

Demographic Indices as Predictor of Science Teachers' Job Commitment in Secondary Schools in Ogun State, Nigeria

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Abstract

The problem of low commitment of science teachers in Ogun State, Nigeria has been an issue of serious concern. Perhaps factors such as demographic indices of teachers could be responsible but have not been given adequate attention in literature. This study was carried out to investigate demographic indices as predictor of science teachers' job commitment in Ogun state. Four objectives consisting of two research questions and two hypotheses guided the study. Descriptive research design was employed. Study population included 172 principals and 2,617 science teachers. Sample of 90 principals and 882 science teachers were used. Researcher-constructed questionnaires titled "Demographic Indices and Teachers' Job Commitment Questionnaire" (DIQ) ($r = 0.79$) and (JCQ) ($r = 0.82$) were used. Descriptive and inferential statistics were used to analyze data. Results showed poor (bad) good teaching experience ($\bar{x} = 2.785$) and professional competence ($\bar{x} = 2.625$) and low level of science teachers' commitment to their job ($\bar{x} = 2.104$). Results also showed significant joint contribution of demographic indices on science teachers' job commitment ($F_{3, 86} = 3.019$). Furthermore, the predictors that had individual significant influence on science teachers' job commitment are good teaching experience ($\beta = .191$; $t = 3.121$) and professional competence ($\beta = .169$; $t = 3.132$) in public secondary schools in Ogun State. It was recommended among others that educational stakeholders should try their best possible to improve demographic indices in order to increase science teachers' job commitment.

Keywords: Demographic Indices, Science Teachers, Job Commitment.

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INTRODUCTION

Job commitment of teachers is defined as their affective commitment to the goals and values of a school organization. More than a mere tool, this type of commitment requires a teacher to play his/her role solely for the well-being of the school organization, in relation with its goals and values (Akinwale & Okotoni 2019). Job commitment of teachers in secondary schools is also viewed as the willingness of teachers to invest personal resources into the teaching task and thus remain in the teaching profession (Ajetunmobi, Maruff & Muhideen 2020). In this study, Dimbore (2018) reported that teachers' job commitment could be defined as teachers' strong belief in and the acceptance of the school's goals and values, a willingness to exert considerable effort on behalf of the school, and a strong desire to maintain one's membership within the school (Abdul 2018).

According to Adegbola (2019) teachers' commitment to the teaching profession involves an

affective attachment to the profession, which is associated with personal identification with the career and satisfaction as a teacher. Commitment to the teaching profession makes a teacher willing to develop the necessary skills, knowledge and relationships needed to have a successful career as a teacher. He also becomes an active member of local, state, and national professional association and always ready to defend the occupation when necessary because the teacher perceives it as the best profession there is. He or she is also interested in engaging in refresher courses that will help him or her stay abreast of happenings in the profession and global best practices in the profession (Akinwale & Okotoni 2019).

Science is an intellectual action carried on by human beings that is planned to discover data about the natural universe in which human beings live and to discover the methods in which this data can be organized into meaningful forms (Badmus & Omosewo 2018). In this case a simple purpose of science is to distinguish the order that exists amongst and between

various information. Science teachers are those that teach science subjects in the schools.

However, Daud, Yaakob & Ghazali (2015) observed that most science teachers in secondary schools in Nigeria are usually not committed especially to their job of teaching the subject (s) and this had lead to an increased n poor performances, absenteeism, burnout and turnout among teachers as a result of low job commitment. Most of them are neither proud of their profession nor do they try their best possible to ensure that students have a first hand and practical knowledge of sciences (Igbaji, Bello & Sunusi 2017). This is beginning to affect students' performance in science subjects such as mathematics, biology, physics and chemistry as majority of students fail in these subjects in both internal and external examinations which also eventually lead to the release of students who lack scientific knowledge, unable to discover new ideas and put scientific knowledge into practice. For instance, a highlight of students' performance in SSCE in the southwest, Nigeria showed that less than 50% of students passed their science subjects from 1995-2018. The proportions of students who had credits in biology, chemistry and mathematics from 2000-2018 were less than 50% in each of the subjects except in 2003 when 51% had credit in chemistry (Agbowuro, Taiwo & Saidu 2015). On the basis of the above issues, researchers are still trying so hard to find out the missing link which are those factors that could be possibly be influencing job commitment of science teachers. This is especially because a nation not grounded in scientific knowledge may not do so much in the areas of production and technology (Oyelade & Abolade 2017).

