TEACHERS' UTILIZATION OF INSTRUCTIONAL SKILLS IN THE 21ST CENTURY CLASSROOM

By

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Abstract

If education is the most powerful instrument for social and economic progress of any country, then teachers are the heart of any educational enterprises and the life of any school system. If teachers have the responsibility of translating educational policies into practice, then it is essential to assess the level to which teachers have the required skills to function effectively in the 21st century classroom. In view of this, the study evaluated the instructional skills of teachers in Southwestern Nigeria. It also assesses if there is significant difference in the skills of teachers based on teaching experience. The study adopted a survey research design using the CIPP model of evaluation. One hundred and five (105) teachers, in seven (7) local government areas, in the Southwestern part of Nigeria constitute the sample. An adapted and validated instruments was used for data collection and this is named "Teachers' Instructional Skills Assessment Format" (r = 0.85). Data were analyzed using percentages and t- test and at 0.05 level of significance. The studies found that higher percentage of the participants have high instructional skills by recording 50% and above. The study found no significant difference in analytical, design, development, implementation and evaluation skills of experienced and less - experienced teachers. Although, there was no significant difference but the mean scores show that experienced teachers possessed better instructional skills. The study recommends that education stakeholders in Nigeria should rise up to improve the quality of teacher education programmes so that the newly inducted teachers would be able to face the challenges of 21st century classroom. Government should give priority to investment in human capital through teacher education and re-training of teacher educators. The study recommends that teachers' skills development should be a continuous exercise so as to integrate pedagogical and technologies professionally in order to enhance learners' performance.

Key words: Evaluation, Pedagogy, Teacher Education, SAI, Educational Technology.

Background to the Study

If teachers are expected to prepare their students for the knowledge society, they have to be adequately prepared for this responsibility through a robust teacher education programme. Nigeria as a country can promote an educational system with highly skilled teachers that have the capabilities to generate ingenuity and creativity in learners, provided they themselves experienced creativity and ingenuity in their training. Adedigba (2010) noted that since the National Policy on Education in Nigeria emphasises the use of innovative ideas in the school setting, schools expect that graduates of teacher education programme have reasonable skills to function effectively in the 21st century classroom. A 21st classroom is characterized by environment where teacher provides opportunities for students' involvement in learning process, creative thinking, problem solving activities, effective communication, collaborative and technology integration. Teachers are generally prepared with the competence to diagnose learners' need, design instructional strategies, develop lesson plan and instructional media, deliver lesson as pre-determined and evaluate the entire instructional process. For instance, effective utilization of instructional technologies in the 21st century classroom demands teachers' creativity, and efficient

preparation. Teachers should be constantly updated with emerging technologies and their application principles in order to achieve the expected learning outcomes (Olori & Osikoya, 2018).

While explaining the relevance of instructional technology to pedagogical practice, Greenhow, Robelia, and Hughes (2009) posited that in any circumstance, educational technology should provide for the trainee-teachers maximum instructional skills. However, due to dynamism in pedagogical practice, educational technology experts have been challenged to answer a critical question: what instructional skills should teachers possess in the 21st century? (Goktas, Yildrim & Yildrim, 2009). In order to answer this crucial question, it is important to examine studies on the importance of educational technology to teaching and learning.

Benedict (2006) justifying the restructuring of the present teacher education programme in Nigeria noted that in the sixties, the Grade II teacher training Colleges were able to train student – teachers successfully in relevant teaching skills through systems approach to instruction as highlighted in principles and practice of education. He equally noted that in the seventies Nigeria Certificate in Education (NCE) teachers prepared by the Colleges of Education were able to effectively utilize the instructional skills in the classroom. This success could be attributed to a robust curriculum which provided for Educational Technology and Micro-Teaching. Emphasis was placed on acquisition of the critical skills of instruction. However, with the phased out of teachers' colleges and low patronage of Colleges of Education, the question how skillful are teachers of today becomes pertinent.

