

# SCHOOL-BASED DATA AND MANAGEMENT OF TECHNOLOGICAL INNOVATIONS IN PUBLIC SECONDARY SCHOOLS IN CROSS RIVER STATE

---

OSIKA E. OKON AND M. I. ESSIEN

(Received 31, March 2014; Revision Accepted 17, July 2014)

## ABSTRACT

This study investigated the relationship between school-based data and management of technological innovations in public secondary schools in Cross River State. One hypothesis was formulated to guide the study. Ex-post facto design was used for the study. The population of this study consisted of 232 principals out of which 210 constituted the sample and 840 teachers were drawn from a population of 5,998 using stratified random sampling technique to assess the principals. School-based Data and management of Technological Innovation Questionnaire (SBDMTIQ) was instrument used for data collection. Pearson's Product Moment Correlation Analysis was used to test the hypothesis. Result indicated that: there is no significant positive relationship between school-based data and principals management of technological innovation. It was recommended that government should give priority attention to the provision and distribution of ICT facilities in schools so as to boost the management of innovations in schools.

**KEYWORDS:** Data, management, technological, innovation.

## INTRODUCTION

Information generated internally in the school system constitute school based data. School based data are used to determine progression through school. Their function is formative since they give direction to the goals of innovations and also shape the attitude and behaviours of members of the school community. There is global understanding that progress and technology go hand in hand. Advances in technological know-how have simplified man's ability to cope with his environment. With the recent development in information and communication technology, the world has turned into a global village. Technological innovations involve the introduction of machines, equipment and facilities (computers, projectors, internet

among others) into the teaching/learning environment.

Management of technological innovations in the school system requires that the principal as the head of secondary school to coordinate both human and material resources effectively for the realization of Information Communication Technology (ICT) goal. Information and communication technology is a useful technological innovation which enhances and compliments teaching and learning in all subject areas. Improving the quality of education through the diversification of contents, methods, promoting experimentation, innovation, infusion and sharing of information and best practices as well as policy dialogue are UNESCO's strategic objectives in Education (UNESCO, 2002). ICTs have become key tools and have, a revolutionary

---

**Osika E. Okon**, Department of Educational Administration and Planning, University of Calabar, Calabar, Cross River State, Nigeria.

**M. I. Essien**, Department of Educational Administration and Planning, University of Calabar, Calabar, Cross River State, Nigeria.

impact on how we see the world and how we live in it. ICT is having a revolutionary impact on educational methodology globally. In Cross River State, many factors affect ICT's use and integration. Even at the secondary school level, teachers hardly come in contact with ICT aided instructional materials. Also most teachers do not have the needed experience and' competence in the use of computers either for educational or industrial purposes.

Furthermore, many teachers, the specifications in the National Policy on Education by the Federal Government of Nigeria notwithstanding, have been unable to find effective ways to use technology in their classrooms or any other aspect of their teaching and learning life. These factors have direct consequences on the state's educational development. This work therefore attempts to examine the relationship between school-based data and management of technological innovations in public secondary schools in Cross River State.

#### Literature review

Data are a collection of information in form of ideas and particulars about objects, persons or events. Many procedures are utilized for the collection of the needed information about school which may be presented in numerical or verbal form (Ekuri, 2008). Ekuri further maintained that three categories of data are useful for school improvement: data that determine the current standard of students' conditions to students learning such as: staff absences, enrolment, professional development and status of school plant; and data on factors that impact directly on students' achievement such as: students' attendance, staff opinion of students' progress, parents'/students' opinion of teaching quality and school environment, time allocated to key learning areas, students' dropout rate, transition rate and teacher-student ratio..

In a study carried out by Ibiwoye (1983) on the learning environment in the Zaria Local Government Education Authority Schools, the following problems were identified: i) a wide range of class size, ii) lack of teaching aids, iii) acute shortage of furniture, iv) poor visual learning environment as a result of constant closure of windows to keep off strong winds, and v) poor condition of buildings. In a similar study conducted by Olaofe (2002), twenty years after reported, the situation had even grown worse.

Olaofe painted a very grim picture of the current situation in public schools when he asserted that all the primary schools in his study were typical public schools and were deficient in basic infrastructural facilities that make learning environment conducive. They included access roads, buildings, classrooms, furniture, and toilets among others. Many classrooms had no doors and ceiling. Children sat on the floor to take lessons and teachers had no tables or chairs. The Nigerian public schools were referred to as "a breeding ground for illiteracy"

It is obvious that no educational system can afford to stay outside the technological age in the current digital world. According to a study conducted by Obioma and Ohuche, (1985) and Okebukola (2005), a comparison of the variables of teaching methods with ability grouping, cooperative learning and enhancement strategy found that poor performance in Science, Technology And Mathematics is as a result of poor classroom teaching, including course evaluation, as well as students attitude to school. Without reliable and valid data, schools have a problem of identifying and solving the problems of poor management of innovations.. Management of technological innovations in the school system requires that the principal coordinates both human and material resources effectively for the realization of ICT goal. Management is viewed as a process designed to ensure the cooperation, participation, intervention and involvement in effective achievement of goals (Emenike,2003).