Demographic indices are the personal attributes of the teacher that make him or her distinct from another to excel in his or her chosen career. It is also viewed as the distinctiveness of a teacher (Ofem, Arikpo & Uko 2015). Moreover according to Hervie & Winful (2019) teachers are highly essential for the successful operation of the educational system and constitute an important tool for educational development and without them, educational facilities cannot be expanded. Therefore his/her characteristics or personal attributes are very vital as they could influence their productivity and effectiveness which would in the long run determine the kind of students that is being produced at the end of an academic session.

Teaching experience refers to the number of years a person has served as a teacher. It is also called length of service. Experienced teachers perceive teaching as more satisfying and enjoyable. Compared to novice teachers, experienced teachers are more familiar with applying effective instruction, managing unruly students and using successful teaching strategies. They are also more prepared for the unpredictability of classroom environment, which can mean less stress

(Claessens, Van Tartwijk, Pennings, Van der Want, Verloop, Van den Brok & Wubbels 2016). Novice teachers tend to engage in communication with motivated and well behaved pupils, whereas experienced teachers strive to form relationships with all pupils regardless of their performance and behavior. This can have repercussions on students' inclusion and participation (Du Plessis, Carroll & Gillie 2014). Experienced teachers are more oriented and accustomed to organizational policy and practices. They also tend to have a status at work, more recognition, more say in decision making and more support from school management. Meeting the demands of the community members and handling workload is more stressful for less experienced teachers which could affect their satisfaction and commitment (Bridget & Akintunde 2019).

Teachers' competence means teachers' strength, expertise or potential to perform their job properly and stable quality that does not change from one situation to another situation whenever teachers teach. Teacher competence is ability of a teacher to teach effectively. Furthermore, it was stated by (Aina Olanipekun & Garuba 2015) that the composite collection of knowledge, different skills, understanding, values and attitude which enforce to successful action in order to solve the problem is known as competence of teacher. Amalu (2015) opined that teacher's professional competence includes knowledge and understanding of children and their learning, subject knowledge, curriculum, the education system and the teacher's role. Professional competence also includes skills such as subject application, classroom methodology, classroom management, assessment and recording. The verbal ability, content knowledge, pedagogical knowledge, certification status, ability to use a range of teaching strategies skillfully, and enthusiasm for the subject characterize more successful teachers (Adegbola 2019). In another development (Symanyuk & Pecherkina 2016) described teacher competence has great importance in educational context. It was suggested that competence of a teacher influences the values, behavior, communication, goals, the teaching, curriculum and professional development as well enhances teachers' commitment.

Statement of Problem

The problem of low commitment of teachers has been a major issue facing science education in Ogun State, Nigeria. Majority of science teachers spend little or no time to prepare for their lessons. Some teachers hardly evaluate their lessons or encourage students to participate in classroom learning. Such teachers never entertain questions in class nor praise students who answer questions rightly. In some schools students are hardly ever given enough attention, individual differences are neglected, while continuous assessment suffers. Demographic indices such as teaching experience and professional competence could

determine how teachers would behave and act within the school environment. In view of the dearth of research work on this subject area, this study therefore investigated the extent to which demographic indices predict science teachers' job commitment in secondary schools in Ogun State, Nigeria.

