Best Practices in ICT Integration: Teacher Education through Teachers' Views

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Abstract: This study explored views held by teachers in Nigeria with regards to Information and Communication Technologies (ICT) integration. This qualitative study used interview to collect data from teachers at the college of education. Results of this study indicated that teacher education programs failed to provide adequate instructional technologies and ICT facilities for class activities. Further, three major issues which appeared to affect the integration of ICT were found to be: (a) the redesigning of the curriculum and ICT policy, (b) incompetent teachers/lack of professional training in ICT delivery, and (c) insufficient ICT structures.

Keywords: Best practices, teacher education, ICT integration, ICT facilities.

1. Introduction

The aim of any country's education system is to provide quality education and training, the people who act in this provision process are teachers. Teachers in Nigeria fall under three categories depending on the level of professional training, (graduate teachers- university, NCE teachers – college of education and grade II teachers – teacher training, gradually being phased out in the county). The minimum qualification for a professional teacher is the National Certificate of Education (NCE). The National Commission for Colleges of Education (NCCE) was established by an Act in 1989 with a mandate to manage, regulate and enforce minimum standards for all teacher education programmes including accreditation, academic awards and restructuring of pre-teachers curriculum in a total of 82 Colleges of Education (federal, state and private owned) in the country. The College of Education in this study is a highly qualified institution accredited by the NCCE of the Federal Ministry of Education of Nigeria, with 25 years' experience in teacher education. It currently relies on five academic units that offer up to 21 remedial, pre NCE and NCE programmes. Teacher education prepares teachers for the society, equips teachers with necessary skills and competences required for the achievement of goals of the education system. Kafu and Simwelo, (2015) view teacher education as a foundation of any established system, a launch pad for economic progress and as custodian of culture of any given society.

The integration of ICT in teacher education programmes in Nigeria's Colleges of Education have not fully taken off and this have been attributed to several reasons, from lack of proper ICT policy implementation, lack of ICT facilities and access to Internet to teachers resistance to change, teachers non ICT compliant to the lack of skills in practical ICT training and integration as this is a new wave in the Nigerian educational environment makes the list endless. According to Zhang, Yang, Chang and Chang (2016), in realization of the potentials of ICT in education, many countries in the developing world, including the least developed countries, are making huge investments on developing their respective ICT in education plans and in turn bringing various ICT equipment and resources into schools. They further state that other than the development of ICT in education, the role and capacity of teachers have become more of a crisis situation, being one of the big challenges for developing countries, on how to enable teachers' use and integrate appropriate technology into the teaching and learning process. Kozma and Vota (2014) points out that some countries in the face of serious financial constraints are buying one laptop for every primary or secondary student. While ICT can offer positive potential to the classroom and teachers may recognise these, the potential is rarely realised (Gulbahar & Guven, 2008). The successful integration of ICT into the classroom depends on the ability of teachers to structure their learning environments in non-traditional ways,

merging technology with new pedagogies. This requires a very different set of classroom management skills to be developed, together with innovative ways of using technology (Hennessy, Ruthven, & Brindley, 2010).

Player-Koro (2012), posit that educational technology research classifies factors that facilitate (or act as barriers) the use of ICT in schools by teachers as either arising from the external environment or the personal characteristics of teacher's including the beliefs, values and attitudes that are likely to influence them. Similarly, research has also shown that teachers in most countries have been known to display a lack of interest in ICT use, and this may be due to the misconception of the concept of ―integration‖ which can be explained by the fact that they possess insufficient knowledge to integrate ICT. Another restraining factor would be the absence of or inadequate teacher training. The view is that through teacher training the objectives of integrating ICT can be clarified. Further, the managements' attitude in supporting the ICT process is also viewed as important to teachers' use of technology. While the school management's attitude may not directly affect the teachers' awareness of ICT, it could indirectly affect teachers' perception of ICT resources with regards to the standard and quantity that the school requires. It is not just enough for NCCE to give a blanket mandate to all college teachers to be computer literate, teacher training, curriculum structures and materials, classroom practices and methods of assessment must be redesigned right at that level for proper inclusion in classroom practice.

2. ICT Integration and Teacher Development

Zhang, Yang, Chang, and Chang, (2016) point out that at times a ―best practice‖ is not applicable or is inappropriate for a particular organisation's needs. Therefore in applying best practice to organizations, it is essential to adapt and deal with the unique qualities of an organisation. To properly understand cases of best practice for ICT in education, it is necessary to understand the overall background of the case, as well as the overall status and trends of ICT in education. In other words, what may constitute ―best practice‖ in one educational context may not necessarily be the ―best practice‖ for another since each one has its qualities and needs.

