Professional Development and School Infrastructure: Panacea to Teachers' Effectiveness in Post - COVID World in Ogun State, Nigeria

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Abstract

Among the many educational reforms to cushion the effects of the COVID-19 pandemic are the need for teachers to keep up with modern trends, as well as, upgrade the use of modern school infrastructure. For these may hamper teachers' effectiveness. This study therefore examined professional development and school infrastructure as determinant to teachers' effectiveness in COVID world in Ogun State, Nigeria. Literature was reviewed conceptually, empirically and theoretically. Three research questions were raised and answered, while one research hypothesis was formulated and tested. Descriptive survey research design was adopted for the study and the population comprised 12,745 public secondary school teachers in 474 public secondary schools in Ogun State. Multistage sampling technique was used to select 200 participants, and self-developed questionnaire was used to collate relevant data from the participants. The research instrument was validated using Lawshe Content Validity Ratio and test-retest reliability technique was used to test the internal consistency. Data collected were analyzed using mean, standard deviation and multiple regression. The hypothesis raised was tested at 0.05 level of significance. The findings showed that teachers' professional development as well as school infrastructure are contribute significantly to teachers' effectiveness. The study concluded that, for teachers to be effective in their respective mastery areas, professional development must be periodic and school infrastructure was be upgraded. The study, therefore, recommends that the Ogun State Ministry of Education should periodically organise professional development programmes for public secondary school teachers and invest meaningfully in school infrastructure upgrading.

Keywords: professional development, school infrastructure, teacher effectiveness, public secondary schools

Background to the Study

The increased awareness and attention on student performance, accountability, and reform have led to greater discourse among researchers and educators regarding the roles of teachers and their effectiveness on the job. Many personal, family, and neighbourhood factors contribute to student's academic performance, but a large body of research suggests that, among school-related factors, teachers matter most. This is because teachers are central to any consideration of schools, and a majority of education policy discussions focus directly or indirectly on the role of teachers.

Teachers are a basic part of educational system as having a vital and decisive role in the quality of education and how well students learn. Effectiveness of teachers in teaching their classes is a very important one of these factors that considered as the most important school related factor in increasing students' performance and success (Miles, 2011). By 'teachers' effectiveness', Hunt, 2009, p. 1) broadly meant the collection of characteristics, competencies, and behaviors of teachers at all educational levels that enable students to reach desired outcomes". In fact, Economists and policy researchers have been demonstrating that teachers actually "matter" in the entire teaching-learning process. Both teaching and learning depend on teachers. That is why an effective teacher has been conceptualised as one who produces desired results in the course of his duty (Uchefuna, 2001). Generally, effectiveness is related to attainment of stated objectives. It is a truism to assert that teacher job effectiveness can be said to be the ability of the teacher to bring about achievement of educational objectives in our schools. It then presupposes that continuous attention should be given to the factors that determine how effective teachers are on their job. Teachers' effectiveness is one of the ultimate goals of education. It is a complex topic, and there are many factors that should be considered.

In educational research, having an effective teacher consistently rises to the top as the most important factor in learning. According to Evans (2006), teachers' effectiveness is a measure of the extent of realization of the instructional objectives. It is a net growth in intellectual aptitude and skills as measured by students' achievements. An effective teacher is therefore a valuable commodity. For many years, educators and other stakeholders have debated on which factors influence students' performance. A growing body of evidence suggests that schools that make a

great difference in terms of students' performance, have that substantial portion of the difference attributable to teachers.

There has been growing concerns about teachers' effectiveness in Nigeria in recent times, perhaps due to poor performance of students, which is a major effect of teachers' ineffectiveness. For instance, Agbatogun (2006) reported that Nigerian teachers in recent time lack knowledge of modern teaching and strategic assessment techniques. Also Adetayo (2008) asserted that Nigerian teachers cannot utilize modern pedagogy that is technology-driven, and that teachers' effectiveness of teachers is relatively low and counter-productive to students' achievement. A study by Agbatogun (2012) revealed low teachers' effectiveness among primary school teachers in Ogun State. This may be as result of poor professional development of teachers and dilapidated school infrastructure in public secondary schools in Ogun State, Nigeria.