On what skills are required for effective teaching in 21st century classroom, Lim and Chai (2008) emphasized that by training, professional teachers should possess instructional skills categorized as follows:-

(i) Diagnostic or analytical skills, which is analysis of instructional tasks, learners need, age, and class, mental and emotional readiness.
(ii) Skills for designing instructional strategies, which is selecting and organizing learning experiences as well as determining how objectives will be met.
(iii) Skills for development of lesson plan and relevant instructional materials that will be most effective in achieving the instructional objectives. It includes developing plan that allows full learner participation and classroom management. This stage is very important because it contains the step by step activities the teacher will employ to satisfy the objectives set for the lesson. Here, the teacher will translate the conceived design into lesson planning activities.
(iv) Skills for implementation and delivery of instruction, which focus on creating set induction or introducing lesson, structuring of classroom questions, illustrating with examples, use of instructional materials, planned repetition, reinforcement, non-verbal communication and stimulus variation.
(v) Skills for evaluation, which is teachers' competence to evaluate the impact of the entire instructional system, including media with respect to the scope, sequences of content, use of learner centred strategies and the learning outcomes. The activities at this stage are significant in order to provide feedback for the purpose of revision and for follow up activities.

It can be deduced from the stated skill categories that what constitutes instructional skills in the 21st century should be relative to instructional technology. Instructional technology is the facilitation of human learning through systematic method of problem analysis, solution design, development, implementation, and evaluation of instructional processes and resources for improved performance in education. Therefore, a graduate of any teacher training institution in Nigeria is considered to have acquired instructional skills during training. Such skills can be grouped as follows:-

- Analytical skills
- Design skills
- Development skills
- Implementation skills
- Evaluation skills

Peralda and Costa (2007), while stressing the importance of 21st century instructional skills in facilitating efficient teaching posited that many practicing teachers lack the required skills to analyze the learners, design the method, develop lesson plan and instructional media, implement instruction and evaluate the total processes involved in teaching-learning. However, other problems may be identified which may find their roots in the pattern of training for skills acquisition. For instance, Archambault and Crippen (2009) observed that faculty members in pre-service teacher education, many of whom were educated before technologies became prominent feature of the learning process are not comfortable or skilled in using technologies to prepare the pre-service teachers.

This problem can spread throughout the classroom experience of teacher education faculty members thereby making it a somewhat frustrating experience for faculty members and students. On the other hand, in a study by Olori (2017) it was reported that majority of the faculty members agreed that they have undergone several in-service training and workshop on the use of instructional technologies in teaching thus they are confident on the instructional skills possessed by their students. These contradicting reports on the level of technological skills possessed or not possessed by teacher trainers themselves and the consequential effect on their trainee make this study important.

There will be continuous debate on the level of instructional skills possessed by teachers in Nigeria in the context of teacher preparation or teachers' characteristics. Afe (2001) noted that in Nigeria, majority of the in-service teachers are not adequately prepared with the skills to function effectively in the 21st century classroom. Many of them could not follow instructional process leading to successful learning outcome. There is lack of expertise in handling instructional technologies especially the new ones which have flooded the market. However, studies indicated that apart from professional training, various state governments do organise workshops and seminars for the in-service teachers on professional development in order to catch up with the needful of 21st century classroom (Adeosun, 2016).

Olori (2017) reported in a study that Lagos state ministry of education indicated that between 2010 to date 90% of its teachers have been undergoing capacity building workshops to enhance productivity. As it were, if there are still teachers that lack the basic teaching skills, they are very few and they may be in the category of the newly employed teachers who has not attended any capacity building training. Teacher training institutions are encouraged to live up to expectation in the training of teachers as nation builders because no nation can rise above the level of its teachers. Also, the door to modernization is through education and it's often not known that teachers are in possession of the key. These arguments on the level of instructional skills possessed as well as influence of teachers' experience make this study essential.

