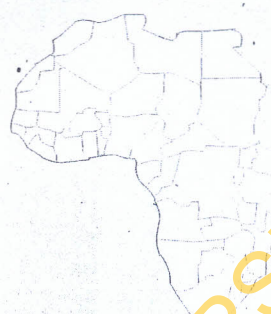


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Enhancing Rural Public Primary School Teachers' Information and Communication Technology (ICT) Knowledge through Holiday Skill Development Programme

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Abstract

The use of information and Communication Technology (ICT) within the four walls of classroom is posing challenges to practicing teachers. This study therefore, investigated the impact of skill development programme organised for rural public primary schools on their ICT knowledge acquisition. The impact of the level of educational qualification attained on ICT knowledge acquisition was also investigated. The study was an experimental study which adopted single group pretest posttest research design. Six hundred and thirty six primary school teachers randomly selected from seven rural local government areas (LGAs) in Nigeria were used. The instrument used for data collection was ICT Test (KR20= 0.7). The data generated was analysed using paired t-test, Analysis of Covariance and Scheffe Post Hoc Test. It was found in the study that the skill development programme has significant main effect on rural primary school teachers' knowledge acquisition on ICT ($p < 0.05$). The level of educational qualification was also found to have significant effect on the ICT knowledge acquisition of the teachers ($p < 0.05$). The knowledge of ICT is needed to be enhanced in teachers because a teacher can only make use of the skill he/she possesses. ICT is known to promote effective teaching and also enhances the involvement of the shy and withdrawn learners. It is therefore imperative to equip all the rural teachers with ICT Skills through periodic skill development programmes. This will improve the lot of their pupils.

Introduction

Education for all (EFA) as turned out to be a major challenge to nations, especially, the Third World countries. A release from UNESCO's Institute of Statistics (2002), lends support to this view by stating that the number of primary school – age children in the Sub – Saharan Africa (SSA) grew from over 82 million in 1990 to 106 million by 2000 and is projected to rise to 139 million by 2015. Concomitant with this challenge, is the growing imbalance between the knowledge base of the trained teachers in low – income countries and the quality demand as education provision is expanding (Leach, Moon and Power, 2002). Learning Instruction that lacks innovation is likely to yield poor result in terms of cognitive, affective and psychomotor outcomes. This presents a challenge before teachers that aim at achieving the objectives of a subject's curriculum. This calls for adaptation of Information and Communications Technology (ICT) to teaching and learning of school subjects in primary schools especially in Africa. Quoting from info Dev 2005

The existence of ICTs does not transform teacher practices in and of itself. However, ICTs can enable teachers to transform their teacher practices, given a set of enabling conditions. Teachers' pedagogical practices and reasoning influence their uses of ICT, and the nature of teacher ICT use impacts student achievement.
(pp2)

This reveals the accomplishments of ICT if properly used in a teaching – learning situation. Mandla, one of the young primary school teachers in South Africa made use of ICT to enhance teaching. In his words, citing from leach, et al (2002):

With the arrival of the laptop everyone in the school was overjoyed. The first time I introduced it to my learners, they were so curious and wanted to use the computer right away. Using the computer makes teaching and learning more enjoyable. Computer technology has done a splendid job for me as a teacher. I'm no longer a traditional teacher who always counsels learners to absorb. I, together with my project always plan

activities in such a way that learners work cooperatively. Even shy and withdrawn learners become involved (pp3)

This reveals the wonders of ICT.

The integration of ICT to teaching especially in primary schools however, has its associated obstacles that must be adequately addressed. One of the problems with technology integration is the barriers that teachers face. In their research, Jenson, Lewis and Smith (2002) summarise these barriers as limited equipment, inadequate skills, minimal support, time constraints, and the teachers' own lack of interest or knowledge about computers. Aduwa-Ogiegbaen and Iyamu (2005) report the effort of ICT usage and obstacles to use ICT in schools in Nigeria. They claim that the obstacles to ICT use in schools include cost, weak infrastructure, lack of skills, lack of relevant software, and limited access to the Internet. In order to improve the teaching and learning processes, policymakers and practitioners should be aware of the fact that principals, teachers and computer coordinators are the central actors in the implementations of computers' educational practices. Hence, human involvement is an essential component of ICT integration.

