JPII 11(2) (2022) 246-259

Jurnal Pendidikan IPA Indonesia

http://journal.unnes.ac.id/index.php/jpii

ANALYSIS OF ORDINARY AND ADVANCED LEVEL IN-FIELD PHYSICS TEACHERS' QUALIFICATION, EXPERIENCE AND JOB PLACEMENT

O. T. Badmus*[1] & L. C. Jita[2]

[1,2]University of the Free State, South Africa

DOI: 10.15294/jpii.v11i2.35070

Accepted: February 15th 2022. Approved: June 27th 2022. Published: June 30th 2022

ABSTRACT

Ordinary and advanced level physics teachers have similar responsibilities in impacting the knowledge of physics among learners. These responsibilities are premised around qualification, experience and job placement. Teachers' experience has a place in the literature to influence physics performance. The curriculum of both advanced and ordinary level physics is with similarities and occasioned differences with respect to content knowledge. However, are there differences in the qualification, experience and job placement between these two sets of teachers? In view of the foregoing, this study examined advanced and ordinary level in-field physics teachers distribution vis a vis qualification, experience and job placement with a view to aggregate data for decision making, as well as, report gender representation, establish drift and possible remediation in the field. Descriptive research of the survey type was employed with Physics Teachers Ordinary and Advanced Level Inventory (PTOALI) as the instrument to elicit data from 225 physics teachers across the three states under review. Similarities exist in teachers' qualification at ordinary and advance levels. Experience of teachers at ordinary level were higher than those teaching advanced level curriculum. Underrepresentation of female physics teachers was found among the sample audience. Also, physics teachers are limited in number across the sampled schools and that female physics teachers are under-represented within the sampled respondents. This study concludes that more qualified physics teachers are needed across the three states under review. Experienced physics teachers are also required in advanced level schools. This study recommends training and recruitment of adequate number of qualified physics teachers to cope with the surging number of willing learners.

Keywords: gender; job placement; teaching experience; teachers' qualification

INTRODUCTION

The responsibility of ordinary and advanced level physics teachers is to impact the knowledge of physics, although, at different levels. Debate surrounds the abilities and competencies required of a teacher in discharging classroom responsibilities especially in physics. These responsibilities are premised around qualification, experience and job placement of such teachers. At both ordinary and advanced levels, existing argument about unqualified in-field physics teachers has been brought to the fore (Adeyemo, 2012; Owolabi & Adebayo, 2012; Akanbi et al., 2018). Teachers' experience has a place in the literature to influence physics performance (Adeyemo, 2012). The curricula of both advanced and ordinary level physics are with similarities and occasioned differences with respect to content knowledge, however, teachers at both levels require similar qualification to discharge these responsibilities (FRN, 2013; Mapolisa & Tshabalala, 2014; WAEC, 2020). Adequacy, competence and representation are areas of need in the literature with regards to physics teaching.

Teachers are instrumental to impacting knowledge through resources at their disposer, whether adequate or otherwise (Ergin, 2013; Mc-

***Correspondence Address**
E-mail: badmus.OT@ufs.ac.za

Culloch, 2020). Curriculum guides the activities of teacher in classroom instruction (McCulloch et al., 2020). This curriculum is housed in the department/ministry of education in different countries. The Nigerian Educational Research and Development Council (NERDC) has the mandate to develop Senior Secondary School Curriculum, physics inclusive. This curriculum is taught at two levels i.e., the ordinary and the advanced. The ordinary level is a sub-component of the advanced with more of the ordinary aspect as the name implies (WAEC, 2020; McCulloch et al., 2020). Ordinary level contents are taught within the senior secondary school programme for three years after which Senior Secondary School Certificate Examinations (SSCE) are sat for by students among participating countries (WAEC, 2020). The SSCE result is a prerequisite to entering any institution of higher learning. The SSCE result is solely and sometimes combined with result of Unified Tertiary Matriculation Examination (UTME) conducted by Joint Admissions and Matriculation Board (JAMB) for entry into the first year in colleges of education, polytechnics and universities. The advanced level programmes are undertaken after the first three years of ordinary level education among interested candidates (JUPEB, 2020). The exercise has a usual duration of one-year. Successful candidates are admitted into second year in the university (NUC-BMAS, 2007; FRN, 2013; JUPEB, 2020).

Similarly, the advanced level physics teachers teach students intending to join the university education or its equivalent at the second year (200 level) of such academic programme. This set of teachers teach physics students who undertake advanced level courses such as Cambridge Examination (Cambridge Assessment International Education Syllabus, 2019), JUPEB (Joint Universities Preliminary Examination Board Syllabus, 2018), IJMBE (Interim Joint Matriculation Board Examination) and more. While the teaching of A level courses requires more dept in terms of content knowledge, there are concerns on which of the level teachers prefer (Mukaro et al., 2021). However, certain traits are expected of the A level teachers which sometimes may not be present in O level and vice versa (Mukaro et al., 2021). Within A level programme, teachers exercise more of content knowledge in the classroom as against what is obtainable at the O level (McCulloch et al., 2020). Although, similarity exist in the pedagogical requirement at both levels, O level remains where the teacher requires more of his expertise owing to limited exposure to physics content among learners at this level (Mapolisa & Tshabalala, 2014).