Teachers' Professional Development (PD) has also been documented as very germane and imperative to teacher effectiveness. Professional development, a kind of formal in-service training to upgrade the content knowledge and pedagogical skills of teachers is widely viewed as an important means of improving teaching and learning. It generally refers to on-going learning opportunities available to teachers and other education personnel through their schools and governments. Effective professional development is often seen as vital to school success, teacher satisfaction and effectiveness, but it has also been criticized for its cost, often vaguely determined goals, and for the lack of data on resulting teacher and school improvement that characterizes many efforts. Ngala and Odebero (as cited in Bua, Dike, Nwajiaku & Okpala, 2015) opine that the objectives of professional development for teachers are to ensure the promotion of teacher professional growth, improve teacher pedagogical skills, keeps teachers abreast of new knowledge, meets particular needs, such as curriculum development and orientation, helps in leadership responsibility, helps new teachers to adjust to teaching field, helps to promote mutual respect among teachers and recognizes the need for modern teaching methods.

The school infrastructure and physical environment are known to be school facilities and they give educational institutions their appropriate shape and atmosphere for teaching and learning. These facilities and the environment also portray the quality of the institutions in terms of their staff/students friendliness, attraction to outsiders, aesthetics, healthy, safety, currency and relevance (Okorie & Uche, 2004,). School facilities directly affect teaching and learning, which

subsequently affect teachers' effectiveness. For instance, poor School infrastructure seem to make it more difficult for teachers to deliver an adequate education to their students, adversely affect teachers' health, and increase the likelihood that teachers will leave their school. Teachers evaluated their surroundings (such as degree of overcrowding, availability and adequacy of specialized facilities, and physiological factors); and reported facing daily problems with their buildings. Significant numbers were dissatisfied with their facilities.

Differentials in teachers' effectiveness have also been reported in literature. For instance, Chauhan (2006)'s study indicated the mean scores on teacher effectiveness of male and female secondary and senior secondary teachers were found to be 230.05 (S.D.= 38.52) and 239.00 (S.D.=33.50) respectively. A similar study by Ferdinand (2007) showed a significant gender difference in the teachers' effectiveness among teachers in Singapore. The male 'teachers' have high level of teachers' effectiveness compared with their female counterparts. A study conducted by Adeyemi (2014) on secondary Mathematics professional development initiative found out that professional development yielded significant changes in teachers' instructional practice and effectiveness, but (with one small exception), it did not improve teacher knowledge of rational numbers. But Garet et al., (2011) reported that at the end of the second year of implementation, the PD programme did not have a statistically significant impact on overall teacher knowledge and effectiveness.

It is against this background that the study examines professional development and school infrastructure as determinant to teachers' effectiveness in COVID world in public secondary schools in Ogun State, Nigeria

Statement of the Problem

No education system can rise above the quality of its teachers, is a common saying. This points to the fact that teachers are usually the focus of any education system. This is because effectiveness of individual classroom teacher is the single largest factor affecting academic growth of the students. In fact, in recent years, a reasonable amount of public attention has been focused on teacher quality and teacher preparation (Cochran-Smith, 2006).

In the face of noticeable dwindling quality of products of our schools, stakeholders have been clamouring for attention to quality of teachers. This is not unconnected with the fact that it is the

single biggest contributor to students' success. It outweighs other factors which influence students' performance such as class size, gender, and socioeconomic background of the students. Of all the things schools can give students to help them succeed, effective teachers are expected to be the best bet. Teachers are central to any consideration of schools, and a majority of education policy discussions focus directly or indirectly on the role of teachers.

