

## **Innovation Tools and Practices for Fostering Educational Resilience Development in Higher Institutions in Cross River State, Nigeria**

Okon, Abigail Edem Ph.D.

Department of Educational Foundations

Faculty of Education University of Calabar-Calabar, Nigeria

[Abigailemokon2017@gmail.com](mailto:Abigailemokon2017@gmail.com)

&

Omori, Anne Emmanuel Ph.D.

Institute of Education University of Calabar-Calabar, Nigeria

[okumaeomori@gmail.com](mailto:okumaeomori@gmail.com)

### **Abstract**

The study examined the innovation tools and practices for fostering innovations for educational resilience in higher institutions in Nigeria. Taking University of Calabar as a case study, we examine innovation tools such as Information Communication Technology (ICT) and Learning Management Systems (LMSs) while the practices include collaborative learning, problem-based learning and activity-based learning. This study becomes imperative considering the changing world of the tertiary education students and its implications for promotion of teaching university students and lecturers. A total of 230 students and 120 lecturers were selected through stratified random sampling technique while five departments were purposively drawn from the university. Data were collected using questionnaire and check-list documents while contingency chi-squared and simple percentages were deployed in analyzing the obtained data. The results revealed that information communication technology and learning management system are veritable innovation tools in fostering resilience in educational development. Also, collaborative learning, problem-based learning and activity-based learning are all contributing practices that provide high level of knowledge and skills' acquisition which enable individual to face our challenging world.

**Key words:** Innovation tools and practices, Educational resilience development, higher institution.

**Sub-theme:** Building Resilience

### **Introduction**

Every learner today come into higher education with varying degrees of learning readiness and at the same time with some physical, social, intellectual, psychological barrier between him or her and mastery of the learning situation and learning material. Also, students in higher education in Nigeria are subjected to challenging learning environments due to lack of learning infrastructures, insecurity, corruption, bad leadership and all other unethical norms. With all these challenges, students are expected to perform highly in their academic activities at all cost. Though, many efforts have been put in by the governments, school administrations and the students to cushion the effects of these challenges faced by the students in higher education in Nigeria, but the challenges are still prevalence. Teaching in higher education is not successful until students have learnt, and as has is often say, failure (to learn) is a symptom of educational (system). Education is not simply concerned with knowing book. It is more concerned with helping individuals to grow in the sense of all-round development, and positive change behaviour. It implies ensuring students' capacity to perform highly despite all barriers. Thus, Scholars have submitted that success in an increasingly competitive world requires higher education system that is resilience. In other words, higher education will thrive on innovation. In spite of this submission, it may be surprising that research has been largely limited in the innovation tools and practices for fostering educational resilience development in higher institutions in Cross River State, Nigeria. Hence, this study becomes imperative. We considered innovation tools include Information and Communication Technology (ICT) and Learning Management Systems (LMSs) while practices are collaborative learning, problem-based learning and activity-centred) learning.

Innovation in education may be defined as a process of change whereby something new happens in educational system, which of course, may be mode of delivering instructions or a change in the school environments where learning is taking place (Hage & Meeus, 2009; Hannon, Patton & Temperley, 2011;

Cerone & Persico, 2014). Innovation may be positive that is, a change that brings improvement, or it may be negative, that is a change that does not result in improvement. In general, the actions of learners, teachers and researchers are meant to drive innovation in education towards a desirable change, like making the learning process more effective (Cerone & Persico, 2014).

Information and Communication Technology (ICT) is viewed differently by researchers based on accessibility and utilization. Accordingly, Urua (2004) defines ICT as the digital processing and distribution of information via the use and manipulation of computers, electronics and telecommunication. Tsado (2012) defines ICT as facilities, tools or resources that could be used to process, store, preserve, access, retrieve and disseminate information with ease. Towolawi (2014) observes that ICT tools are particularly necessary for students and schools in developing countries where there is a lot of physical 'brain drain' and where the contributions of such Diaspora personnel can be made available through ICT.

A closely related concept to ICT is Learning Management Systems (LMSs) which are software applications for the administration, documentation, tracking, reporting and delivery of courses or training programmes (Towolawi, 2014). Learning Management Systems (LMSs) become essential tools when education is delivered through e-learning modalities. E-learning is an electronic means of knowledge sharing and transmission which does not necessarily involve physical contact between teachers and learners. It is a cost-effective way of giving instruction and teaching and learning materials can be accessed notwithstanding time and distance (Cerone & Persico, 2014; Amadi, 2014; Persico, Manca & Pozzi, 2014). E-learning may involve synchronous activities where all participants join in at once, as with an online chat session or a virtual classroom or conference. Virtual reality (VR) allows the definition of educational environments in which learners are aided to quickly navigate towards the focused information and put it virtually into practice. All these use modalities and activities that appeal to learners much more than typical academic work. Learning technologies, as highlighted in this paper, work effectively if their integration in education is pedagogically sound, that is, if they are used in the right context and in the proper way (Towolabi, 2014; Amadi, 2013).