Eziuzo (2009) investigated the resources allocated to Science, Technology and Mathematics Education (STME) in junior secondary schools in Anambra State between 2003 and 2006. The study, which was based on one research question and one null hypothesis, adopted the ex-post-facto research design. Twenty-six schools were selected using proportionate, stratified sampling. A twenty-one item structured questionnaire titled "Science, Technology and Mathematics Education Resource Allocation Inventory (STMERAI)" was used in collecting data from these principals in their offices while the Analysis of Variance were used to test the null hypothesis at 0.05 significance level. The findings of the study indicated that the resources allocated to STME subjects (integrated science, introductory technology and mathematics) were highly should as a matter of urgency increase the annual

budgetary allocation to education. This will help principals to procure the resources needed for the various subjects.

Essien, Uko, Edet, Ekpiken (2008) investigated access and dichotomy between male and female students' enrolment in secondary schools in Nigeria. They also investigated the students' academic performance in the core subjects in the West African Senior Secondary School Certificate Examination. Ex-post facto design was adopted and data obtained from Federal, Ministry of Education and West African Examination Council showed students' results for three consecutive years. The study found, among others, low enrolment in secondary schools, insignificant gender imbalance in enrolment and poor performance in core science subjects.

Like many countries in the world, the education system in Cross River State in particular and Nigeria in general places strong emphasis on Science Technology and Mathematics Education. This is in response to the rapid advancement in science and technology so that the country will be able to key into the process of digitization like other countries of the world. The quality of education itself depends upon the availability of reliable data, adequacy of resources allocated to education and effective management of this resources.

Ntukidem and Etor (2001) asserted that school site selection and acquisition affected the overall goals of the institution. They maintained that the criteria for site selection can be classified into educational and demographic dimensions. Educational criteria are concerned with size of schools in terms of school population, the level and age of students, among others. The demographic criteria include the local or geographical condition surrounding the school site as well as freedom from health hazards, noise vibration and other distractions that might affect teaching and learning in the school. From the study above, it is obvious that school data of this nature will go a long way in helping to select a good school site that will help learning to take place and effective management of technological innovation such as computers, projectors, among others.

Gaziel (2007) examined the effect of the school principals' instructional behaviour on students' achievement in secondary schools. The research sample included 256 teachers from 32 secondary schools in Israel. Data collected on

school features included: school size, average class size, teacher education and experience. These variables were regressed on school students' achievement in matriculation examination results. The result indicated that 49% of the variance in students' achievement was explained by the variables: students' socio economic status, class size and principal leadership behavior. Education is important to national growth and development because the future of any nation depends quite considerably on the quality of education it provides for its citizenry. The nature of school based data available to the principal as presented in the above study enables him to know the required technological equipment and facilities needed for effective learning to take place.

Essien (2004) investigated indicators of self reliance among Nigerian students in Cross River State as perceived by administrators of tertiary institutions. Four hypotheses involving skills in self-reliance were formulated to guide the search. From a population of 1,865 tertiary institutions' administrators, 400 were randomly selected to constitute the sample. Data for investigation were collected using School Administrators Perception of Self-Reliance Questionnaire (SAPSQ). The hypotheses were tested at 0.05 level of significance using t-test of single mean. Results revealed among other that - ability to make decisions without undue external influence and ability to exploit human and material resources were significantly necessary for attainment of self reliance. Based on the findings, recommendations made include: exploratory teaching methods in democratic classrooms, refresher courses for teachers, appropriate reward for teachers to attract the best brains to the teaching professions and emphasis should be placed on research and the use of research findings. Exploratory teaching method can only be possible when technology is applied, refresher courses for teachers on the use of technological equipment will enable the best brain to remain in the teaching profession and make use of future research findings in the educational system.