The very basic of ICT integration is that all the course content in the school curriculum will be delivered in association with some ICT components. ICT integration into education has been assumed to have the potential to revolutionise an outmoded educational system with new technological tools (Albrini, 2006). According to Cavas, Cavas, Karaoglan and Kisla (2009) ICT plays a critical role in information societies' educational systems. In these societies, the stakeholders of educational policy, redesign and reconstruct their educational systems based on the new educational paradigms such as constructivist theory so that both teachers and students develop the necessary knowledge and skills sought in this digital age. The emergence of the knowledge-based economy has resulted in educational reforms in many developed and developing countries across the world. In essence, these reforms aim to develop active learners to work collaboratively with others to construct knowledge. Pedagogically, they demand a teaching practice that is learner-centred and constructivist-oriented (Jimoyiannis & Komis, 2007).

The factors against the effective use of ICT in teaching in Nigeria are of various dimensions and scope. As posited by the current classroom teachers who are expected to bring in the ICT reform into Nigerian education system went through the ―talk and chalk‖ method of training devoid of any exposure to ICT. It, therefore, becomes a task for these set of teachers to acquire the necessary skills and content that are characteristics of ICT, teachers can only pass on skills and ideas to their students if they themselves are competent in this areas. Making change happen is a difficult process even at the best of times in schools, change is often found to be possibly frustrating, given the remarkable teaching, fiscal, testing and social clamour put down on teachers (Surry, Porter, Jackson & Hall, 2004). These new technologies have put pressure on teachers for a total reorientation and change in direction as many lack the competence and basic access to ICT structures for ICT integration

Countries all over the world have identified not only the positive effects of technology in education, but also the crucial roles that it plays in acquiring jobs in the aggressive job market of the 21st century. Teacher education programmes need to work in line with the National Policy on ICT for the country, whose main objective ―is to create a conducive environment for rapid expansion of ICT networks and services that are accessible to all at reasonable costs…‖ and one policy statement

is ―to ensure the country's effective participation in regional and international ICT market and to promote ICT development in Nigeria, meet the country international obligation and derive maximum benefit from inter co-operation in these areas‖ (NICTP, 2012; p. 13). The ICT Policy facility for Nigeria was provided for research, evaluation and planning purposes. The policy is aimed at tackling the entrepreneurship, innovation, digital divide strategies and development problems in Nigeria.

At the same time, it has been noted that ICT has much to offer, but on that front it has failed to deliver. So much time and effort has been invested in the development of effective ICT policy, even so its implementation has also failed to yield results (Ololube, 2006a, 2006b). Therefore, there is a need to theoretically ascertain if the factors mentioned by teachers in this study are responsible for ICT integration in Nigeria teacher education environment. Little is known about the current process of ICT integration in teacher education, the overall aim of the present study is to explore ICT integration from the teachers' views and in this context the current study adds some original contributions to the theory and practice in the area of ICT integration in teacher education. This study will help to reposition the teacher education programme in Nigeria in the preparation of teachers at the Colleges of Education with emphasis placed on adequate knowledge and application of ICT in teaching and learning process in their teacher education programmes.

3.   Methodology

This is a qualitative study, using in-depth interview as the main research instrument to gather data for the study. The use of in-depth interviews as a research tool for this study has the advantage of providing in-depth investigation, allowing better understanding of teachers' beliefs, perceptions, views, thoughts, feelings, experiences and understanding, in relation to ICT integration. According to Cohen, Manion and Morrison (2007), ―the major justification of using interview in research is that it is believed that in an interpersonal encounter with people, they are more likely to disclose aspects of themselves, their thoughts, their feelings and values‖ (p.282). A College of Education was selected for the study, expanding a purposive sampling method to cover six schools in the college. The schools (faculties) selected included both science and arts. Three respondents were selected from each of these schools; the criteria used being their position as senior academic officers with more than five years as teaching experiences, their role in knowledge sharing as part of their duties, as well as how it relates to teacher education. Some of the respondents had held such posts as dean, head of departments, academic board member and director student affairs units. Sixteen participants emerged at the end of the selection process. Two of the selected participants were unable to participate in the study, due to other official duties.

The interviews were conducted over a three months period (January–March) with the remaining 16 respondents, the interviews were scheduled during their break sessions, a few times the sessions were cancelled because of other school work activity such as teaching practice supervision, the respondents provided a rich insight into how ICT integration in the college can translate into quality teaching and learning. Interpretative Qualitative Approach was used to discuss the findings, teachers were given numbers for identification. The findings were first grouped into themes as they occur in the study. Coding and selection of the themes depended on their importance and relevance to the study as well as their significance to the informants' discussion.