Innovation tools and practices in managing school systems help stakeholders in education to learn which interventions create the greatest positive change with least effort but yield resilient development. They also help to explain how to strategically develop a system's capacity for different learning methods that can yield expected results. Three e-learning practices as cited earlier are examined as follows:

**Collaborative learning:** According to Cooper in Ornstein and Levine (2006), is a constructivist ideology which believes that learners evolve their view of knowledge by interacting with their environment. This school of thought sees knowledge as a human construction which is tentative and conjectural and subject to ongoing revision as learners acquire more knowledge or experience. Knowledge is never complete, we add to it and revise it based on our experience. Collaborative learning is the sharing of experiences and ideas through language which makes knowledge both a personal and social construction and increases resilience in learning. Such knowledge sharing is made easier with e-learning.

In problem-based learning, a second e-learning practice cited, learners are given the opportunity to enquire into subjects so that they discover knowledge for themselves. It is seen as discovery learning. It is the combination of rules to form a higher order rule via thinking, which aids retention in the memory of what is learnt (Parkay & Standford, 2004; Pollard, 2010). E-learning enhances problem-based learning particularly when information from the internet is retrieved. A number of such information may be outside students' textbooks, and such self-discovery knowledge is long-lasting in the learner and aids resilience in learning.

Activity-based (activity-centred) learning is more or less student-centred learning as against subject-centred curricula. The activity-centred emphasizes learners' interests and needs, which also includes the affective aspect of learning. Activity-centred learning has its root in Jean Jacques Rousseau's philosophy which encourages students' self-expression (Ornstein & Levine, 2006). Activity-centred learning allows the creativity and freedom essential for growth. It stresses the need for functional education that are relevant, life-like and are based on learner's needs and interests (FRN, 2004; Ukpokor, 2014). It has relevance in fostering resilience in educational development especially with diligent application of e-learning.

The concept of educational resilience has become very popular in view of the numerous challenges and learning gaps in higher education and the specific needs to address identified educational downturns. Resilience simply refers to how individuals respond to a challenging event. It is the learner's ability to bounce back after some adversities. Academic resilience means students achieving good educational outcomes despite adversity (Boing, 2016). For schools, promoting resilience involves strategic planning and detailed practice involving the whole school community to help vulnerable young people do better than their circumstances might have predicted ([www.boingboing.org.uk](http://www.boingboing.org.uk), retrieved 25 March, 2022).

Resilience in education is important because it leads to students' improved outcomes as it is related to their beliefs that they have the ability to influence their environments. Resilient students are high in autonomy and self-efficacy. They experience feelings of confidence and believe that things will work out (Adetokunbo, 2015). Fostering resilience in educational development of a nation

implies a fast revival of educational opportunities from its downturns. It is the ability of nation's educational quality to become better after a period of observed woes.

It gives without doubt that higher education should contribute to the transition to a resilient educational development in the society through innovation tools and practices. Could the effective adoption of collaborative learning, problem-based learning and activity-centred learning through the use of ICT and LMSs by universities, build resilience in both present and future of Nigeria educational development?

### **Statement of the Problem**

The old fashion of information management in our higher education together with outdated and analogue tools associated with their solutions aptly demand a more digital approach to tackle the issues. The modern aged learners are no longer comfortable with ancient and obsolete mode of education in which information is presented linearly with little or no activity aimed at knowledge acquisition leading to a real-life practices. However, in the last decade considerable attention was focused on making technologically enhanced learning affordable.

The question is: How can the use of modern technology in conjunction with renewed instructional practices enhance resilience in educational development?

The purpose of this study was to examine the effect of innovation tools and practices in fostering resilience in educational development in higher education.

### **Research questions**

1. What influence has e-learning tools on indicators of educational resilience in higher institutions of learning?
2. What e-learning tools are available for fostering resilience in educational development in University of Calabar?
3. What instructional benefits are derivable from ICT innovation for fostering resilience in educational development?

### **Hypothesis 1**

E-learning tools have no significant effects on indicators of educational resilience in higher institution of learning.