A further discussion on teacher and technology pointed to a study in which Honey,MicMillan and Spielvoget (2005) investigated the instructional skills of pre-service teachers preparing to teach at the middle and high school levels. In the study, majority of the pre-service teachers (90%) posited that instructional design competency will advance the quality of their instruction, (75%) felt comfortable in developing and using instructional media with students, and (70%) planned to use analytical skills effectively in the classroom when they start teaching, while (80%) responded that they are competent in evaluation skills. Half of the pre-service teachers shared the same opinion that their teacher training

courses provided enough information about how to use instructional skills in the classroom. On the other hand, the remaining half of the pre-service teachers reported they were not provided in the training enough information on systematic utilization of instructional skills.

In a study,Jonsson and Lennung (2011) investigated the pre-service teachers' use of instructional skills in the classroom and the most outstanding result of the study was that after enrolling in an educational technology course, pre-service teachers had significant possession of analytical, design, development, implementation and evaluation skills . Campbell, Murphy and Holt (2002) in a study found that in-service teachers significantly possessed analytical, design, development, implementation and evaluation skills. Bauer and Kenton (2005) in a study of in-service teachers in high school found significant possession of analytical, design, development, implementation and evaluation skills in the sampled teachers. Botturi (2003) in a study found significant improvement in analytical, design, development, implementation and evaluation skills among pre-service teachers on teaching practice programme in Switzerland. Contrarily, Berliner (2004) found that pre-service teachers' were deficient in analytical, design, development, implementation and evaluation skills. Kehinde (2012) in a study reported that Pre-service teachers have poor skills in the use new instructional technologies.

Archambault and Crippen (2009) observed that the use of instructional skills is influenced by teaching experience. Sugar, Crawlley and Fine(2004); Ertmer, Ottenbreit-Lftwich and York(2006); Lau and Sim(2008) reported that there is no significant difference in the analytical, design, development, implementation and evaluation skills possessed by experienced and less experienced teachers. On the other hand, Tam (2000); Chauve (2003) and Corich (2004) reported that there is significant difference in the analytical, design, development, implementation and evaluation skills possessed by experienced and less experienced teachers.

The study is guided theoretically by systems theory of Ludwig Bertalanffy in 1968. Bertalanffy (1968) considers a system as a complex of interacting elements that are mutually interdependent and functionally related and working together towards achieving the same goal. Systems theory focuses on the arrangement of and relations between the component parts which connect them into a whole. The systems approach to instructional process is an attempt to conceive teaching and learning process as an event made up of several elements of instructional system. However, this could be a systematic integration of the instructional skills which teachers should possess in order to function effectively in the 21st century classroom.

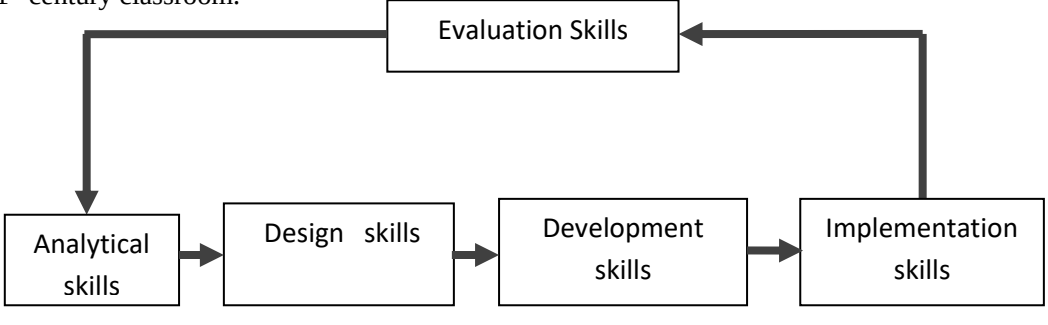

Figure 2.3: Instructional Skills Model

Source: Olori (2017)