The under-enrolment of learners in physics has a global stamp that lasted too long at all levels of education (Stewart, 1998; Whittemore, 2005; Hofer, 2015). This situation is prevalent among female learners, teachers and experts. A body of literature traversed barriers to learning physics by female students with the intension to substantiate primordial deficiencies with no success (Barthelemy et al., 2015; Traxler, 2016; Badmus & Jita, 2022). A field without adequate gender representation is considered as male dominated and not necessarily female incapacitated. Studies have brought to the fore female learners' capacity to not only study physics but also excel in it (Hofer, 2015; Vidor et al., 2020). Existing literature exposed the contributory elements to advance the course of female learners and establish competence (Adeyemo, 2012; Owolabi & Adebayo, 2012; Akanbi et al., 2018). However, knowledge acquired requires practice in terms of job placement. This manuscript investigated in-field physics teachers' qualification, experience and job placement with a view to elicit usable data to inference in-field physics teaching, inform labour and improve the body of literature. Subsequent paragraphs will expose readers to peculiar characteristics of the respondents and relatable perspectives for reproducibility.

The previous and present paragraphs become imperative due to the category of audience that this manuscript may attract. Physics teachers are prepared professionally in the universities to teach at these two levels of programme i.e., the same qualification (NUC-BMAS, 2007). Aside this preparation, candidates' enrolment for this programme across Nigeria remains poor (Adeyemo, 2012; Akanbi et al., 2018). Similarly, there is general scarcity of physics teachers at all levels globally (Whittemore; 2005; Cameron & Grant, 2017). That said, of those who graduate in this field, a significant number do not practice owing to poor remuneration, occasioned lack of interest among other factors (Neuschatz & McFarling, 2000). Kini and Podolsky (2016) posited that, for every educational system to function effectively and efficiently, teachers are a fundamental component. For the goals and objectives embedded in national and global policy on education to be achieved, teachers' availability and effectiveness are paramount. Paying attention to qualification, experience and availability becomes imperative as teachers cannot give what they do not possess (Okolo, 2013).

A qualified teacher should exhibit the following characteristics; verbal ability, subject-matter knowledge, pedagogical knowledge, ability to adapt a wide range of teaching strategies to suit

student needs and others (Ugwulashi, 2012). Qualification of physics teachers as considered in this study is influential to the mastery and competence required in the school environment (Okendu, 2012). A teacher's qualification includes preparation and training, the use of a particular instructional approach and experience in teaching (Abe & Adu, 2013). In addendum, Teachers' qualification is widely thought of as an essential determinant of students' academic performance (Adeniyi et al., 2014). Teachers themselves agree that teacher's qualification matters and that defining, measuring and identifying teacher's qualification is a far more controversial task in terms of output (Mkpanang & UtibeAbasi, 2018). Certification remains relevant in teaching and can cannot be relegated owing to the fact that it is the minimum requirement by training for teachers to practice as professionals in their various fields (Adeniyi et al., 2014). This qualification is a prerequisite in job placement and for promotion from one cadre to the other (Owolabi & Adebayo, 2012).

The categorisation of teachers into experience, moderately experience and less experience is rooted in the literature (Stewart, 1990; Adeyemo, 2012; Akanbi et al., 2018). With consistent practice comes mastery. Scholars have adduced teachers' teaching experience as determinant of students' performance in physics (Okendy, 2012; Owolabi & Adebayo, 2012; Moosa & Shareefa, 2019). Experienced teachers have been found to better their counterpart in classroom management, teaching method, use of student-centred approach, engaging students and having less dictatorial approach to teaching (Musili, 2015; Louws et al., 2017). The experience of teachers and gender excites argument among scholars, especially in science education and specifically in physics education (Hofer, 2015; Vidor et al., 2020).

Moosa and Shareefa (2019) researched teachers' experience and qualification on efficacy, knowledge and implementation of differentiated instruction (DI). The study sought to establish differences in teachers' self-efficacy, knowledge and implementation as a result of their experience and qualification. One hundred and one (101) respondents were sampled among elementary school teachers in a single atoll of Maldives. ANOVA and t-test were employed in the analyse differences existent in the grouping of teachers while multiple regression with split sample was employed to elicit difference in the moderator variables. Statistically significant difference existed among experienced, moderately experienced and less experienced teachers in terms of efficacy. No significant difference was found in teachers' knowledge and implementation of DI based on both qualification and experience. The study recommended that relevant content training in the knowledge of differentiated instruction should be done in sufficient amount for teachers for effective integration.

Louws et al. (2017) examined self-directed learning and teachers' teaching experience to check what teachers want to learn. The concept was an extract from the adult learning theories which accommodated the understanding that teachers develop their own learning needs and guide their learning. This research explored a qualitative approach which sought to answer what, how and why they choose these learning domains and activities. The sample for the study were 11 Dutch senior secondary schools with a total of three hundred and nine (309) respondents. Regression was employed to analyse both linear and non-linear similarities between self-directed learning and experience among participating teachers. The study found both early and late career teachers eliciting higher preferences when compared with mid-career teachers' classroom management domains.

Fägerstam (2014) investigated high school teachers' experience and the potential of outdoor teaching and learning. The study assembled teachers of various disciplines in a longitudinal case study. Free spaces on the school premises were used instead of the usual classroom in the teaching of various subjects by the participating teachers to their junior high school students in Sweden. The foci of the study were to explore the teaching and learning in different subjects outside the classroom, also, compare the experience of both teachers and students after a period of one year. The interview was analyzed using thematic analysis. The teachers perceived that students' educational potentials are better; motivation, participation and communication improved in outdoor classroom. Also, teachers perceive the shared experience outside the classroom to be utilizable to improve the normal classroom teaching. The study reported that students took time to adjust to the outdoor teaching as they were used to the classroom space.