### **Methodology**

A survey research design was used for the study as respondents' opinions were sought. The study population was of two parts. The first part consisted of all lecturers in the Faculty of Education, University of Calabar, and the second part comprised all the undergraduate students of the faculty. The University and Faculty were purposively selected being the domains of the researchers. Simple random sampling method was adopted to select 120 lecturers whose names were written in pieces of papers, folded and picked blindly by the lecturers during a faculty meeting. Stratified random sampling method was adopted to select 230 students from five departments chosen randomly. Fifty students per department with their year of study as a basis of stratification, and 12 students from each class of study were selected. At the end of the selection, 230 students and 120 lecturers filled their questionnaire appropriately and returned, giving a total sample size of 350 for the study.

The instruments used for data collection were questionnaires and check-list rubric. The questionnaire instruments were in two parts: Part one was a five-point response scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) used to elicit information on effects of e-learning on the indicators of resilience in education development. The second questionnaire instrument has a three point response scale of Very True (VT), True (T) and Not True (NT), which was used to obtain information on benefits of ICT innovations.

The questionnaire instruments and the check-list rubric were validated by having them peer-reviewed by a senior researcher. Cronbach alpha was a test statistic used to test the coefficient obtained was 0.7, an indication that the instruments were suitable for use. A list of some essential tools for e-learning constituted check-list rubric with a tick (✓) for a availability and on asterisk (\*) for non-availability.

Data obtained were analyzed using contingency chi-squared for testing the null hypothesis on the effects of e-learning tools on the indicators of educational resilience. Descriptive statistics of frequency counts and percentages were adopted for the analysis of other data.

### **Findings**

In addressing the research questions and the null hypothesis, the data collected were analyzed and their findings summarized as follows:

### Research Question 1

What influence has e-learning practice indicators of educational resilience in higher institutions of learning?

Null hypothesis (Ho):

E-learning practices have no significant effect on indicators of educational resilience in higher institutions of learning. The analysis is shown in Table 1.

Table 1: Contingency chi-squared test for effect of e-learning practices on indicators of educational resilience

E-learning practices	Resilient indicators			Total
	Mastery of skill	Self-discovery	Attitudinal change	
Collaboration	O =125 e=109.14 (2.30)	O =48 e = 54.57 (0.79)	O = 18 e = 27.29 (3.16)	191
Problem-Based	O = 51 e = 63.43 (2.44)	O = 40 e = 31.71 (2.17)	O = 20 e = 15.86 (108)	111
Activity-Based	O= 24 e = 27.43 (0.43)	O = 12 e = 13.71 (0.21)	O = 12 e = 6.86 (3.85)	48
<b>Total</b>	<b>200</b>	<b>100</b>	<b>50</b>	<b>350</b>

Test statistics:  $X^2 - \sum \frac{(O-e)^2}{e} = 2.30+0.79+3.16+2.44+3.17+1.08+0.43+0.21+3.85 = 16.43$

O = Observed frequency

e = Expected frequency

In a one tailed test, and df=4 and 5% level of significance ( $P<0.05$ ), the computed value ( $X^2=9.49$ ). The null hypothesis is rejected. This means that e-learning practices have a significant effect on resilient educational development.

### Research Question 2

What e-learning tools are available for fostering resilience in educational development in University of Calabar?

Table 2: A checklist on available e-learning tools for fostering resilience in educational development in University of Calabar

S/No.	Provisions/Tools	Yes	No
1.	Stable power supply.		*
2.	Multimedia computer software for classes.		*
3.	Video projection unit	√	
4.	Prepared spreadsheets to capture and model data.	√	
5.	Virtual libraries.	√	
6.	Virtual classrooms.		*
7.	Computer-based testing tools.	√	
8.	Time-table for computer classes for all students	√	
9.	Adequate competent technologists	√	
10.	Adequate setting arrangement.		*
11.	Hypermedia systems functional for students.		*

Yes (√) = Available      No (\*) = Non-available

The result revealed that some basic tools are lacking for instruction in the department.

Research question 3

What instructional benefits are derivable from ICT innovation for fostering resilience in educational development?

The analysis is as shown in Table 3.

Table 3: Frequency and percentage distribution of respondents on benefits of ICT innovation

S/N	Items	VT (%)	T (%)	NT (%)
1.	It has drastically reduced examination malpractices (All)	265(76)	80(23)	5(1)
2.	Provision of students with instant examination results (All).	35(10)	204(58)	111(32)
3.	Time and distance is no longer a barrier in learning (All).	230(66)	101(29)	29(8)
4.	Learners are highly motivated (All).	98(28)	201(57)	51(15)
5.	Project supervision by lecturers is not completely computerized: 120 lecturers only.	18(16)	102(84)	0(0)
6.	There is equal opportunities for every learner (All).	96(27)	210(60)	44(13)
7.	Younger lecturers and students are more likely to make use of ICT in their work than their older colleagues (All).	40(11)	301(86)	9(3)

Key: VT = Very True, T=True and NT = Not True  
 All = Both lecturers and students (350)  
 information represents percentages (%).