Purposes of the Study

The aim of this study was to investigate school factors and teachers' demographic indices as predictors of science teachers' job commitment in secondary schools in Ogun State, Nigeria. The objectives were to:

1. ascertain the demographic indices of science teachers in public secondary schools in Ogun state, Nigeria;
2. examine the level of job commitment of science teachers in public secondary schools in Ogun state, Nigeria;
3. investigate the significant joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria;
4. investigate the significant relative influence of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria;

1.4 Research Questions

The following research questions were answered in the course of this study:

1. What is the extent of demographic indices (teaching experience and professional competence) on science teachers in public secondary schools in Ogun state, Nigeria?
2. What is the level of job commitment of science teachers in public secondary schools in Ogun state, Nigeria?

1.5 Hypotheses

H₀₁: There will be no significant joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria

H₀₂: There will be no significant relative influence of demographic indices (teaching experience and

professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria.

Scope of the Study

The study was basically on demographic indices as predictors of secondary school science teachers' job commitment in Ogun state, Nigeria. The geographical spread of this study covered a selected number of Local Government Areas in Ogun state. The respondents of the study comprised of principals and science teachers in public senior secondary schools in Ogun state. The independent variables of the study was teachers' demographic indices while the dependent variable was job commitment of science teachers. The independent variable for the study which is demographic indices was treated using two indices which are:- teaching experience and professional competence. The only dependent variable for study which was job commitment of science teachers.

METHODOLOGY

This study employed the descriptive research design. The study population consisted of all secondary school sciences teachers (2,617) and principals (172) in Ogun state. Sample that was used in the study were 882 science teachers and 90 principals. Two questionnaires titled: "Demographic Indices Questionnaire (DIQ)" and "Job Commitment of Teachers Questionnaire (JCTQ)" were used for data collection. The instrument were validated by experts. Pilot testing of the instruments were done and Cronbach's alpha was used to estimate the reliability of each of the questionnaires resulting to a correlation coefficient values of 0.87 and 0.80 respectively. These values made the questionnaires reliable for distribution. The instruments were administered personally and through the help of research assistants. Data was analyzed using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (multiple regression analysis) at 0.05 level of significance.

RESULTS

Research Question One: What is the extent of demographic indices (teaching experience and professional competence) of science teachers in public secondary schools in Ogun state, Nigeria?

Table-1: Science Teachers' Teaching Experience in public secondary schools in Ogun State, Nigeria

S/N	Items (My Science Teachers)	N	Mean (\bar{x})	Standard Deviation	Decision
1	have experience in the science subjects they teach	90	2.73	0.735	Good
2	have taught science subject (s) for several years	90	2.92	0.821	Good
3	are able to relate what they teach to the professional environment	90	2.56	0.411	Good
4	can teach even without the help of a lesson note	90	2.87	0.891	Good
5	have taught sciences successfully in several academic institutions	90	2.76	0.761	Good
6	have experience in the use of science equipment	90	2.87	0.432	Good
Weighted Mean = 2.785 (SD = 0.675); Overall Decision = Good (Agree)					

Source: Fieldwork, 2021

Rating Scale used: SA = Strongly Agree (4), A = Agree (3), D = Disagree (2), SD = Strongly Disagree (1), Std. Dev. = Standard Deviation

Mean Threshold: 0.000-1.499 = Very Bad (strongly disagree); 1.500-2.499 = Bad (disagree); 2.500-3.499 = Good (agree) and 3.500 to 4.449 = Very Good (strongly agree)

Table 1 presents teaching experience of science teachers as perceived by their principals in

public secondary schools in Ogun State, Nigeria. Six (6) items were used to ascertain the science teachers' teaching experience. All the items were rated good as their means were within 2.5-3.5. This means that most of the principals perceive or agree that their science teachers are well experienced. The weighted mean of 2.785 (0.675) confirms generally that the science teachers in Ogun State public senior secondary school have good experience in teaching as perceived by their principals.