By training, physics educators (individuals with bachelor of education in physics) have the requisite understanding of the teaching expected in advanced level programme as well as in ordinary level (McCulloch, 2020; McCulloch et al., 2020). Unqualified teachers have found their way into teaching in many developing countries across the world (Adeyemo, 2012; Owolabi &

Adebayo, 2012; Akanbi et al., 2018). This situation is arrived at in various climes as a result of scarcity of qualified physics teachers (Kini & Podolsky, 2016; Louws et al., 2017). In other climes, reasons beyond unavailability can be adduced to their scarcity teachers (Kini & Podolsky, 2016; Louws et al., 2017). In Nigeria, for instance, professional teachers demand higher wages for teaching positions which sometimes necessitate the employer to hire an alternative employee to fill this position (Adeyemo, 2012). While these sharp practices need to be nibbed in the bud, the denial of its existence may create more problems than what exist at the moment. The position of scholars in this area seems limited in terms of research to take account of happenings, especially in the locale under review.

Researches bordering on analysis of ordinary and advanced level Physics teachers' variables, and their influence vis a vis qualification is yet to find its depth in the literature. However, the existing literature have explored the influence of teacher's qualifications on student's academic achievement without sufficient adjudication of levels of teaching and the requisite qualification therewith (Fägerstam, 2014; Musili, 2015; Akanbi et al., 2018). Similarly, variations exist in the modes and levels of classroom delivery between the ordinary and advanced teachers. These variations account for requisite demand by such teachers to match the impending training of such students. Understandably, advanced level syllabi across board have been found to be more demanding in terms of content knowledge (Ergin, 2013), however, the qualification, experience and sometimes exposure of the teachers in these two programmes remain relevant and worthy of investigation to determine the pattern and present possible areas of remediation.

An investigation of teachers' variables with respect to ordinary and advanced level programmes in Lagos, Ogun and Kwara States, Nigeria formed the focus of this study. While findings of researches in these areas elude literature at the moment. It is imperative to note that, both ordinary and advanced level syllabi were drawn from the same curriculum as designed by the Nigeria Educational Research and Development Council (NERDC). An aggregation of data in this area may inform decisions to manage, prescribe and remediate with a view to improve performance and beyond for learners, teachers and policy makers alike. This study therefore, sought to Analyse Ordinary and Advanced Level Physics Teachers' Qualification, Experience and Job Placement.

Research Question are: (1) Is there similarity in the qualification of ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States?; (2) Is there similarity in the years of teaching of ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States?; (3) Does gender influence job placement of Physics teachers in ordinary and advanced level programmes in Kwara, Lagos and Ogun States?. Furthermore, the following hypothesis were formulated and answered in this study: **H_{01}:** There is no significant similarity in the qualification of ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States; **H_{02}:** No significant similarities exist in the years of teaching for ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States; **H_{03}:** There is no significant influence of gender on job placement of Physics teacher in ordinary and advanced level programmes in Kwara, Lagos and Ogun States.

METHODS

This study adopted descriptive research of the survey type because the variables considered have peculiar characteristics of respondents which are gotten through description of parameters peculiar to each respondent. A researcher designed inventory titled- Physics Teachers of Ordinary and Advanced level Inventory (PTOALI) was employed to elicit data from respondents (physics teachers) in the selected senior secondary schools in Kwara, Lagos and Ogun States, Nigeria. The instrument consists of four sections, which are; Section A and D. Section A contain regarding the bio/demographic information of respondents, section B had 10 statements with four Likert responses of strongly agree, agree, disagree and strongly disagree on teachers' qualifications at ordinary and advanced level. Section C required responses about 7 items on teaching experience and section D 7 items requiring responses on the same Likert scale. The face and content validities of the instrument was done by seven seasoned physics educators not below Ph.D. certification (two each from the states in which the study was carried out) and a professor from the Department of Science Education, University of Ilorin, Nigeria to check for content, construct and criterion validity. The reliability of the instrument was determined using test-retest

reliability method. A pilot study was conducted outside the sample among 15 physics teachers for the reliability. The responses from the first and second administration of the questionnaire were correlated using the Cronbach's alpha Formula to obtain reliability index 0.89 for the instrument.

The population for this study were all ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States, Nigeria. The sample were two-hundred and twenty-five teachers from the three states under review. Purposive sampling technique was employed because participant must meet criteria enumerate in this study before eligibility. These criteria are: that participating teacher must be teaching in a government registered and approved school; participating schools must have been existing for at least five years. Participants must have been working in the school for more than six months and; participants must be willing to give accurate account of the variables of interest in this study. Respondents were drawn from Kwara, Ogun and Lagos states. A total of 76, 74 and 75 respondents took part in the study respectively. This study indulged private school (schools not owned by government). What informed the choice of private schools are; insinuation of sharp practices these schools in terms of employment, appreciable number of Ordinary and Advanced Level educational centres are established and managed by private educational bodies. Considering the fact that some of the selected private schools employed more than one physics teacher, stratified sampling techniques was employed in the selection of a teacher per school (most experience in most cases and next in rank in case of absence).

A letter of introduction was obtained from the Department of Science Education, University of Ilorin, Ilorin, Nigeria. This letter was presented to the Head of School in each school and a consent form was also administered to the participating teachers. The questionnaires (PTOALI) were administered directly to the teachers by the researcher and in some instances by research assistants. The respondents were encouraged to be objective in their responses. The researchers welcome other relevant information given by respondents (teachers).

RESULTS AND DISCUSSION

Figure 1 shows that, Kwara state had 76 respondents that participated in this study, 25 of them which represents 32.9% of the entire respondents were female teachers, and 51 which represents 67.1% of the entire respondents were male teachers. Ogun had 74 respondents, 26 which represents 35.1% of the respondents were female teachers, and 48 which represents 64.9% of the respondents were male teachers. For Lagos state, 75 respondents participated in the study, 20 which represents 26.7% of the respondents were female teachers, and 55 which represents 73.3% of the respondents were male teachers.