Over the years, teaching which used to be a noble profession has been taken over by impostors who have no business teaching in the class. The low employment opportunities prevalent in Nigeria have contributed to inundate the classroom with unqualified teachers who look upon teaching as a stop-gap which should be jettisoned as soon as their dream jobs are obtained. Teachers seem not to be adequately motivated and trained in relation to their counterparts in other professions. This, perhaps, has resulted in the perceived poor effectiveness on the parts of the teachers. Scriven (2008); Adetayo (2008) reported that teachers' effectiveness of teachers is relatively low and counter-productive to students' achievement.

The concern on teachers' effectiveness has therefore become so volatile that it has spread to all levels of education. The downward trend in performance of students in public examinations constantly triggers public opinion. It has serious implications for the education system. For instance, students will not be properly groomed to face future academic challenges, the poor students' academic performance will continue unabated, and the entire quality of the nation's education will remain questionable. The overarching question now is: Could the perceived teachers' ineffectiveness be due to poor professional development and dilapidated school infrastructure in public secondary schools? This study therefore examined professional development and school infrastructure as determinant to teachers' effectiveness among public secondary school teachers in Ogun State, Nigeria.

Objectives of the Study

This study broadly investigated professional development and school infrastructure: panacea to teachers' effectiveness among public secondary school teachers in Ogun State, Nigeria. Specifically, the study sought:

1. to determine the level of teachers' effectiveness based gender among public secondary school teachers in Ogun State.
2. to investigate the association between professional development and teachers' effectiveness.
3. to examine the association between school infrastructure and teachers' effectiveness.

Research Questions

The following research questions are raised in line with the specific objectives of the study in order to guide the study:

1. What is the level of teachers' effectiveness in term of gender among public secondary school teachers in Ogun State?
2. How do conditions of professional development and teachers' effectiveness?
3. What is the association between school infrastructure and teachers' effectiveness?

Research Hypotheses

The following null hypotheses are formulated and tested at .05 level of significance:

Ho_1 Teachers' effectiveness is not significantly different based on gender.

Ho_2 There is no significant association between professional development and teachers' effectiveness.

Ho_3 school infrastructure and teachers' effectiveness are not significantly associated.

Review of Related Literature

This chapter provides an overview of the literature addressing research and theory related to the study. This has been done under the followings:

Concept of Professional Development

When people use the term "professional development," they usually mean a formal process such as a conference, seminar, or workshop; collaborative learning among members of a work team; or

a course at a college or university. However, professional development can also occur in informal contexts such as discussions among work colleagues, independent reading and research, observations of a colleague's work, or other learning from a peer. Mizell (2010) observed that professional development refers to many types of educational experiences related to an individual's work. Many fields require members to participate in ongoing learning approved by the profession, sometimes as a requirement for keeping their jobs. Professionals often also voluntarily seek new learning.

Professional development generally refers to ongoing learning opportunities available to teachers and other education personnel through their schools and districts. This teacher-directed process occurs over a period of time, leading to the professional growth for the teacher. Professional development is a vital component of ongoing teacher education and is central to the role of principals and teachers.

Staff professional development according to Nakpodia (2008) is a process for continuous updating of teachers' knowledge, skills and interests in a chosen field. It is a means for continuous professional growth, which encourages the extension of technical assistance by teachers' educators. In-service teacher education is an integral part of staff development programme which is organized for teachers while in-service. Today, professional development activities include formal teacher induction, the credits or degrees teachers earn as part of recertification or to receive salary boosts, the national-board-certification process, and participation in subject-matter associations or informal networks. (Sawchuk, 2010). Nakpodia (2008) outlined some of the benefits of in-service training of teachers to include:

- to enable teachers obtain higher academic and professional qualifications in order to improve their positions in the school system
- to enable the teachers to be adequately equipped to meet up with the new changes in the school system in the 21st Century.

Professional development is most effective when it occurs in the context of educators' daily work. When learning is part of the school day, all educators are engaged in growth rather than learning being limited to those who volunteer to participate on their own. School-based professional development helps educators analyze student achievement data during the school year to immediately identify learning problems, develop solutions, and promptly apply those solutions to

address students' needs. Professional development also can be useful if it takes place before classes begin or after they end.