Table-2: Science Teachers' Professional Competence in public secondary schools in Ogun State, Nigeria

S/N	Items (My Science Teachers)	N	Mean (\bar{x})	Standard Deviation	Decision
1	can teach science subjects without the use of lesson notes	90	2.565	0.432	Agreed
2	solve scientific problems effectively	90	2.781	0.543	Agreed
3	have mastery in the use of science equipment especially at school laboratories	90	2.685	0.411	Agreed
4	can answer most questions posed towards them in science subject matter	90	2.699	0.459	Agreed
5	use better methods in disseminating science knowledge to students	90	2.678	0.510	Agreed
6	have received recognition in science or science related fields	90	2.451	0.384	Disagreed
7	are able to supervise and mark scripts for external examination bodies such as WAEC, NECO, GCE in science subject area	90	2.516	0.493	Agreed
Weighted Mean = 2.625 (SD = 0.462); Overall Decision = Agreed					

Source: Fieldwork, 2021

Rating Scale used: SA = Strongly Agree (4), A = Agree (3), D = Disagree (2), SD = Strongly Disagree (1), Std. Dev. = Standard Deviation

Mean Threshold: 0.000-1.499 = strongly disagree; 1.500-2.499 = Disagree; 2.500-3.499 = Agree and 3.500 to 4.449 = strongly agree

Table 2 presents the professional competence of science teachers as perceived by their principals in public secondary schools in Ogun State, Nigeria. Six out of seven of the items were rated good as their means were within 2.500-3.499. Only one item was remarked

as 'bad' because the mean value was within 1.500-2.499. This means that most of the principals perceive or agree that their science teachers have competence in their teaching profession. The weighted mean of 2.625 (0.462) also confirms generally that the science teachers in Ogun State public senior secondary school have good professional competence in the field of teaching as perceived by their principals.

Research Question Two: What is the level of job commitment of science teachers in public secondary schools in Ogun state, Nigeria?

Table-3: Science Teachers' Job commitment in public secondary schools in Ogun State, Nigeria

S/N	Items (My Science Teachers)	N	Mean (\bar{x})	Standard Deviation	Decision
1	have a strong desire to maintain membership in the school	90	2.111	0.522	Low
2	are ready to accept the goals, rules, values, policies and programmes of the school	90	1.901	0.210	Low
3	are willing to contribute their quota when and where necessary to curricula and extra-curricular activities, all in the bid to move the school forward	90	2.101	0.412	Low
4	find it easy to cope with the laws and policies of the school without complain	90	1.998	0.239	Low
5	hardly leaves his/her place of work to engage in other attractive activities that would add extra income to his/her pockets except by permission	90	2.411	0.591	Low
Weighted Mean = 2.104 (SD = 0.395); Overall Decision = Low					

Source: Fieldwork, 2021

Rating Scale used: High Level (HL) = 4, Moderate Level (ML) =3, Low Level (LL) = 2 and Not At All (NAA) =1

Mean Threshold: 0.000-1.499 = Not At All; 1.500-2.499 = Low; 2.500-3.499 = Moderate and 3.500 to 4.449 = High

Table 3 presents job commitment of science teachers to the school institution as perceived by their principals in public secondary schools in Ogun State, Nigeria. All the items were rated low as their means were within 1.5-2.5. This implies that most of the

principals perceive that their science teachers' commitment to the school is low. The weighted mean of 2.1 (0.395) also confirms generally that the science teachers in Ogun State public senior secondary school have low commitment as perceived by their principals.

Hypotheses

H₀₁: There will be no significant joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria

Table-4: Multiple Regression analysis and Model Summary for the joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools n Ogun State, Nigeria

		Anova					
Model		Sum of Squares	Df	Mean Square	F	Significance Value	Decision
1	Regression	199.419	3	17.978	3.019	.008	Significant
	Residual	3575.309	86	9.129			
	Total	3774.728	89				
Model Summary							
R = .854							
R square = .729							
Adjusted R Square = .701							
Standard Error of the Estimate = .00532							

Source: Field Work, 2021

Dependent Variable: Science teachers' job commitment

Predictors: Teaching experience and professional competence

In table 4, the Anova results reveal a significant joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun State ($F_{3, 86} = 3.019$). This results suggested that demographic indices (teaching experience and teachers' professional competence) influence job commitment of science teachers in the study area. The model summary showed the coefficient

of determination (R) value to be .854; R^2 value to be .729 and Adjusted R^2 to be .701. This value shows that 70.1% (.701) of the variability in science teachers' job commitment is explained by the predictors' demographic indices). The value also implies that 29.9% could be due to errors and indices that are not included in the model or considered in the study.

