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Item Response Theory Analysis of Geography Qualifying Examinations in Relation to Gender-Based Academic Performance in Senior Secondary Schools, South-West, Nigeria

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Abstract: The study investigated the item response theory analysis of gender-based differences in geography qualifying examinations in relation to academic performance in south-west Nigerian senior secondary schools. This study adopted an ex-post facto research design. The population comprised all Senior Secondary School II (SSS II) students who sat for the 2021 Geography Qualifying Examinations in South-West, Nigeria. A sample of 1,200 students was drawn through a multistage sampling procedure. The instruments consisted of 50 multiple-choice Geography items from the Ekiti State Qualifying Examination (ESQE), 50 items from the Oyo State Qualifying Examination (OSQE), and 60 items from the Ogun State Qualifying Examination (OGSQE) for the 2021 academic session. Data were obtained from the respective State Ministries of Education in form of Optical Mark Reader (OMR) sheets. Students' responses were dichotomously scored with correct options coded as 1 and incorrect options as 0 for Item Response Theory (IRT) analysis. Data collected were analyzed using both descriptive and inferential statistics in line with the research questions and hypotheses. Item parameters were estimated using the One-Parameter (1PL), Two-Parameter (2PL), and Three-Parameter (3PL) Logistic Models of Item Response Theory via the BILOG-MG software. Research questions were answered using mean and standard deviation, while hypotheses were tested using correlation analysis at 0.05 level of significance. The findings revealed that the qualifying test items were most difficulty for Ogun State followed by Oyo State while test items from Ekiti are easy for test-takers. It also revealed that qualifying Geography items from Ekiti State discriminated test-takers that know the materials from those that did not more than Ogun and Oyo States The study revealed that Ogun State qualifying items were the most difficult, followed by Oyo, while Ekiti items were the easiest. Ekiti items showed higher discriminatory power than Ogun and Oyo, whereas Ogun items provided more test information in differentiating low and high ability examinees. Items across the three states were not susceptible to guessing. Under the 1PL model, the test was more difficult for females than males, while under the 2PL and 3PL models, it was slightly more difficult for males, with females showing higher vulnerability to guessing. Pearson Product Moment Correlation revealed a significant and high correlation between male and female performance across Oyo, Ekiti and Ogun States. It was recommended that item analysis should be prioritized in the item selection process prior to final administration of qualifying examinations, and should be handled by psychometric experts and test developers in the Ministries of Education.

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I. INTRODUCTION

Education is a key driver of political, social, and economic development and enhances productivity across all sectors of nation-building. It equips individuals with knowledge, skills and intellectual capacity for effective functioning in society. The quality, competence and potential of learners are determined through tests and examinations, which are also used for placement, employment and promotion, requiring valid and reliable measuring instruments. Examinations constitute a fundamental mechanism for evaluating learning outcomes, certifying competence, and guiding decisions on placement, promotion and certification at the senior secondary school level. In South-West Nigeria, comprising Ogun, Oyo and Ekiti States, Geography qualifying examinations serve as a prerequisite screening to determine students' preparedness for the Senior School Certificate Examination (SSCE). As a gatekeeping assessment, the quality and fairness of this examination are crucial for ensuring valid inferences about students' abilities and for facilitating equitable access to tertiary education and career opportunities in environmental management, social

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sciences and related disciplines. However, persistent inconsistencies in performance trends across states and between male and female students have raised concerns about the psychometric integrity of the test items. The psychometric quality of examination items largely determines the accuracy of ability estimation. Item analysis is typically conducted on previously administered tests or pilot tests to improve test quality for subsequent use. In this context, academic performance serves as a key indicator of student achievement. Teachers and educational institutions commonly assess achievement through standardized test scores, classroom performance and graduation outcomes, which collectively reflect learning at the end of an educational programme. Performance in education denotes observable behaviour or characteristics of achievement at a given point in time and provides a basis for determining a student's capacities and academic potential within a formal learning environment (Olanipekun & Aina, 2014). Item Response Theory (IRT) offers a robust framework for evaluating test quality by modelling the relationship between latent ability and item response. Through its one-parameter, two-parameter and three-parameter logistic models, IRT provides independent estimates of item difficulty, discrimination and pseudo-guessing, as well as item information functions that indicate measurement precision across different ability levels (Adeyemi & Adebileje, 2020).Gender-related differences in Geography achievement have remained a subject of scholarly interest, particularly in standardized and qualifying examinations. Evidence suggests that variations in item characteristics can differentially affect male and female examinees, with implications for equity and academic performance. Olutola, Daramola and Owoyele (2022) found that differential functioning of test items across gender groups distorts the estimation of true competence, thereby undermining the fairness of test-based decisions. Similarly, Adeyemi and Adebileje (2020) reported that differences in item difficulty, discrimination power and susceptibility to guessing contribute significantly to gender gaps in Geography performance. These findings underscore the need to interrogate the psychometric fairness of Geography qualifying examinations in South-West Nigeria and to determine whether observed variations in academic performance reflect genuine differences in ability or are a function of item properties.