Educational leaders are being presented with several models for improving the effectiveness of classroom instruction and increasing students' achievement that

advocate for better use of data to guide decisions about instruction. School wide models for instructional improvement such as those advocated by Love (2001), Fullan (2002) and Murzano (2003) had several common themes or components to their model. Their findings revealed: school wide improvement design that involved administrators, teachers, including time scheduled for staff to work together and time for teacher development of content knowledge and subject specific pedagogy. Structured activities for training staff to analyze data on students performance and data on the educational environment that explains differences and disaggregated data to identify learning problems and gaps between expected and actual performance and frequent use of data as a formative evaluation tool to guide instructional decisions and plans. These data provide opportunities for the principal to adequately manage technological innovations. This means that the absence of these data posed a serious management problem to the principal.

Porter, Blaine, Smithson and Osthoff (2005) designed to test the data enacted curriculum instructional improvement model involving Mathematics and Science teachers in 50 middle schools located in five urban districts in the United States of America. The sample was made up of 604 Mathematics and Science teachers who were assigned to treatment and control groups. Result showed that data enacted curriculum model had effect on improving instruction for teachers in treatment schools when compared with teachers that did not experience the data enacted curriculum professional development approach. The key feature of the model is the capacity to analyze gaps and weaknesses of instruction in relation to standards, assessments, improvement of innovation goals and to make informed decisions about the content areas of instruction that should be strengthened to improve students learning. The model uses data on instructional practices and enacted curriculum taught in the classroom to offer educators an additional rich source of information to formative evaluation data and direct feedback to teachers.

Bisong (2008) considered school based data as school records. He described school records as a collection of information received, treated and stored for future reference. He identified reasons for keeping school records to include: provide necessary information for the teacher to act upon; help proper planning; enable the school to monitor the behaviour and general performance of each student in the school system; enable proper evaluation/assessment of the performance of the students in the three domains of cognitive, affective and psychomotor; provide information to principals to enable them make concrete proposals or suggestions for improvement. Emetarom (2004) declared that data from schools and classroom observations during the Situation and Policy Analysis Survey conducted in 1991-1992 in Nigerian primary schools showed that the management of the general environment in Nigerian primary schools did not promote quality teaching and learning. Eighty seven percent of the Nigerian primary schools sampled were overfilled with pupils crowding on the few available long benches. Seventy-seven percent of the schools had no potable water and 68% of schools had no toilets. Three percent of the schools had no chalkboards, 20% of the pupils sat on the floor, 47% of the primary schools lacked furniture for pupils, 77% of pupils were without textbooks, 36% were without writing materials.

Based on the literature review, it is obvious that most- of the studies have been subjected to longitudinal effect and so this study provides current literature on school based-data and management of technological innovations in public secondary schools in Cross River State. Besides, the increased sample of 2010 principals and 825 teachers as well as the instrument used for data collection serve as another significance of this study.

### **Statement of the Problem**

In Cross River State public secondary schools, the goal of ensuring that teachers and students are computer literate in line with ICT innovation has not been realized due to some factors such as: inadequate computers, projectors, internet facilities, inexperienced and untrained personnel in the school system to operate these technological innovation. The consequence of this is that the state is technologically and educationally backward. It is on this bases that this study seeks to address the question: To what

extent does school based data relate with the management of technological innovation in public secondary schools in Cross River State?

**Research question**

The research question that guided this study was:

1. To what extend does school based data relate with the management of technological innovation.

**Statement of hypothesis**

The null hypothesis that guided this study stated that there is no significant relationship between school based data and management of technological innovation.

**Methodology**

Ex-post facto design was used for the study. One hypothesis was formulated to guide the study. The population of this study consisted

of all the 232 principals and 5,998 teachers in the 232 public secondary schools in Cross River State. A sample of 210 principals and 840 teachers were drawn using stratified random sampling technique. Stratification was based on the three education zones in the state. School Based Data and Management of Technological Innovation Questionnaire was the structured instrument for data collection. The instrument consisted of two sections. Section one contained personal information of the respondents and section two involved the items on school based data and technological innovations. The instrument was validated by experts in research statistics and was administered by the researchers to the teachers in their respective schools. However, due to attrition,825 out of 840 questionnaire were utilized for the study. Data collected were coded and analyzed using Pearson Product Moment Correlation Analysis and the result is presented in table 1.

**TABLE 1:** Relationship between School-based data and Management of technological Innovations. (n=825)

Variable	x	SD	r
School-Based Data (X)	13.99	2.39	
Technological innovation (Y)	13.69	1.71	05

\*significant at 0.05; df 823; critical r=0.08

The result presented in table 1 shows that the calculated r- value of 05 was less than the critical r-value of 0.08 given 0.05 alpha level and with 823 degree of freedom. Consequently, the null hypothesis was retained. This implies that there is no significant positive relationship between school-based data and principal’s management of technological innovation.