Concept of School infrastructure

School infrastructure, which consist of all types of buildings that use for academic and non-academic purpose, equipment, classroom facilities, furniture, instructional materials, audio-visual aids, toilet, ICT, library and laboratory materials and others play a pivotal role to smoothly run teaching and learning process. As Buckley, Schneider and Shang (2004), School infrastructure enable the teacher to accomplish his/her task as well and help the learner to learn and achieve effectively.

School infrastructure influence the teaching and learning process and are central concerns of educational planners. School infrastructure determine trends in school activities and processes which influences teacher performance, effectiveness, and student achievement. The school physical environment play key roles in influencing teachers level of dissatisfaction and their level of performance or productivity. The classrooms and other facilities in which students learn and teachers teach may be a very important factor during educational growth and development and should be treated as an active tool to improve and support these processes. These facilities and their design should therefore be high on the list of concerns when professionals look for ways to improve and enhance student achievement. Educational leaders should be highly concerned to make sure the facility they develop and manage is as safe, cost efficient, functional and supportive of the educational process as possible.

Concept of Teacher Effectiveness

The term 'teacher effectiveness' is used broadly, to mean the collection of characteristics, competencies, and behaviors of teachers at all educational levels that enable students to reach desired outcomes" (Hunt, 2009, p. 1). Awofala (2012) claimed that teacher effectiveness is synonymous to individual teachers' performance and teacher effectiveness is encompassed in knowledge, attitudes, and performance (Hunt, 2009, p. 30). Teacher effectiveness is important

because the "effectiveness of every teacher is the life of every educational institution" (Rao & Kumar, 2004, p. 4).

Teacher job effectiveness can be measured by the way in which the teacher competently and effectively brings about learning and positive change in behaviour in students using the indices as: method of teaching-lecture, discussion, recitation and tutorial methods; student assessment-computerized examination record allows easy access to the students record and subsequent decision making on the academic standing of each student (Maiyaki, 2002). Specifically, effective teachers are those who achieve the goals they have set for themselves or which they have set for them by others (Anderson, 2004). They enable their students to attain "specific learning objectives as well as broader goals such as being able to solve problems, think critically, work collaboratively, and become effective citizens" (Hunt, 2009, p. 1).

Teacher effectiveness, Kalhotra (2014) meant the characteristics of the teacher which are effective in causing effective instruction. "Teacher effectiveness is our area of research which is concerned with relationship between the characteristics of teachers, teaching aids and their effects on the educational outcomes of classroom teaching".

Research Methodology

The descriptive survey design was used for this study. Descriptive research design is a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way. This design enabled the researchers to collect and describe data on professional development and school infrastructure as determinant to teacher effectiveness among public secondary school teachers in Ogun State, Nigeria. The total population for this study comprised 12,911 teachers in the 474 public secondary schools in Ogun State, Nigeria (Ogun State Secondary Education Management Board, 2019). The breakdown of the study population is as follows:

Table 1: Breakdown of the Study Population

Education Zone	Number of Schools	Number of Teachers
Egba	144	4813
Ijebu	135	3302
Yewa	141	3269
Remo	54	1527
Total	**474**	**12911**

A total of 126 public secondary schools and 1800 teachers were selected through the multi-stage sampling technique as sample for the study. At the first stage, the Ogun State was stratified based on the existing zones in the State. Each zone has at least three Local Government Areas. Proportionate stratified sampling technique was used to select: three local government areas from Egba zone (Abeokuta North, Ewekoro and Odeda), three local government areas from Ijebu zone (Ijebu East, Ijebu North Central and Ogun waterside), two local government areas from Yewa zone (Imeko-Afon and Yewa South) while two local government areas were selected from Remo zone (Remo North and Shagamu). At the second stage proportionate stratified sampling technique was used to select 183 public secondary schools from the selected local government areas. At the third stage, the researchers used the proportionate sampling technique to select 1800 teachers from the selected schools.