H₀₂: There will be no significant relative influence of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria.

Table-5: Coefficients of Multiple Regression for the relative influence of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun state, Nigeria

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	26.362	2.263		10.100	.000
	Teaching Experience	.083	.026	.172	3.121	.005
	Professional Competence	.021	.092	.169	3.132	.002
Dependent Variable: science teachers' job commitment						

*β coefficients significant at 0.05 level of significance (P<0.05)

Source: Field Work, 2021

In table 5, the predictors that had individual significant influence on science teachers' job commitment are all the indices of demographic factors which include:- Teaching Experience ($\beta = .172$; $t = 3.121$) and professional development ($\beta = .169$; $t = 3.132$). This suggests that they could be the cause of the significance observed in the model. This implies that they explained the variability in science teachers' job commitment and are therefore needed in the model.

DISCUSSION

Research Question 1

Research question one reveals that the demographic indices of science teachers in terms of their teaching experience ($\bar{x} = 2.785$) and professional competence ($\bar{x} = 2.625$) is good in public secondary schools in Ogun state. This finding corroborates Olowa, Olowa & Umoru (2021) title "Analysis of selected demographic factors on the level of job satisfaction among secondary school Agricultural Science Teachers in Ikorodu LGA of Lagos State" which also reported that agricultural science teachers' experience and competence is alright.

Research question two reveals that science teachers have low job commitment to the school institution ($\bar{x} = 2.104$), students ($\bar{x} = 2.308$) and their teaching profession ($\bar{x} = 2.448$) in public secondary schools in Ogun state. This finding is fully supported by Akinwale & Okotoni (2019) on a study "Assessment of Job Commitment of Secondary School Teachers in Osun State, Nigeria" which showed that teachers' commitment to school, students and teaching profession was low. A large portion of the teachers were not willing to go extra mile and saw teaching profession as a last option and would not hesitate to leave for other professions whenever there is opportunity to do so.

Hypothesis one revealed a significant joint contribution of demographic indices (teaching experience and professional competence) on science teachers' job commitment in public secondary schools in Ogun State ($F_{3, 86} = 3.019$). This finding agrees with the findings of Ajetunmobi, Maruff & Muhideen (2020) which reported that demographic characteristics, teaching experience and professional development influence teachers' job satisfaction and performance. This finding agrees with the findings of Walson, Hart, Ajikere & Kasi (2020) who reported that demographic characteristics, working environment and professional development influence teachers' job satisfaction and performance.

Hypothesis two revealed that predictors that had individual significant influence on science teachers' job commitment are all the indices of school factors which include:- Physical working environment ($\beta = .191$; $t = 3.121$), teachers' workload ($\beta = .169$; $t = 3.132$) and professional development and training ($\beta = .076$; $t = 2.797$). This result is also supported by the findings of

Olowa, Olowa & Umoru (2021) which noted that work environment, workload and professional development influence teachers' job performance in the secondary schools in Ogun state.

CONCLUSIONS

The findings of this study revealed that demographic characteristics such as teaching experience and professional competence of science teachers are good. Furthermore, it was revealed that teachers' job commitment is low. It can therefore be concluded that although demographic indices had a significant influence on science teachers' job commitment, the indices of demographic characteristics such as professional development and training were responsible for the significant influence.

RECOMMENDATIONS

Recommendations were made on the basis of the findings of this study as follows:

1. Teaching experience and professional competence of science teachers was good. This should be maintained and also encouraged.
2. The physical environment where teachers work should be conducive and adequately resourced. Teachers should also be trained and allowed to grow in their profession.
3. All hands should be on deck to ensuring that teachers are more committed to their duties

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