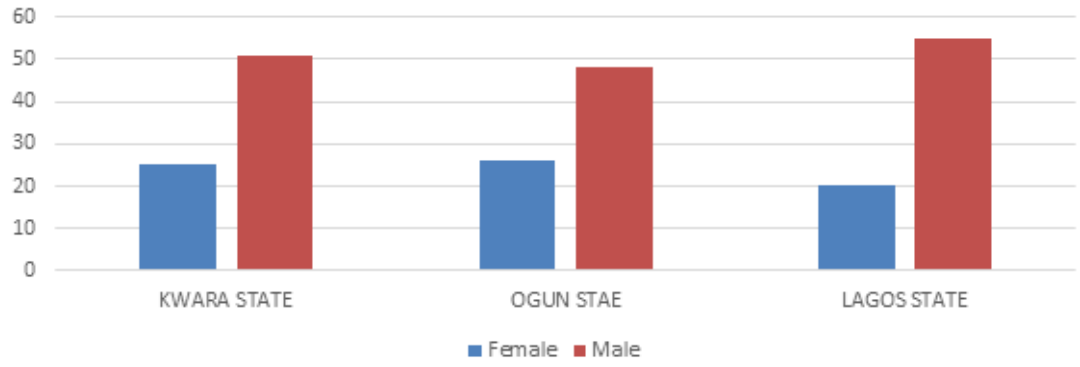

Figure 1. Gender Representation of Respondents

Interpretation of figure 2, Kwara state with 76 teachers, 26 teachers teach advanced Level, accounting for 34.2 percentage of advanced Level teachers, while 50 teachers teach ordinary Level, accounting for 65.8 percentage of ordinary Level teachers. From Ogun state with 74 Teachers, 25 instructors teach A' Level, accounting for 33.8 percent of A' Level teachers, while 49 teachers teach O' Level, accounting for 66.2 percent of O' Level teachers. Lagos state had 75 teachers, 25 teachers teach A' Level, accounting for 33.3 percent of A' Level teachers, while 50 teachers teach O' Level, accounting for 65.8 percent of O' Level teachers.

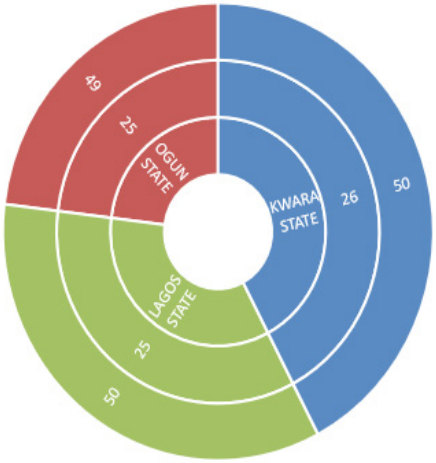

Figure 2. Teaching Level (Advance and Ordinary)

Figure 3, for Kwara state, out of the 76 respondents that participated in the study, 29 accounting for 38.2% of the entire respondents had 1 – 5 years teaching experience, 42 accounting for 55.3% of the entire respondents had 6 – 10 years teaching experience, 4 accounting for 5.3% of the entire respondents had 11 – 15 years teaching experience, while, 1 accounting for 1.3% of the entire respondents had 16 and above years teaching experience. It shows that the vast majority of the respondents in Kwara had between 6 – 10 years teaching experience. In Ogun state, 74 respondents participated in the study, 18 accounting for 24.3% of the entire respondents had 1 – 5 years teaching experience, 32 accounting for 43.2% of the entire respondents had 6 – 10 years teaching experience, 18 accounting for 24.3% of the entire respondents had 11 – 15 years of teaching experience, while, 6 accounting for 8.1% of the entire respondents had 16 and above years teaching experience. It shows that the vast majority of the respondents in this study had between 6 – 10 years of teaching experience. Lagos state had 75 respondents that took part in the study, 20 accounting for 26.7% of the respondents had 1 – 5 years teaching experience, 23 accounting for 30.7% of the respondents had 6 – 10 years teaching experience, 21 accounting for 28.0% of the respondents had 11 – 15 years' experience in teaching, while, 16 years and above accounting for 14.6% of the entire respondents had 16 and above years teaching experience.

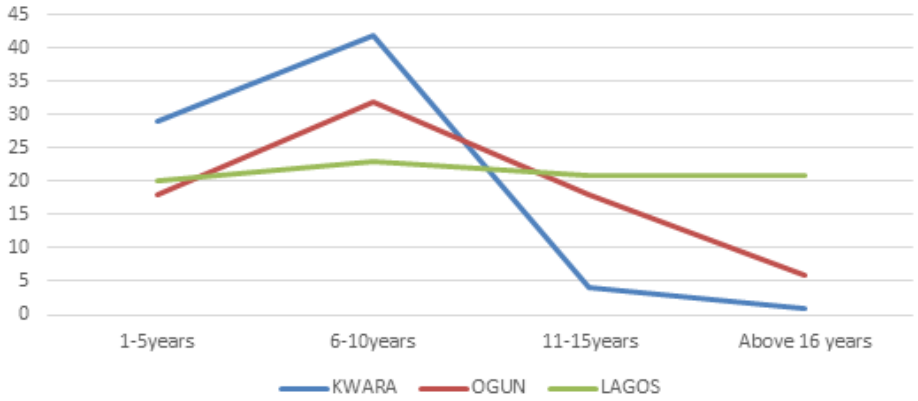

Figure 3. Distribution of Respondents by Experience

Figure 4 is presented thus, in Kwara state, among the 76 respondents that participated in the study, 29 which represents 38.2% of the respondents had B.Sc. Ed./B.Ed. (Physics) certificate, 13 which represents 17.1% of the respondents had B.Sc. and PGDE (Physics) certificate, 8 which represents 10.5% of the respondents had M.Sc. And PGDE (Physics) certificate, 3 which represents 3.9% of the respondents had M.Ed. (Physics) certificate, while 23 which represents 30.3% of the respondents had other qualification (HND, B.Eng. Civil Engineering, B.Sc. Physics,