Conceptual Framework for Evaluation of the Instructional Skills

EVALUATION	VARIABLES OF INTEREST	INSTRUMENT FOR DATA COLLECTION	RESEARCH QUESTION AND HYPOTHESIS	DATA SOURCE
CONTEXT	This is de-emphasized in this study			
INPUTS	Teacher-factor e.g years of teaching experience	Teachers' Instructional Skills Assessment Format (TISAF	**H01**	Teachers
PROCESS	Instructional Skills (analytical, design, development , implementation and evaluation)	Teachers' Instructional Skills Assessment Format (TISAF)	**H01**	Teachers
OUTPUT	Level of instructional skills possessed by the teachers	Teachers' Instructional Skills Assessment Format (TISAF)	**RQ 1**	Teachers

Source: Adapted from CIPP Evaluation Model by Stufflebeam (2003)

Statement of the problem

Teacher education ideally involves inculcation of instructional skills to make for competent teachers who can function efficiently in the 21st century classroom. Such skills are usually found in the curriculum of all teacher education institutions. However, there are diverse reports from literature on the level of skills possessed by teachers. If the instructional skills are of relevant for effectiveness, can it be said that teachers have acquired enough skills ? This study sought to evaluate the level of instructional skills possessed by teachers in public schools in South West Nigeria and the extent to which teaching experience influences possession of the skills.

Research Question

1. What is the level of teachers' possession of instructional skills?

Hypothesis

H01: There is no significant difference between the experienced and less experienced teachers on instructional skills possessed.

Methodology

Research design

The study adopted a survey research design.

Population

The target population for the study consists of all professionally trained teachers at public primary and secondary schools in South West part of Nigeria.

Sample and sampling technique

The sample consisted of 105 respondents. Multi-stage sampling technique was used in constituting sample for the study. Simple random sampling technique was used to select three states (Oyo, Lagos and Ogun) from the six states in South West part of Nigeria. Oyo State has thirty three Local Governments Areas, Lagos State and Ogun State have twenty Local Government Areas each. Proportional sampling technique was used to select ten percent of the Local Government Areas in each selected state and this gave three (3) LGAs in Oyo, two (2) LGAs in Lagos and two (2) LGAs in Ogun State. Purposive sampling technique was used to select five (3 primary and 2 secondary) public schools in each local government area and this gave a total of thirty five schools. Purposive sampling technique was used to select three professionally qualified teachers in each school for direct classroom observation.

Instrumentation

The instrument "Teachers' Instructional Skills Assessment Format (TISAF)" was an adaptation of Charlotte Danielson's (2007) framework for teaching skills and Olabisi Onabanjo University Faculty of Education Student – Teacher Evaluation Format (OOUSTEF) for supervision of teaching and learning in the classroom. The instrument was used to directly observe the teachers' utilization of instructional skills. The instrument has two sections. Section A sought background information about teachers in terms of name of school, class taught, topic and years of teaching experience. Section B was used to rate the teachers on the utilization of instructional skills in classroom situation. It consisted of five (5) parts which covered the analytical skills, design skills, development skills, implementation skills and evaluation skills. The participants were directly assessed during teaching using four likert type rating scale of the followings options: Excellent (4), Very Good (3), Good (2) and Fair (1). In order to establish the validity of the instrument it was given to experts in Educational Technology and Educational Evaluation for comments on the adequacy and suitability of the items in measuring what it is designed to measure. The errors pointed out were corrected and reflected in the final draft. The instrument was also pre-tested by observing thirty (30) teachers and using inter-rater reliability with Scott's Pi (π) coefficient formula. This yielded values of 0.85 thus, confirming that it was valid, internally consistent and reliable.

Method of Data Collection

One research assistant who is a lecturer in College of Education and who has also been actively involved in teaching practice supervision for many years was selected from each of the three states. The research assistants were trained in the procedures for administering the evaluation instruments called. For administration teachers' demographic information was obtained through their lesson plan and personal interaction, while teachers directly observed in the classroom by research assistants were allowed to teach any topic of their choice as they demonstrated the use of the instructional skills within a period of 35 - 40 minutes.