Moon (2000) observes that "bricks and mortar institutions of teacher education created in the last century are unable to cope with the scale and urgency of demand of ICT". A teacher who does not possess adequate level of knowledge of ICT may not consider its usage while teaching. This necessitates the suggestion of Moon and Dladla (2002) that teacher education programme should be recast and that such training needs to be strongly conceptualised and that medium and long – term planning for professional development must incorporate the use of new ICTs. The above suggestion could be of help to trainee teachers. What will be the lot of teachers that are already on the teaching field and the learners under them? According to InfoDev (2005), teachers that are not privileged to attend regular training workshops have not been seen to be comfortable using ICTs, let alone in integrating it successfully into their teaching. This calls for professional development programme, packaged to boost the knowledge-base of the practicing teachers especially on ICTs.

The current emphasis on the use of ICT in a teaching – learning situation does not eliminate the major roles of a teacher as a facilitator, and a leader. These roles are likely to be influenced by certain factors. Wayne and Youngs, (2003) based on their review of past research work contend that certification in a particular subject area may result in more effective teaching. This informs the reason why teachers' highest educational qualification was controlled for in this study. This study therefore seeks to find the main effect of the Holiday Skill Development Programme organised by Federal Government of Nigeria in 2006 through National Teacher Institute (NTI), on (ICT) knowledge acquisition of Nigerian rural primary school teachers. It also aims at finding the effect of their educational qualification on ICT knowledge acquisition.

Research Questions

The following research questions were answered in this study based on the salient problems highlighted in the introductory section.

1. Is there any significant main effect of the holiday skill development programme on the rural primary school teachers' ICT knowledge acquisition?
2. Does educational qualification of the rural primary school teachers have significant main effect on their ICT knowledge acquired in the programme?

Methodology

Research Design

Single group pre-test – post-test experimental research design was adopted for the study.

Sample

Seven rural local government areas (LGAs) in Nigeria were purposively selected for the study. Only primary schools where rural public primary schools were in existence in the seven selected LGAs. A teacher each

was randomly selected from each of the schools. Six hundred and thirty six rural primary school teachers participated in the study.

Instrument

Information and Communications Technology Test (ICTT) was used to gather data for the study. This instrument was designed by the researcher to measure the knowledge of rural primary school teachers on ICT. It consists of two sections, section A sought information on personal characteristics of teachers and section B presents ten fill – in the gaps items on ICT in which four items have two gaps each while others have a gap. The items were developed using the modules prepared by ICT experts. This ensured the content validity of the items. The estimated reliability coefficient using Kuder Richardson 20 formula was 0.7. The test was critiqued by a test development expert who also ascertained the content validity of the instrument. ICTT was used as both the pre-test and post-test. The highest mark obtained on ICTT is 14.

Procedure

The researcher was the resource person on ICT during the holiday skill development programme organised by the Federal Government of Nigeria through National Teacher Institute (NTI) in 2006. The ICTT was administered before the practical-oriented training. At the end of the training, ICTT was also administered as Post-test. Marking scheme was prepared for scoring the responses of the participants.

Data Analysis

Paired t – test, Analysis of Covariance (ANCOVA) and Scheffe Post Hoc were used to analyse the data collected for this study.

Results and Findings

Research Question One

Is there any significant main effect of the holiday job development programme on the rural primary school teachers' ICT knowledge acquisition?

Table 1: Paired t – test showing the difference between pre-test and post-test scores of participants.

	Mean	N	Std Deviation	t _{obs}	df	P	Remark
Pretest Score	0.42	636	3.05	77.97	635	.000	S
Post test Score	10.55	636	1.64				

Table 1 shows that the $t_{(635)}$ observed value indicating the difference between the pretest and posttest scores of the participants is 77.97; $P < 0.05$. Since P value is less than 0.05, it implies that there is significant main effect of the holiday skill development programme on the rural primary school teachers' ICT knowledge acquisition.

Research Question Two

Does educational qualification of the rural primary school teachers have significant main effect on their ICT knowledge acquisition?