B.Sc. Food Sc. and Tech., Electrical/Electronic Engineering certificate. Ogun state had 74 respondents that participated in the study, 15 which represents 20.3% of the respondents had B.Sc. Ed./B.Ed. (Physics) certificate, 23 which represents 31.1% of the respondents had B.Sc. and PGDE (Physics) certificate, 13 which represents 17.6% of the respondents had M.Sc. And PGDE (Physics) certificate, 8 which represents 10.8% of the respondents had M.Ed. (Physics) certificate, while 15 which represents 20.3% of the respondents had other qualification (HND Physics, HND Electronics, B.Sc. Computer Science, HND and PGDE, HND Electrical/Electronics, HND (Elect/Elect) and PGDE, B.Sc. Comp. Mathematics, B.Sc. (Elect/Elect), B. Eng. certificate. For Lagos, 75 respondents that participated in the study, 24 which represents 32.0% of the respondents had B.Sc. Ed./B.Ed. (Physics) certificate, 20 which represents 26.7% of the respondents had B.Sc. and PGDE (Physics) certificate, 12 which represents 16.0% of the respondents had M.Sc. And PGDE (Physics) and M.Ed. (Physics) certificate respectively, while 7 which represents 9.3% of the respondents had other qualification (B. Sc. (Biochemistry), PGDE, B.Sc. (Chemical Engineering) NCE, B.Tech., MSc. B. Tech. applied Geophysics, M.A. (Education), OND, B.Sc. Engineering, B.Sc. (Geophysics).

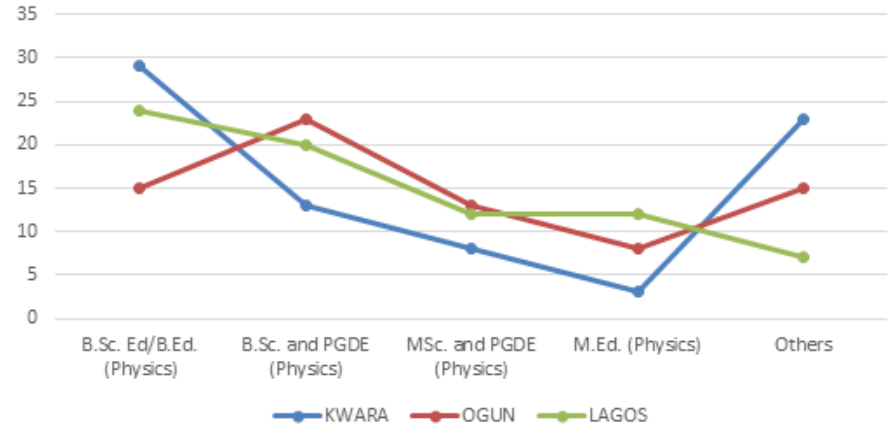

Figure 4. Respondents by Qualification

The research hypotheses postulated in this study were tested using the Chi-square statistics at 0.05 level of significance. **H_{01}:** There is no significant similarity in the qualification of ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States.

Table 1. Chi-square of Teachers by Qualification in Kwara State

		Qualification									
		B.Sc. Ed/B. Ed. (physics)	**B.Sc. and PGD (Physics)**	**MSc. and PGDE (Physics)**	**M.Ed. (Physics)**	**Others**	**Total**	**df**	**Cal. X^2-value**	**Cal. Sig. (2-sided)**	**Decision**
A'LEVEL	Count	4	4	7	2	9	26				
	Expected Count	9.9	4.4	2.7	1.0	7.9	26.0				
O'LEVEL	Count	25	9	1	1	14	50	4	17.19	.00	H_{O1} Rejected
	Expected Count	19.1	8.6	5.3	2.0	15.1	50.0				
Total	Count	29	13	8	23	23	76				
	Expected Count	29.0	13.0	8.0	23.0	23.0	76.0				

$\rho < 0.05$

Table 1 shows that the calculated Cal. X^2-value is 17.19 with calculated significance of .00 computed at critical alpha level of .05 significance. Since the calculated significant (.00) is lower than the critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is, there is a significant relationship in the qualification of Physics teachers in ordinary and advanced level programmes in Kwara State.

Table 2. Chi-square of Teachers by Qualification in Lagos State

			Qualification									
			B.Sc. Ed/B. Ed. (Physics)	**B.Sc. and PGD E(Physics)**	**M.Sc. and PGDE (Physics)**	**M.Ed. (Physics)**	**Others**	**Total**	**df**	**Cal. X^2-value**	**Cal. Sig. (2-sided)**	**Decision**
Level	A'Level	Count	2	9	7	5	2	25				
		Expected Count	8.0	6.7	4.0	4.0	2.3	25.0				
	O'Level	Count	22	11	5	7	5	50				
		Expected Count	16.0	13.3	8.0	8.0	4.7	50.0	4	11.81	.02	H_{O1} Rejected
	Total	Count	24	20	12	12	7	75				
		Expected Count	24.0	20.0	12.0	12.0	7.0	75.0				

ρ **<0.05**

Table 2 shows that the calculated Cal. X^2-value is 11.81 with calculated significance of .02 computed at critical alpha level of .05 significance. Since the calculated significant (.02) is lesser than the critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is there is a significant relationship between the qualification of Physics teachers in ordinary and advanced level programmes in Lagos State.