Method of Data Analysis

Frequency counts and percentages were used to answer the research question while *t*-test was used for testing the hypothesis

Results

Research Question: What is the level of teachers' possession of instructional skills?

Table 1: Frequency Distribution of Level to Which the Teachers Possessed Instructional Skills

Instructional Skills	No. of Observed Teachers with High Instructional Skills (%)	No. of Observed Teachers with Low Instructional Skills (%)
Analytical Skills	84 (80.0%)	21 (20.0%)
Design Skills	90 (85.7%)	15 (14.3%)
Development Skills	65(61.9%)	40(38.1%)
Implementation Skills	59 (56.2%)	46(43.8%)
Evaluation Skills	80 (76.2%)	25 (23.8%)

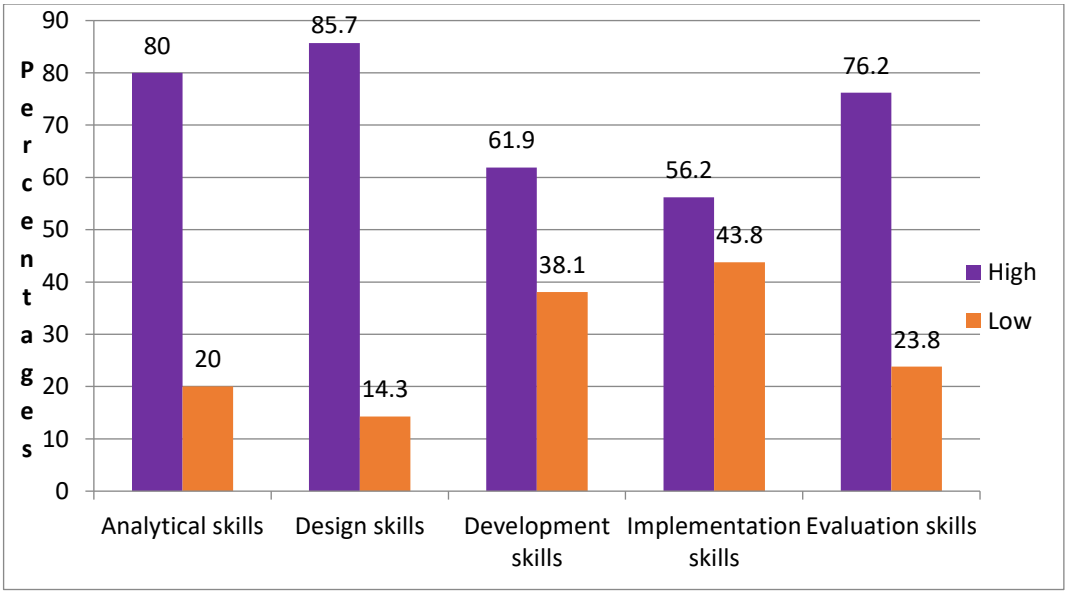

Figure 1: Instructional Skills Level of the Teachers

Table 1 revealed that 80.0% of the sampled teachers in observed category were found to possess high analytical skills, while 20.0% were found to possess low analytical skills. In design, 85.7% were found to possess high skills, while 14.3% were found to possess low skills. In development, 61.9% were found to possess high skills, while 38.1 % were found to possess low skills. In implementation skill, 56.2% were found to possess high skills, while 43.8 % were found to possess low implementation skills. In evaluation, 76.2% were found to possess high skills, while 23.8 % were found to possess low skills. This result is graphically represented with Figure 1 above.