4.   Discussion and Findings - Teachers' Views

ICT integration in teacher education in Nigeria: Major findings from the interview data analysis are presented in this section, in order to explore teachers' views on ICT integration in teacher education. Respondents were asked whether they think ICT integration was needed in teacher education and why. In the analysis of the first question, two themes emerged — ICT facilities, no ICT competence and one sub-theme — useful effective learning. All respondents were in support of ICT integration given the rapid changes occurring in ICT and the relative lack of related transformation in current teacher education, teacher quality is accepted as a critical factor in educational outcomes, there is so little attention paid to improving the quality of teachers' professional knowledge. Teacher 4, Teacher 7 and Teacher 15 commented:

Teacher 7: Teacher competence whether in using ICT or in not using, is already a problematic and challenging situation. You said something about best practices that in itself are one of the challenges: How does one come up with best practice for ICT integration in teaching and learning? What should be looked at? When should measurements be taken? I am the one now asking the questions because I know that all these is with regards to international as well as local assessment… aspects such as standardization. Government expects that ICT should be used to enhance the quality of education there has been little movement on their part towards using ICT to assist teachers with accessing the knowledge and competence that might enhance their teaching.

Teacher 4: Whose best practice are we to follow? ICT integration should start small if the stakeholders mean well or should I say are serious…one day is one intervention process or the other all with conflicting roles…one hasn't taken off with visible results another is taking off.

Teacher 15: Teachers have to be involved in this integration process because they are the one right in the eyes of the storm if I can say that…their input is necessary.

To further capture the participants' views toward ICT integration, Teacher 1, Teacher 3, Teacher 8 and Teacher 9 responded:

Teacher 3: ICT is very useful and effective for both teachers and students…it will be good to have.

Teacher 9: ICT should be integrated into teacher education…gradually… I think we are very late…however, it should be put into requirements for accreditation by those concerned.

Teacher 1: I believe in the potentials of ICT to make learning more fun and efficient as it enriches the learning environment.

 Teacher 8: I believe with ICT our educational system will improve with quality teachers if only there is the ICT implementation and integration.

Teacher 3, Teacher 2 and Teacher 16 affirmed to the lack of ICT structures even when they are well aware that there should be ICT integration in teacher education programmes.

Teacher 3: There is no such thing as ICT integration… how are we going to do that when there is lack of access to ICT and support… by providing computers in IT labs is not enough for ICT integration.

Teacher 16: There are no ICT infrastructures, so where will my competence come from… is not sufficient especially in the IT labs.

Teacher 2: It is a very serious issue that there are no computers in the classrooms…I know it is a lot of investment on the part of the stakeholders.

The second question is a follow-up from the first where the participants were asked whether they think ICT related teacher competence and their actual use of ICT are sufficient in the schools and why. Two themes emerged from this question being ICT training and lack of opportunities. The

participants pointed out in their comments, that the existing ICT training they have had are not sufficient for the implementation process if it were to be effective, so they desire to have more ICT training for a successful ICT integration. Teachers 3, Teachers 11, Teachers 13 and Teacher 15 remarked:

> Teacher 13: As a teacher do have minimum requirements in terms of ICT competency, but I know I should, ICT is developing continually and this means I do need more training in order to update myself accordingly with the changing technology.

> Teacher 11: I know I need more in terms of training to apply this ICT…because it is difficult to give up old habits…when one is set in a particular way.

> Teacher 3: Teachers are already familiar with new technologies in their daily lives…however; they do not have enough opportunities to use ICT in their classes.

> Teacher 15: I personally will want to use technology in class, it will take a lot of training…every day is a new thing…in order to keep up with the developments in new technologies… it is so fast.

On the second theme participants mentioned lack of opportunities to use ICT in the classroom and they are also lack of enough ICT peripherals, software or hardware and ICT policy. The teachers think that these conditions are some of the barriers to their integration of ICT in the teaching and learning processes in teacher education programmes. Teacher 4, Teachers 7 and Teachers 10 noted:

> Teacher 7: I know there are the school's ICT policy….of course it is there is somewhere.

> Teacher 10: I have not read it but it there….maybe it will be implemented…..we just make do with what we have been doing.

> Teacher 4: The classrooms have to be purposely built for ICT integration, so many things has to be on ground, security, electricity, the equipment's…a lot, and it is overwhelming…the stakeholders to me have to take a bold step.