Table 3. Chi-square of Ordinary and Advanced Level Physics Teachers by Qualification in Ogun State

			Qualification									
			B.Sc. Ed/B. Ed. (physics)	**B.Sc. and PGD (Physics)**	**MSc. and PGDE (Physics)**	**M.Ed. (Physics)**	**Others**	**Total**	**df**	**Cal. X^2-value**	**Cal. Sig. (2-sided)**	**Decision**
Level	A'LEVEL	Count	3	3	10	5	4	25				
		Expected Count	5.1	7.8	4.4	2.7	5.1	25.0				
	O'LEVEL	Count	12	20	3	3	11	49				
		Expected Count	9.9	15.2	8.6	5.3	9.9	49.0	4	19.80	.00	H_{O1} Rejected
	Total	Count	15	23	13	8	15	74				
		Expected Count	15.0	23.0	13.0	8.0	15.0	74.0				

ρ <0.05

Table 3 shows that the calculated Cal. X^2-value is 19.80 with calculated significance of .00 computed at critical alpha level of .05 significance. Since the calculated significant (.00) is lower than the critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is, there is a significant relationship between the qualification of Physics teachers in ordinary and advanced level programmes in Ogun State. **H_{02}:** No significant similarities exist in the years of teaching for ordinary and advanced level physics teachers in Kwara, Lagos and Ogun States.

Table 4. Chi-square of Years of Teaching Physics in Ordinary and Advanced Level Programmes in Kwara State

			Experience				Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			1 - 5 years	6 - 10 years	11 - 15 years	16 years above					
Level	A'LEVEL	Count	8	18	0	0	26				
		Expected Count	9.9	14.4	1.4	.3	26.0				
	O' LEVEL	Count	21	24	4	1	50				
		Expected Count	19.1	27.6	2.6	.7	50.0	3	4.56	.21	H_{O2} Not Rejected
	Total	Count	29	42	4	1	76				
		Expected Count	29.0	42.0	4.0	1.0	76.0				

$\rho >$ **0.05**

Table 4 shows that the calculated Cal. X^2-value is 4.56 with calculated significance of .05 computed at critical alpha level of .05 significance. Since the calculated significant (.21) is greater than critical alpha level of significance (.05), this implies that the null hypothesis is therefore not rejected, that is, there is no significant dissimilarities between physics teachers' years of experience in ordinary and advanced level programmes in Kwara State.

Table 5. Chi-square of Years of Teaching Physics in Ordinary and Advanced Level Programmes in Lagos State

			Experience				Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			1 - 5 years	6 - 10 years	11 - 15 years	16 years above					
Level	A'LEVEL	Count	6	10	5	4	25				
		Expected Count	6.7	7.7	7.0	3.7	25.0				
	O'LEVEL	Count	14	13	16	7	50				
		Expected Count	13.3	15.3	14.0	7.3	50.0	3	2.07	.56	H_{O2} Not Rejected
	Total	Count	20	23	21	11	75				
		Expected Count	20.0	23.0	21.0	11.0	75.0				

$\rho > 0.05$

Table 5 shows that the calculated Cal. X^2-value is 2.07 with calculated significance of .56 computed at critical alpha level of significance .05. Since the calculated significant (.56) is greater than critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is, there is significant similarities between physics teachers' years of experience in ordinary and advanced level programmes in Lagos State.

Table 6. Chi-square of Years of Teaching Physics in Ordinary and Advanced Level Programmes in Ogun State

			Experience				Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			1 - 5 years	6 - 10 years	11 - 15 years	16 years above					
Level	A'LEVEL	Count	8	14	3	0	25	3	7.75	.05	H_{O2} Rejected
		Expected Count	6.1	10.8	6.1	2.0	25.0				
	O'LEVEL	Count	10	18	15	6	49				
		Expected Count	11.9	21.2	11.9	4.0	49.0				
	Total	Count	18	32	18	6	74				
		Expected Count	18.0	32.0	18.0	6.0	74.0				

$\rho \geq 0.05$

Table 6 shows that the calculated Cal. X^2-value is 7.75 with calculated significance of .05 computed at critical alpha level of .05 significance. Since the calculated significant (.05) is equal to critical alpha level of significance (.05), this implies that the null hypothesis is therefore not rejected, that is, there is significant dissimilarities between physics teachers' years of experience in ordinary and advanced level programmes in Ogun State. **H_{03}:** There is no significant influence of gender on job placement of Physics teacher in ordinary and advanced level programmes in Kwara, Lagos and Ogun States.

Table 7. Chi-square of Gender Influences in Kwara State

			Gender		Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			Female	Male					
Level	ALEVEL	Count	7	19	26	1	.64	.42	H_{O3} Not Rejected
		Expected Count	8.6	17.4	26.0				
	O'LEVEL	Count	18	32	50				
		Expected Count	16.4	33.6	50.0				
	Total	Count	25	51	76				
		Expected Count	25.0	51.0	76.0				

$\rho > 0.05$

Table 7 shows that the calculated Cal. X^2-value is .64 with calculated significance of .42 computed at critical alpha level of significance .05 significance. Since the calculated significant (.42) is greater than critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is, there is no significant gender variation on job placement of Physics teacher in ordinary and advanced level programmes in Kwara State.