Hypothesis:

There is no significant difference between the experienced and less experienced teachers on instructional skills possessed

Table 2: Summary of *t*-test Statistics Comparing the Teachers' Level of Possession of Instructional Skills in Terms of Teaching Experience

Instructional Skills	Teaching Experience	N	Mean	SD	SD Error Mean	df	t-cal	Sig. Val.
Analytical Skills	Less Experienced	33	11.88	2.58	0.45	2	-1.342	0.173
	Experienced	72	13.53	2.03	0. 24	102		
	Total	105				104		
Design Skills	Less Experienced	33	11.12	3.06	0.53	2	-	0.156
	Experienced	72	13.53	2.55	0.59	102	0.191	
	Total	105				104		
Development Skills	Less Experienced	33	11.27	3.45	0.60	2	-1.522	0.304
	Experienced	72	13.25	3.75	0.44	102		
	Total	105				104		
Implementation Skills	Less Experienced	33	11.85	3.24	0.56	2	-1.560	0.182
	Experienced	72	13.92	4.15	0.49	102		
	Total	105				104		
Evaluation Skills	Less Experienced	33	11.09	3.50	0.61	2	-0.370	0.270
	Experienced	72	13.39	3.12	0.37	102		
	Total	105				104		

The results in Table 2 revealed that the null hypothesis is retained, meaning that there is no significant difference between observed experienced and less experienced teachers in all the instructional skills. In Analytical skills (t = -1.354, P > 0.05), Design skills (t = -0.191, P > 0.05), Development Skills (t = -1.522, P > 0.05), Implementation Skills (t = -1.560, P > 0.05) and Evaluation Skills (t = -0.370, P>0.05).However, it is revealed that the experienced teachers obtained higher mean score when compared with the less experienced teachers.

Discussion of findings

The success of any teacher education programme significantly depends on sufficient instructional skills provided by the curriculum and the teacher trainer. This is a known fact because a skillful, innovative and creative teacher in the 21st century classroom must be able to analyze the learning tasks, design instructional method, develop lesson plan and materials, effectively implement instruction and evaluate the entire teaching - learning process. The finding on research question shows that in terms of analytical, design, development, implementation, and evaluation skills majority of the teachers observed highly possessed instructional skills. This shows that majority of teachers in Nigeria possessed the competence in the utilization of systems approach to instruction (SAI). This finding agrees with the finding of Jonsson, Baartman and Lennung (2009) who reported in a study that when teachers undergo training and re-training programmes these will greatly help them to develop competence in the use of systems approach to instruction. This finding is supported by Koehler and Mishra (2009) who observed that teacher education curriculum has been redesigned with provision of effective technological pedagogical and content knowledge (TPCK) and for teachers to be systematic in their instructional approach.

Findings in the hypothesis reveals no significant difference in the analytical, design, development, implementation and evaluation skills possessed by the less experienced and experienced teachers. This finding supports the study of Berliner (2004), Goeze, Zottmann, Schrader and Fischer (2010) who earlier reported no significant difference in the analytical, design, development, implementation and

skills of experienced and less experienced teachers. The reason given is that the two groups of teachers were exposed to contemporary issues in curriculum development.

Conclusion

This study evaluated the instructional skills of public primary and secondary schools teachers in southwest, Nigeria. The purpose of the evaluation was to investigate the level to which they possess analytical, design, development, implementation and evaluation skills so as to provide empirical support for decision to review policies on skill training of teachers. The findings of the study reveal that majority of the teachers observed highly possessed instructional skills. The study primarily reveals that the quality of instructional skills provided by teacher education programmes seem to be sufficient to offer the 21st century skills needed by the Nigerian students.

The findings reveal no significant difference in the analytical, design, development skills, and implementation and evaluation skills of in-service teachers in terms of teaching experience. However, experienced teachers obtained higher mean scores in all the skills when compared with their counterparts meaning that they are better in the instructional skills.

Recommendations

Based on the findings, it is recommended that a policy of mentor-mentee relationship should be put in place by government whereby a newly employed teacher would be placed under the supervision of an experienced teacher for a period of one year in order to understudy the teacher to whom he has been assigned and gradually assumes the responsibility of teaching. Nigeria government should continue to provide the necessary impetus for the training of teachers in order to improve their efficiency in the 21st century classroom. Teachers' remuneration should improve like other professionals in Nigeria. Teacher registration council of Nigeria should keep records of certified teachers, monitor their progress, honor them with fellows, associates and facilitate regular meetings by professional members.

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