The result shows that instructional process has a lot to benefit from ICT towards enhancement of educational resilience.

### Summary of major findings

Collaborative learning, problem-based learning and a activity-based learning as practices of e-learning have positive effects on the development of educational resilience in higher institutions of learning.

Some essential ICT tools are not available as required for the development of educational resilience in the University of Calabar.

Instructional process has a lot to gain from ICT innovations if the facilities are adequately provided and utilized.

### Discussion

From Table 1 the table chi-square value (1949) is less than the calculated value (1643) at 5% significant level with degrees of freedom (df) of 4 and with the use, of a one tailed test. This is interpreted to mean that there is a significant effect of e-learning practices on indicators resilient educational development. The null hypothesis which stated that e-learning practices have no significant effect on indicators of resilient educational development is rejected. It is concluded that innovation in school management is a necessity if educational development must be enhanced.

From Table 2, it is revealed that some basic e-learning tools are lacking such as virtual classrooms and a stable power supply. The absence of virtual classroom does not encourage learning especially with the ravaging of corona virus in the entire world, which makes physical contact during learning a health hazard. The shortage and unavailability of some facilities with high population of students poses a learning challenge. This result conforms with the finding of Falaye (2014) that educational development in higher institution of learning is poor due to inadequate facilities.

Table 3 indicates respondents opinion on the benefits of ICT innovation to educational resilience in higher institutions of learning. Respondents were to select among the three options of 'Very True', 'True' and 'Not True' according to how they feel. For the sake of brevity, 'Very True' and True scales were merged and 'True' thereby having two categories – 'True' and 'Not True'.

The range of opinions agreeing that there are benefits of ICT innovations for fostering resilience in educational development is between 68 percent (35+204=239); and 99 percent (265+80=345), and the items are 1, 2, 3, 4, 6 and 7, while item 5 agrees (100%) percent that project supervision is not completely computerized for now. Item 7 with 96 percent (40+301=341) 'true' opinion has striking implication. It states that younger generations are likely to benefit from ICT innovation, this implies that ICT has come to stay in fostering educational resilience. This finding is in tandem with the assertion of Ojerinde and Weiger (2014) that ICT based exams are gradually replacing pen-paper based exams.

### Conclusion and Recommendations

This paper examined the importance of ICT innovative tools and practices in building resilience in educational development in higher institutions of learning. It also looked at the level of preparedness by our

universities towards effective and practical use of ICT technologies, after analyzing the possible benefits accruing therefrom.

It concludes based on the premise that in order for our higher education to be able to compete favourably in today's high-impact knowledge economy, it would need to escalate targeted intervention with in the education sector both at the public and private levels.

The paper recommends that:

There should be effective and appropriate application of e-learning tools and practices in our instructional process.

University administration should be watchful so as they know the needs of facilities and departments in order to improve their facilities.

Conducive learning environment should be provided for maximal pedagogical activities, including project supervision.

## References

- Adesehinwa, A. & Arewu, O. (2010). The relationship among predictors of child's, family, school, society and the government and academic achievement of senior secondary school students in Ibadan, Nigeria. *Procedia Social and Behavioural Sciences*, 5(2010), 842-849.
- Adetokunbo, D.L. (2015). Building resilience in education. Centre for sustainable Development. Universities of Ibadan, Nigeria.
- Amadi, E. C & Anaemeotu, P. (2013). Professional development of teachers' academic performance in secondary schools in Etche Local Government Area of Rivers States, Nigeria. *Academic Medicine: Journal of the Association of American Medical Colleges*. International Journal of Education.
- Baumeister, R. F., Campbell, J. D., Krueger, J. I. & Vohs, W. D. (2003). Does high self-esteem cause better performance interpersonal success, happiness or healthier life styles? *Psychological Science in the Public Interest*, 4(1), 1 – 44.
- Boing, B. (2016). Academic resilience in higher institution. [www.boingboing.org.uk](http://www.boingboing.org.uk) Accessed on 25, March, 2022.
- Cerone, A. (2012). Learning and activity patterns in FLOSS Communities and their impact on software quality. In: Proceedings of Open Cert 2011, 48 of Electronic Communications of the EASST (2012).
- Cerone, A., Persico, D., Fernandes, S., Garcia-Perez, A., Katsaros, P., Shaikh, S. A., & Stamelos, I. (ed) In SuEdu 2012. LNCS, 7991. *Springer Heidelberg* (2014).
- Fadeeva, Z., & Mochizuki, Y. (2014). Regional centres of expertise on education for sustainable development: Evolution of concept and practices. In Fadeeva, Z., Poayyappaloman, U., Tabucanon, M., & Banga, C. K. (Eds). *Building a resilient future through multi-stakeholder. Learning and Action: Ten years of regional centres of expertise on education sustainable development*. 20-47, Tokyo, UNU IAS Publication.
- Falaye, F. V. (2014). Critical issues in sustainable national development through quality teaching and learning outcomes in higher education. *Analyzing Educational Issues* (ed.) A. O. U. Onuka, 278-288.
- Federal Republic of Nigeria (FRN, 2004). National Policy on Education (4<sup>th</sup> ed). Nigerian Educational Research, in press.
- Federal Republic of Nigeria (FRN, 2018). National Policy on Education. National Bureau of Statistics, Abuja.
- Hage, J. & Meeus, M.. (2009) Innovation, science and institutional change. A handbook of research.
- Hannon, V.; Pattan, A.; Temperley, J. (2011) Developing an innovation ecosystem for education. Education unot for global education, CISCO System, Inc.
- Isangedighi, A. J. (2007). Child psychology: Development and education (1<sup>st</sup> ed). Eti-Nwa Associates, Calabar.