Table 8. Chi-square of Gender Influence in Lagos State

			Gender		Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			Female	Male					
Level	ALEVEL	Count	4	21	25				
		Expected Count	6.7	18.3	25.0				
	O'LEVEL	Count	16	34	50				H_{O3}
		Expected Count	13.3	36.7	50.0	1	2.18	.14	Not Rejected
	Total	Count	20	55	75				
		Expected Count	20.0	55.0	75.0				

$\rho > 0.05$

Table 8 shows that the calculated Cal. X^2-value is 2.18 with calculated significance of .14 computed at critical alpha level of .05 significance. Since the calculated significant (.14) is greater than critical alpha level of significance (.05), this implies that the null hypothesis is therefore not rejected, that is, there was no significant gender variation on job placement of Physics teacher in ordinary and advanced level programmes in Lagos State.

Table 9. Chi-square of Gender Influence in Ogun State

			Gender		Total	df	Cal. X^2-value	Cal. Sig. (2-sided)	Decision
			Female	Male					
Level	ALEVEL	Count	4	21	25				
		Expected Count	8.8	16.2	25.0				
	O'LEVEL	Count	22	27	49				H_{O3}
		Expected Count	17.2	31.8	49.0	1	6.07	.01	Rejected
	Total	Count	26	48	74				
		Expected Count	26.0	48.0	74.0				

$\rho > 0.05$

Table 9 shows that the calculated Cal. X^2-value is 6.07 with calculated significance of .01 computed at critical alpha level of .05 significance. Since the calculated significant (.01) is lower than critical alpha level of significance (.05), this implies that the null hypothesis is therefore rejected, that is, there is a significant gender variation on job placement of Physics teacher in ordinary and advanced level programmes in Ogun State.

First finding revealed that there was a significant similarity between the qualification of physics teachers in ordinary and advanced level programmes in Kwara, Lagos and Ogun States. This outcome seems logical but deviates from the general perceptive that a separate breed of teachers with better qualification teach at advanced level. We posit that physics teachers are referred based on their qualification andd not the level in which they teach. The studies of Moosa and Shareefa (2019), Louws et al. (2017) and Fägerstam (2014) exposed teachers' qualification and experience on directed instruction, self-directed learning, and potentials for outdoor teaching and learning, respectively. The afore-listed works did not examine these variable along ordinary and advance levels. Having sustained this position for the three states under review, ordinary and advanced level teachers do possess similar capacity and competencies with reference to qualification in this study.

Furthermore, there was no significant similarity in the years of teaching of Physics teachers in ordinary and advanced level programmes in Kwara and Lagos States. Ogun State is an exception with significant similarity in the years of teaching between ordinary and advanced level physics teachers in the state. For Kwara and Lagos States, the years of experience of ordinary and advanced level physics teachers are similar, unlike Ogun State. This position is relatable, owing to the fact that teachers migrate from one job to the other for better payment and remuneration. Studies of Akanbi et al. (2018), Musili (2015), Kini & Podolsky (2016) and Louws et al. (2017) correlated teachers experience with students' performance at different instances. This study compares qualification of teachers of ordinary and advanced levels.

Also, there is no significant gender variation on job placement among Physics teacher in ordinary and advanced level programmes in Kwara and Lagos States with exception of Ogun state. However, from data stratification by gender, it is evident that female physics teachers are underrepresented in-field. Studies of de Barros Vidor (2020), Barthelemy et al. (2015), Hofer (2015), Stewart (1998) and Traxler et al. (2016) have all considered gender in the context of academic performance among learners and female representation in physics learning. In this study, the variation between male and female physics teachers in ordinary and advance level teaching positions is not significant for Kwara and Lagos States. The alternative is for Ogun State.

CONCLUSION

Similarities exist in the qualifications of Physics teachers in ordinary and advanced level programmes across the states under review. Variation also exists in physics teachers' years of experience at ordinary and advance levels and that the number of in-field physics teachers are inadequate going by the ratio of students. Also, similar years of experience was inferenced in Kwara and Lagos State as against Ogun. The profession of physics teaching has limited female representation on job placement aside the general inadequacy. Outside the data analysed, one of the reasons why this study indulged purposive sampling was because of inadequacy of physics teachers in considerable number of the secondary schools visited. Instances of mathematics and chemistry teachers teaching physics was noticed at the time of visit in some schools. Similarly, unqualified physics teachers in sizable number had representation in a number of schools visited. The implication of the afore-stated is that, government, policy makers and relevant authorities can make use of the data available in this study to plan appropriately and adequately with a view to remediate the shortage experienced among physics teachers in senior secondary schools. This study highlights the need to train more physics teachers. It also brings to the fore the rationale to make teaching lucrative to aspiring teachers. Aspiring female physics teachers should be encouraged through scholarship and stipends to study physics and by extension STEM courses. Teachers are also encouraged to pay adequate attention to self-development in both advanced and ordinary level curriculum to cater for emerging areas in science teaching. This study is limited to only three states out of the thirty-six states in Nigeria. As such, a generalisation of the finding of this study may not be empirically adequate. We therefore, encourage further probing.

REFERENCES

Abe, T. O., & Adu, E. I. (2013). Influence of qualification on development and assessment of computer programmed instructional package on energy concept in upper basic technology in Ekiti state. *Journal of Science and Technology, 3*(6), 611-618.

Adeyemo, S. A. (2012) The Influence of teachers' supply and the provision of laboratory facilities on students' achievement in Physics. *European Journal of Educational Studies, 4*(3), 397-409.

Adeniyi, C. O., Ogundele, L. O., & Odetola, C. A. (2014). Teacher quality factors as a determinant

of students' achievement in Mathematics. *Journal of Education and Practice*, *5*(37), 1-6.

Akanbi, A. O., Omosewo, E. O., & Bayim. O. (2018). Teachers' characteristics and availability of laboratory as predictors of senior school students' performance in physics in Ilorin, Nigeria. *Journal of Teacher Education and Educators*, *7*(1), 43-56.