The researchers' developed two sets of questionnaire used as data collection instrument. The first one was titled: '**Peer Assessment of Teachers' effectiveness Scale (PATES)**'. It was made up of two parts. Part One probed into the socio-demographic background of the teachers such as gender, age, highest qualification, years of teaching experience, while the second part has 10 items which measured teachers' effectiveness. The second instrument titled: "**Teacher Professional Development and School Infrastructure Scale (TPDSIS)**' has 12 items (six for each variable). The scoring of the instrument was done using four-point modified Likert-type scale of SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree; which carries 4, 3, 2, 1 weights respectively. All negative items were reversely coded for analysis purpose.

Copies of the draft instrument were given to the researcher's supervisors and some lecturers in the Faculty of Education, University of Lagos for vetting and experts' opinions. The face and content validity of the instrument were first subjected to a thorough screening to ensure that they were relevant, clear, and unambiguous by the researchers' supervisor. The final draft was used after considering the observations and effecting the corrections noted by these experts.

In estimating the reliability status of the instrument, the validated instruments were administered to 60 public secondary school teachers in Obafemi/Owode zone in Ogun State. The data collected was analysed using the Cronbach Alpha reliability technique to determine the internal consistency of the instrument. The obtained reliability values are: professional development scale 0.87, and school infrastructure scale 0.75. Peer Assessment of Teachers' effectiveness Scale has 0.79 reliability

value. Since any instrument with Alpha value greater than 0.70 is considered as good for any survey study, all the instruments were adjudged reliable.

The researchers administered 1800 to the participants with the aid of six well-trained research assistants who were trained for two weeks before the administration of the instruments. They were given the necessary instructions regarding strategies for effective administration of the instruments on the respondents and were readily available to respond to questions from respondents. All copies of the questionnaire administered were retrieved and good for analysis; therefore, the return rate was 100%. All the research questions were converted to hypotheses. Hypothesis one was tested with one sample t-test, while hypothesis two and three were tested with Pearson Chi square. All the hypotheses were tested at 5% significance level.

Result Presentation

All the research questions were converted to hypotheses. Hypothesis one was tested with one sample t-test, while hypothesis two and three were tested with Pearson Chi square. All the hypotheses were tested at 5% significance level.

Research Hypotheses

$Ho_{1:}$ Teachers' effectiveness is not significantly different based on gender.

Table 2: Difference in Teachers' effectiveness Based on Gender

Variable	Gender	Mean	SD	N	df	t	P	Remark	Decision
	Male	27.69	4.56	709					
Teaching Effectiveness					1798	-.637	.524	Not Sig	Accept $H0_8$
	Female	28.16	5.76	1091					

Using an alpha level of .05, an independent-samples *t*-test was conducted to determine whether teachers' effectiveness among public secondary school teachers in Ogun State, Nigeria differed significantly based on gender. Table 2 shows that the test was not significant, $t(1800) = -.637$, $df = 1798$, $p > .05$. This implies that teachers' effectiveness was not significantly different based on

gender. Thus, the hypothesis which was stated that teachers' effectiveness is not significantly different based on gender was accepted.

This outcome however, negates the result of Ferdinand (2007) that female teachers possess high level of teachers' effectiveness compared to their male counterpart. This finding also negates the findings of Adetayo (2008) that male teachers do not consider teaching as a befitting as a profession.

Ho_2 Professional development and teachers' effectiveness are not significantly associated.

Table 3: Association between Professional Development and Teachers' effectiveness

Variables	Mean	SD	N	df	$\chi 2$	P	Remark	Decision
Teaching Effectiveness	127.97	15.29	1800	36	1583.03	0.011	Sign.	Reject H_{02}
Professional Development	22.73	3.89						

The Chi-Square statistics is significant at the .05 level.

A Pearson Chi-square correlation was run to determine the association between professional development and teachers' effectiveness among public secondary school teachers in Ogun State, Nigeria. Table 3 shows that χ^2 (36, N= 1800) = 1583.03, $p< 0.05$. This indicated that there was significant association between professional development and teachers' effectiveness. Thus, the hypothesis which stated that Professional development and teachers' effectiveness are not significantly associated was rejected.