- Lambrechts, W., & Van Petergerm, P. (2016 in press). The interrelations between competences for sustainable development and research competences. In: *Internal Journal of Sustainability in Higher Education*, in press.
- Myer, D. G. (2007). *Exploring social psychology* (4<sup>th</sup> ed). Hope College, Boston. New York: London.
- Ojerinde, D. & Wieger, J. (2014). Introduction of computer-based test (CBT) in public examination: Joint experiences from JAMB, Nigeria, and (ITO, the *Netherland Journal of Educational Assessment in Africa* 9, 2014, 195-205.
- Ornstein, A. C. & Levine, D. U. (2006). *Foundations of education* (9<sup>th</sup> eds.). Houghton, Mifflin, Boston & New York.
- Parkay, F. W. & Stanford, B. H. (2004). *Becoming a teacher* (6<sup>th</sup> ed.). Allyn and Bacon, Boston. London: New York.
- Pollard, A., Anderson, J., Maddock, M., Swaffield S., Warin, J. & Warwick, P. (2010). *Reflective teaching* (3<sup>rd</sup> ed.). Continuum International London.
- Tauritz, R. L. (2012). *A pedagogy for uncertain times*. University of Edinburgh. [Ritauritz@gmail.com](mailto:Ritauritz@gmail.com) retrieved on 2018, July 18.
- Towolabi, K.O (2014). The role of access to utilization of information and communication technology in biology education in Nigeria. Analyzing educational issue in honour of Emeritus Professor P. A. Obanya (Ed) AOU Onuka
- Tsado, E. (2012). The role of information and communication technology in vocational and technical education in Nigeria. *European Scientific Journal October Special Edition*, 8(29), 75-83.
- Ukpor, C. O. (2014). Institutional and social measures as determinants of private secondary schools effectiveness in Cross River State, Nigeria. A Doctorate Degree Dissertation presented to Graduate School, Calabar.
- UNESCO (2008). *Information and communication technology in education: a curriculum for schools and programme of Teacher Development*.
- UNESCO (2014). Vietnam. <http://www.psych.unimel.edu.au/ICRC>. Accessed on February, 2021.
- UNU-UNESCO-IAS (2014). [Yasuda@unu.edu](mailto:Yasuda@unu.edu). Accessed on February, 2022.
- Urua, E. E. (2004). ICT, pedagogy and the teaching of Nigerian languages. Lead paper presented at the 90<sup>th</sup> Conference of the Association of Nigerian Language Teachers (ANLAT). National Institutes of Nigerian Languages, Ogbor Hill Aba, Abia States, December 7 – 10, 2004.
- Wals, A. E. J. (2010). *Shaping the education of tomorrow: 2012 Full length report on the UN Decade of education for sustainable development – DESD Monitoring and Evaluation Report*, UNESCO, Paris.
- World Health Organization (WHO, 2008). *Nigerian Educational Research and Development Council*, Abuja.
- Yasuda, S. (2014). United Nations University, Institute for the Advanced Study of Sustainability. [yasudaa@unu.edu](mailto:yasudaa@unu.edu). Accessed on February, 2022.
- Yoloye, T. W. (2014). Effective learning for sustainable development. Analyzing Educational Issues in Honour of Emeritus Professor P.A.I. Obanya (Eds.) A. O. U. Onuka.