Badmus, O. T., & Jita, L. C. (2022). Pedagogical Implication of Spatial Visualization: A Correlate of Students' Achievements in Physics. *Journal of Turkish Science Education*, *19*(1), 97-110.

Barthelemy, R. S., Van Dusen, B., & Henderson, C. (2015). Physics education research: A research subfield of physics with gender parity. *Physical Review Special Topics-Physics Education Research*, *11*(2), 020107.

Cambridge Assessment International education. (2019). Cambridge International AS & A Level Physics syllabus. www.cambridgeinternational.org/alevel

Cameron, D., & Grant, A. (2017). The role of mentoring in early career physics teachers' professional identity construction. *International Journal of Mentoring and Coaching in Education*.

Ergin, I. (2013). The evaluation of the studies related to the new curriculum of physics course: The case of Turkey. *Educational Research and Review, 8*(10), 620-630.

Fägerstam, E. (2014) High school teachers' experience of the educational potential of outdoor teaching and learning. *Journal of Adventure Education and Outdoor Learning, 14*(1), 56-81.

FRN [Federal Republic of Nigeria] (2013). *National Policy on Education* (4th Ed). Abuja NERDC Press: Lagos.

FR [Federal Republic of Nigeria] (2007). *National Policy in Education*, Abuja: NERDC Press.

Hofer, S. I. (2015). Studying gender bias in physics grading: The role of teaching experience and country. *International Journal of Science Education*, *37*(17), 2879-2905.

JUPEB [Joint Universities Preliminary Examinations Board] (2020). *Syllabus*. JUPEB Press.

Kini, T., & Podolsky, A. (2016). Does Teaching Experience Increase Teacher Effectiveness? A Review of the Research. *Learning Policy Institute*.

Louws, M. L., Meirink, J. A., van Veen, K. & van Driel, J. H. (2017). Teachers' self-directed learning and teaching experience: What, how, and why teachers want to learn. *Teaching and Teacher Education, 66*,171-183.

Mapolisa, T., & Tshabalala, T. (2014). Perceptions of teachers on causes of poor performance of pupils at ordinary level public examinations in Zimbabwean rural secondary schools: A case study of Nkayi District. *International journal of innovation and applied studies*, *8*(1), 158.

McCulloch, G. (2020). The Nuffield Physics Ordinary-level Curriculum Project in the 1960s: a Transnational Project? *Foro de Educación*, *18*(2), 47-62.

McCulloch, G., Goodson, I., & Gonzalez-Delgado, M. (2020). *Transnational Perspectives on Curriculum History*. London: Routledge.

Mkpanang, J. T. & UtibeAbasi, S. S. (2018). Compliance level with professional knowledge and skills requirements by high school physics teachers in Akwa Ibom State: Implications for the education of science teachers. *British Journal of Education, 6*(11), 52 – 64.

Moosa, V., & Shareefa, M. (2019). The impact of teachers' experience and qualification on efficacy, knowledge and implementation of differentiated instruction. *International Journal of Instruction, 12*(2), 587-604

Mukaro, J. P., Chivheya, R., & Ruparanganda, F. (2021). An Assessment of the Alignment of Curricula Operating in the Same Context: A Case Study of Ordinary and Advanced Biology Practical Work in Zimbabwe. *Zimbabwe Journal of Educational Research, 33*(1&2) 91-111

Musili, A. M. (2015). *Influence of teacher related factors on students' performance in Kenya certificate of secondary education in public secondary schools in Kibwezi sub-county Kenya* (Doctoral dissertation).

NUC [National Universities Commission] (2007). *Benchmark Minimum Academic Standards for Undergraduate Programmes in Nigerian Universities*. http://www.nuc.edu.ng/nucsite/File/DASS/BMAS%20SOCIAL%20SCIENCE.pdf

Neuschatz, M., & McFarling, M. (2000). Background and professional qualifications of high-school physics teachers. *The Physics Teacher*, *38*(2), 98-104.

Okendu, J. N. (2012). The Impact of School Administrative Structure and Adequate Supervision on the improvement of instructional processes. *Academic Research international journal, 2*(3), 497-500.

Okolo, I. A. (2013). *Teachers' education: A panacea for successful transformation in Nigeria.* A Seminar Paper presented at the 2013 National Conference of the Committee of Provost of Colleges of Education in Nigeria, Abuja.

Owolabi, O. T., & Adedayo, J. O. (2012). Effect of Teacher's Qualification on the Performance of Senior Secondary School Physics Students: Implication on Technology in Nigeria. *English Language Teaching*, *5*(6), 72-77.

Stewart, M. (1998). Gender issues in physics education. *Educational Research*, *40*(3), 283-293.

Traxler, A. L., Cid, X. C., Blue, J., & Barthelemy, R. (2016). Enriching gender in physics education research: A binary past and a complex future. *Physical Review Physics Education Research*, *12*(2), 020114

Ugwulashi, C. S. (2012). *Time management and school administration in Nigeria: problems and prospects.* Proceedings of the 1st international technology, education and environment conference(s) African society for scientific Research (ASSR).

Vidor, C., Danielsson, A., Rezenda, F., & Ostermann, F. (2020). What are the Problem Representations and Assumptions About Gender Underlying Research on Gender in Physics and Physics Education? A Systematic Literature Review. *Revista Brasileira de Pesquisa em Educação em Ciências*, *20*, 1133-1168.

WAEC [West African Examinations Council] (2020). West African Examinations Council syllabus 2020. Retrieved from: https://waecdirect.org.ng/

Whittemore, G. C. (2005). Why relatively few choose physics: A view from inside the pipeline. *American journal of physics*, *73*(11), 997-998.