**DISCUSSION**

The findings of this study has shown that there is no significant relationship between school based data and management of technological innovations in secondary schools in Cross River

State. This finding is rather unfortunate considering the importance of technological innovations in the development of educational system in the state. Therefore the findings is an indication that the necessary technological equipment and facilities such as computers, projectors and other ICT accessories are grossly inadequate in secondary schools in the state. This is why the necessary data cannot even be generated within the school system let alone storing them for retrieval when necessary. It is also observed with dismay that even if the ICT facilities were available, the required man power is not available to operate the machines. This is why there is high rate of computer illiteracy

among the teachers and students in the school system. Therefore, the principal cannot use school based data to manage technological innovations.

## CONCLUSION

The result of this study indicates that school-based data does not relate with the management of technological innovations in public secondary schools in Cross River State; this is due to inadequate ICT facilities in schools. Therefore, it could be concluded that principal's management of technological innovations requires adequate provision of ICT facilities for the realization of functional, valid, excellent and efficient achievement of ICT goals in Cross River State

## RECOMMENDATIONS

Consequent upon the finding of this work the following recommendations were made:

- 1) Government should give priority attention to the procurement and distribution of ICT facilities in schools so as to boost ICT education in the state.
- 2) All stakeholders should create intensive awareness on the need for all to embrace ICT education in the secondary school system.

## REFERENCES

- Bisong, A. A., 2008. Record keeping and school supervision. A Paper presented at a raining Workshop for Inspectors in Cross River State. June, 2nd 3<sup>rd</sup>.
- Ekuri, E. E., 2008. School based data and quality assurance in school supervision. A paper presented at a training workshop for school inspectors in Cross River State. June, 2nd 3<sup>rd</sup>.
- Emetarom, U. G., 2004. Provision and Management of Primary Schools in Nigeria: Implications for Policy Formulation. In E. O. Fagbanye, J. B. Babalola, M. fabunmi & A. O. Ayeni (Ed). Managing primary education in Nigeria. Benin City: NAEAP.
- Essien, M. 1. E., Uko, E. S., Edet, A and Ekpekin, W., 2005. Secondary school enrolment, gender disparity and academic performance in science subjects in secondary schools in Nigeria: Implication for Sustainable Development Benin City: NAEAP
- Emenike, O., 2003. Educational management: Theory and practice. Enugu: Jamoe Publishers.
- Essien, M. 1. E., 2004. Indicators for Self Reliance. West African Journal of Educational Research. 7, 1 &2, 1-8.
- Eziuzo, G. O., 2009. Allocation of Science, Technology and Mathematics educational resources in junior secondary schools in Anambra state. Journal of educational administration and planning 9, (2) 81-91.
- Gaziel, H. H.. 2007. Re-examining the Relationship Between Principal Instructional Leadership and student Achievement. Journal of Social Science. 15, (1): 17-24.
- Ibiwoye, J. M., 1983. "Environment and the education of the child" Paper presented at the International Conference on early childhood education organized by the institute of Education, A.B.U. Zaria with London Montessori Centre, A.B.U. Zaria, 4-8 July, 396-418.
- Love, J. N., 2001. Using Data-Getting result: A Practical Guide to School Improvement in Mathematics and Science. Norwood:Christopher Gordon Publishers Incorporated.
- Murzano, R. J., 2003. What Works in School: Translating Research into Action. Alexandria: Association for Supervision and Curriculum Development.
- Ntukidem, P. J and Etor, R. B., 2001. School site selection and acquisition: Implications for the school board and teaching Administration, Planning and Research. 1, (1): 19-29.
- Obioma, G. O and Ohuche, R. O., 1985. The effects of an instructional treatment in two mathematics ability groups in

- number sequences problem. JSTAN 23, (182): 182-1 85.
- Okebukola, P. A. O., 2005. The race against obsolesce: Enhancing the relevance of Benin. National Workshop on Examination Malpractice. In C. Maduka (Ed.). Examination malpractice: causes, implications and remedies. Benin Ambik Press.
- Olaofe, I. A., 2002. "Public Primary School as Breeding Ground for Illiteracy in Nigeria" Biennial Conference of Reading Association of Nigeria (RAN), Ahmadu Bello University, Zaria, 8-12 October.
- Porter, A. C., Blame, R. K., Smithson, J and Osthoff, E., 2005. Place- based Randomizing Trials to test the Effects on Instructional Practices of mathematics/Science
- Protested Development for Teacher The Analysis of the American Academy of Practical and Social Science. 599, (1): 147-175.
- UNESCO., 2002. Information and Communication Technology in Teacher Education: A planning Guide. Paris: UNESCO.