through cooperation with others to produce services beyond the teaching. The faculty of education has an important role to play in guiding teacher educators and prospective teachers to acquire the stated abilities and more, this will equip them with the necessary knowledge, abilities, and values for success beyond classroom practices in the 21st-century business world. Skilfulness in edupreneurship will always drive the awareness and readiness to key into any innovation in education and other relevant areas where collaboration is needed. Continuous adoption of the new educational research findings could be a driving force for the desired attainment level in the 21st-century teacher education programme.

Also, consistent thorough market research in terms of feasibility studies of the current trends and demand in education, identifying the target audience and the need for competition would be a road map to gaining insights into marketing the services to meet the needs of the target audience already identified and on the long run a strong market brand that represents the edupreneur values, professionalism and unique selling proposition would be built and sustained. For instance, if a social and community educator venture focuses on the capacity building of existing subject teachers, the market brand should reflect the sustainability of that brand. In another direction, a counsellor educator providing office or home services should sustain such consultancy

services, other specialities in education are expected to create their unique sustainability market brand to thrive as an edupreneur.

References

- Aibinu, M. A. (2023, August 14). Embrace collaboration, and mentorship to win grants. UNILORIN Bulletin News, 7.
- Elliott, C., Mavriplis, C., & Anis, H. (2020). An entrepreneurship education and peer mentoring program for women in STEM: mentors' experiences and perceptions of entrepreneurial self-efficacy and intent. *International Entrepreneurship and Management Journal*, 16(1), 43-67. <https://www.scirp.org/reference/referencespapers?referenceid=3106903>
- FasterCapital (2024). Navigating the Challenges of Edupreneurship: Strategies for Success <https://fastercapital.com/content/Navigating-the-Challenges-of-Edupreneurship--Strategies-for-Success.html>
- Formplus (2022). What is Educational Research? + Types, Scope and importance. By Formplus Blog.
- Hassan T. (1995). *Understanding Research in Education*. Ikeja Lagos: Merrifield Publications
- Lawal R. A. (2014). Using the Curriculum: From Planning to Post-Implementation in R. Lawal (Eds). *A Handbook of Fundamentals of Curriculum Development*. Departments of Arts and Social Sciences Education, University of Ilorin, 127-141
- Lubis, P. K. D. (2018). Pengaruh Pendidikan Kewirausahaan dan Keterampilan Berwirausaha Terhadap Motivasi Berwirausaha Mahasiswa Pendidikan Ekonomi Universitas Negeri Medan. *Niagawan*, <https://journals2.ums.ac.id/index.php/jpis/article/download/3395/1054/15160>
- Office of Innovation and Improvement (2016), "US Department of Education" https://oese.ed.gov/files/2016/09/AIR-STEM2026_Report_2016.pdf
- Ogundare S. F. (2013). *Study Guide on Educational and Social Research*. Ibadan Nigeria: Franco-Ola Publishers
- Oladele J. I., Okafor I. P. Adegoke, A. K., Adeniji, A. O. & Owolabi, H. O. (2020). Lecturers' Capacity for Online Teaching and Research: Implication for Managing the Covid-19 Pandemic and Sustainable Development in Nigeria. Paper presented at the 22nd annual national conference of the Association of Educational Researchers and Evaluators in Nigeria (ASSEREN); Held virtually between July 20-24.
- Serdyukov, P. (2017). Innovation in education: What works, what doesn't, and what to do about it. *Journal of Research in Innovative Teaching and Learning*. 10(1), 4-33

<https://www.researchgate.net/publication/318598549> Innovation in education What works what doesn't and what to do about it

Siswanto, S., Sukarno, S. & Sri H. (2023). The existence of entrepreneurship skills on teachers and prospective teachers: *A survey. AL-ISHLAH Jurnal Pendidikan* 15(4) 4262-4270. [10.35445/alishlah.v15i4.2866](https://doi.org/10.35445/alishlah.v15i4.2866)