5. Conclusion and Recommendation

Teachers in this study hold common views on ICT integration and the major restraining factor would be the absence of or inadequate teacher training in the use of ICT as a tool for teaching. The view is that through teacher training the objectives of integrating ICT can be clarified. Further, the stakeholders' attitude in supporting the ICT process is also viewed as important to teachers' use of ICT. While the school management's attitude and ICT policy may not directly affect the teachers' awareness of ICT, it could indirectly affect teachers' perception of ICT resources with regards to the standard and quantity that the school requires.

Based on teachers' views in this study, the following recommendations are hereby suggested through which ICT integration in teacher education could be implemented to improve teacher education. One major recommendation is the urgent need to review the educational policy strategies and techniques by policy makers and education administrators as it concerns ICT in the teaching methodologies of teachers. This implies that there is a need to introduce the teaching of ICT in schools curricular for teacher education with emphasis on practical application. When ICT integration at this level is made compulsory, the student teachers will graduate to teach the same way they were taught. Also the findings of this study have clearly shown that the availability of ICT facilities and teachers utilization of any such ICT facilities is quite low or not available. This creates

a serious limitation to quality instructional delivery in this ICT global age, support structures such as electricity and the Internet should be improved and adequately provided for.

Training and re-training of teachers is a continuous process and cannot be over emphasised, such could be achieved through exposure to what is available – conference, seminars and workshops that are ICT based in content delivery, this way the teachers are forced in some ways to stay abreast with the dynamic and modern development in ICT, while the government and stakeholders have a duty towards qualitative education for its citizens, non-governmental organisations should be encouraged to assist in areas of providing and funding of facilities for schools. ICT will not replace the teacher, but ICT should be seen as a tool to enhance quality instructional delivery

References

Cakiroglu, O. (2015). Teachers' views on the use of interactive whiteboards in secondary schools. Eurasia *Journal of Mathematics, Science & Technology Education*, *11*(2), 251–259. doi: 10.12973/eurasia.2015.1335a.

Cavas, B., Cavas, P., Karaoglan, B., & Kisla, T. (2009). A study on science teachers' attitudes toward information and communication technologies in education.

Cohen, L., Manion, L., & Morrison, K., 6th Edition (2007) *Research Methods in Education*. London: RoutledgeFalmer.

Cox, M. J., Cox, K., & Preston, C. (2000). *What factors support or prevent teachers from using ICT in their classrooms?* Paper presented at the Educational Research Association Annual Conference, University of Sussex at Brighton, University of Sussex at Brighton.

Gulbahar, Y., & Guven, I. (2008). A survey on ICT usage and the perceptions of social studies teachers in Turkey. *Educational Technology & Society*, *11*(3), 37-51.

Hennessy, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: commitment, constraints, caution, and change. *Journal of Curriculum Studies*, *37*(2), 155-192.

Hooker, M., Mwiyeria, E., & Verma, A. (2011). *ICT competency framework for teachers in Nigeria* (pp. 1–93). World Bank and GESCI.

Jimoyiannis, A., & Komis, V. (2007). Examining teachers' beliefs about ICT in education: Implications of a teacher preparation programme. *Teacher Development, 11*(2), 149-173.

Kafu, P.A., & Simwelo, G.N. (2015). Reforms and Innovations in teacher education. http://www.eajournals.org/journals/british-journal-of-education..../.pdf.

Kozma, R., & Vota, W. (2014). *ICT in developing countries: Policies, implementation, and impact*. In J. M. Spector, M. D. Merrill, J. Elen & M. J. Bishop (Eds.), Handbook of research on educational communications and technology (pp. 885–894): New York: Springer.

NICTP (2012). *Penetration of Information Technology in Nigeria*. National Information Communication Technology Policy.

Ololube, N. P. (2006a). Appraising the relationship between ICT usage and integration and the standard of teacher education programs in a developing economy. International *Journal of Education and Development using ICT*, *2*(3).

Ololube, N. P. (2006b). The impact of professional and non-professional teachers' ICT competencies in secondary schools in Nigeria. *Journal of Information Technology Impact*, *6*(2), 101-118.

Player-Koro, C. (2012). Factors influencing teachers' use of ICT in education. *Education Inquiry*, *3*(1), 93–108.

Surry, D., Porter, B., Jackson, K., & Hall, D. (2004). *Conditions for creating an innovation friendly environment in K-12 schools*. Paper presented at the Society for Information Technology & Teacher Education International Conference, Chesapeake, VA.

UNESCO. (2015). Qingdao declaration—International conference on ICT and post-2015 education.http://www.unesco.org/new/en/education/resources/in-focus   articles/qingdaodeclaration.

Zhang, J., Yang, J., Chang, M., & Chang, T. (Eds.). (2016). *ICT in Education in Global Context: The Best Practices in K-12 Schools*. 1-17. Springer.