Ho_3 There is no significant association between School infrastructure and teachers' effectiveness.

Table 4: Association between School infrastructure and Teachers' effectiveness

Variables	Mean	SD	N	df	$\chi 2$	P	Remark	Decision
Teaching Effectiveness	127.97	15.29	1800	36	1953.63	0.013	Sig	Reject H_{03}
Condition of School Facilities	27.34	6.71						

The Chi-Square statistics is significant at the .05 level.

A Pearson Chi-square correlation was run to determine the association between school infrastructure and teachers' effectiveness among public secondary school teachers in Ogun State, Nigeria. Table 11 shows that χ^2 (36, N= 1800) = 1953.63, p< 0.05. This indicated that there was significant association between school infrastructure and teachers' effectiveness. Thus, the hypothesis which stated that there is no significant association between school infrastructure and teachers' effectiveness was rejected.

Discussion of Findings

Finding from the tested hypothesis one showed that teaching effectiveness was not significantly different based on gender [*t* (1800) = -.637, *df* = 1798, *p* > .05]. This finding corroborates that of Garet etal., (2011) who reported that the effectiveness of male and female secondary and senior secondary teachers were found to be 230.05 (S.D.= 38.52) and 239.00 (S.D.=33.50) respectively, and that the calculated 't' value 1.21 turned out to be lesser than the table value at.05 level of significance. Therefore, it was confirmed that teaching effectiveness was not significant on the basis of gender. The male and female school teachers do not differ significantly in their teaching effectiveness.

There was significant association between professional development and teaching effectiveness [χ^2 (36, N= 1800) = 1583.03, p< 0.05] as shown in the finding from hypothesis two. This result is in agreement with the one conducted by Adeyemi (2014) on secondary Mathematics professional development

initiative found out that professional development yielded significant changes in teachers' instructional effectiveness. Therefore, the opinions of Cohen and Hill (2017); Yusuf and Fashiku (2016); Akpan and Ita (2015) are in line with the result of the analysis of the response to questionnaire which revealed that professional development will cause teachers to get more teaching skills and capabilities in utilising the required professional tools, skills and knowledge.

Finding from hypothesis three showed that there was significant association between school infrastructure and teaching effectiveness [χ^2 (36, N= 1800) = 1953.63, $p< 0.05$]. The result analyses lends credence to the study of Indyar, Azever and Onyeanisi (2018) which found that adequate school infrastructure enables the teacher to do a great work of impacting positive knowledge in students. Therefore, the opinion of Dike (2019) is in line with the result of the analysis of the response to questionnaire which revealed that good, healthy and conducive school facilities create positive teacher instructional behavioural patterns, as well as, promote students' capacity in learning. The study therefore showed that secondary school teachers' in Ogun State render instructional services effectively when the school infrastructure provided are sufficient, adequate and periodically maintained for teaching and learning activities.

Conclusion

The research findings show that professional development and school infrastructure have roles in determining the teacher effectiveness in public secondary schools in Ogun State. The result findings of this study in conjunction with a number of other studies in recent years reveal some noteworthy results in professional development and school infrastructure.

Based on these findings, the study concludes that professional development and school infrastructure positively associate with teacher effectiveness. Therefore, a great deal of professional development of teachers and school infrastructure attention needs to be channeled to public secondary schools in Ogun state in order to improve effectiveness and efficiency of teachers.

Recommendation

In line with the findings, the study therefore recommends that:

1. Government should as a matter urgency, declare a state of emergency in the education sector with a view to carrying out a total overhauling of the system in the areas of school faacilities.
2. The professional development of teachers needs continuous attention from the Government. Teachers should therefore always be exposed to series of professional developments such as seminars, workshops, conferences, etc. Teachers too should be encouraged to embark on self-development. There are several free online developmental programmes that they can avail themselves.
3. Government should appoint both male and female into the teaching profession since there was no significant difference in teaching effectiveness based on gender. Government should stand against gender discrimination among teachers at all times.

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