Table 2: ANCOVA – Main Effect of Rural Primary School Teachers on their ICT Knowledge Acquisition

	Experimental Method					
	Sum of squares	df	Mean square	f	P	Remark
Main Effect (combined)	424.828	2	212.414	24.879	.000	S
Highest Educational Qualification	170.825	2	85.4125	10.004	.000	S
Medium Educational Qualification	84.736	1	84.736	9.925	.000	S
Lowest Educational Qualification	509.564	3	169.855	19.894	.000	S
Covariates – Pre-score	5396.114	632	8.538			
Model	5905.678	635	9.300			
Residual						

S= Significant at 0.05 alpha level.

The result of analysis of covariance presented in Table 2 shows that $f_{(2,632)}$ ratio indicating the main effects of rural primary school teachers' educational qualification on their acquired ICT knowledge in the programme is 10.004; $P < 0.05$. Since the P value is less than 0.05, it implies that educational qualification of the rural primary school teachers has significant main effect on their acquisition ICT knowledge in the programme.

Table 3: Scheffe Post Hoc Test.

Highest Educational Qualification	N	Subset for alpha = .05
		1
Grade II	29	8.71
NCE	551	10.52
B.Ed	56	11.73
Sig.		.304

The result of Scheffe Post Hoc Test as shown in Table 3 shows that participants with highest educational qualification (B.Ed) gained more knowledge from the ICT programme with a mean score 11.73. Next to B.Ed is participants with National Certificate of Education (NCE) with mean of score 10.52 and lastly, participants with Grade II certificate with mean score 8.71

Discussion

The participants in the holiday teacher development programme gained significantly especially in the area of knowledge of ICT. This result justifies the huge amount of money spent by the Federal Government on the training programme. Acquisition of knowledge of ICT by the teachers precedes its use in the public primary schools. The finding from this study corroborates the earlier results from Moon (2002). He observed that "bricks and mortar" institution of teacher education created in the last century are unable to cope with the scale and urgency of demand of ICT.

The training and ICT knowledge gained by the participants will be a starting point in overcoming a formidable task of ICT use in rural public primary schools. Large proportion of Nigeria's population resides in rural areas. The education of the children in this area can be effectively taken care of with the support of ICT. Battery operated laptops that could be used for educational programmes are available in markets. With the acquired knowledge of ICT by these rural primary school teachers, their experiences can turned out to be the same with that of Mandla as cited by Leach *et al* (2002). With the arrival of ICT (using laptops) in Mandla's classroom the pupils were so curious, found learning more enjoyable and withdrawn learners became involved.

The finding also provides a solution to one of the problems of ICT integration raised by some researchers. They realised that most of the problems of ICT integration to schools are associated with teachers. In their research, Jenson, Lewis and Smith (2002) summarise these barriers as limited equipment, inadequate skills, minimal support, time constraints, and the teachers' own lack of interest or knowledge about computers. Aduwa-Ogiegbaen and Iyamu (2005) report the effort of ICT usage and obstacles to use ICT in secondary schools in Nigeria. They claim the obstacles for ICT use in secondary schools are cost, weak infrastructure, lack of skills, lack of relevant software and limited access to the Internet. Training and retraining of teachers especially on ICT usage will gradually eliminate problem of lack of skill and poor attitude to ICT usage in schools.

The participants with higher educational qualifications achieved more in the ICT training programme. The level of knowledge acquired can as well determine the level of its use. Little wonder Wayne and Youngs (2003) contend that certification in a particular subject area may result in more effective teaching. Continuation of this type of training programme is likely to transform the education system in Nigeria especially in rural areas.

Recommendations

Based on the findings of this study, the following recommendations are made:

- Federal Government should continue with the programme until all the rural primary school teachers have benefited from ICT training.
- Federal Government should also provide adequate ICT facilities that could be used in rural primary schools to foster the use of the knowledge gained by the participants.
- The two other tiers of government should also corroborate the effort of the Federal Government in providing ICT training and facilities for rural primary school teachers.
- Federal Government should also put a strategy in place to make participants ICT trainers in their respective schools.
- School inspectors should also be carried along while introducing ICT to rural primary schools for effective monitoring. This is important to achieve the desired goals.

Conclusion

Rural areas have been neglected in the past and pupils' education has really suffered in rural settings. With the training on ICT use in rural primary schools, hope seems to be coming alive. If learning of school subjects can be adequately supported with ICT pupils' interest in learning will be sustained and EFA will no more be a mere slogan but a reality.

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