➢ *Statement of the Problem*

The decline in secondary school students' performance in external examinations has become a major concern for stakeholders in Nigeria's education sector. Reports from the West African Examinations Council (WAEC) and the National Examination Council (NECO) indicate persistent mass failure in Geography and other core subjects in the May/June and June/July examinations, particularly in South-West Nigeria. The Chief Examiners' Reports consistently show underperformance, with the trend being pronounced during the 2016/2017 to 2018/2019 academic sessions (National Bureau of Statistics, 2019).To mitigate this, qualifying examinations are conducted for Senior Secondary School II students across the South-West to determine their readiness and eligibility for government sponsorship for the Senior School Certificate Examination (SSCE). However, despite this screening, mass failure persists. While factors such as socio-economic status, teaching methods and environmental conditions have been extensively investigated, limited attention has been given to the psychometric quality of the qualifying examination items themselves. Although WAEC and NECO subject their items to rigorous item analysis, there is no evidence that Geography qualifying examination items administered across states in the South-West undergo similar standardization. Variations in item quality across states may partly explain the observed disparities in external examination outcomes. The low level of standardization of SS II Geography qualifying examination items may therefore undermine its predictive validity and contribute to poor performance in SSCE.

➢ *Research Questions*

The following research questions were raised for the study:

- What are the one parameter of the geography items of the qualifying examination constructed for students in Senior Secondary School 2 (SSS 2) in each of the states in southwest?
- How effective are the functioning power of the two parameters of geography items of the qualifying examination constructed for students in Senior Secondary School 2 (SSS 2) in each of the states in southwest?
- What are the three parameters' values of the geography items of the qualifying examination constructed for students in senior secondary schools 2 (SSS 2) in each of the states southwest?

➢ *Research Hypothesis*

The following hypothesis was formulated for the study:

- There is no significant relationship between the academic performance of male and female students in the Geography items of the qualifying examination for Senior Secondary School 2 students in each of the states in southwest.

II. MATERIALS AND METHODS

The study adopted an ex-post facto research design. The design involved the analysis of existing responses of Senior Secondary School II students who sat for the 2021 Geography qualifying examinations in South-West Nigeria, without manipulation of variables. The population comprised all public Senior Secondary School students who participated in the 2021 Geography Qualifying Examinations in Ekiti, Oyo and Ogun States. A sample of 1,200 students' responses was drawn through a multistage sampling procedure. This consisted of responses to 50 multiple-choice Geography items from Ekiti and Oyo States Qualifying Examinations and 60 multiple-choice items from Ogun State Qualifying Examination. The research instruments were the adopted qualifying examination papers and the students' Optical Mark Recorder (OMR) sheets obtained from the Ministries of Education in the three states. Responses were dichotomously scored, with correct options coded as 1 and incorrect options

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as 0. Data were analyzed using descriptive and inferential statistics.

III. RESULTS AND DISCUSSIONS

Data were analyzed based on the research questions and hypothesis formulated. Item parameters for the 1-Parameter, 2-Parameter and 3-Parameter Logistic models were estimated using BILOG-MG. Research questions were answered using mean and standard deviation, while the hypothesis was tested using correlation at 0.05 level of significance.

➢ *Research Question 1:*

What are the one parameter of the geography items of the qualifying examination constructed for students in Senior Secondary School 2 (SSS 2) in each of the states in southwest?

Table 1 One-Parameter Statistics for Qualifying Geography Items in Ogun, Ekiti and Oyo States Independently.

	Ogun		Ekiti		Oyo	
Item	**bparam**	**b_se**	**bparam**	**b_se**	**bparam**	**b_se**
geo1	2.91	0.22	-1.75	0.15	3.03	0.22
geo2	-3.72	0.31	-2.06	0.16	2.21	0.16
geo3	2.91	0.22	-0.49	0.12	2.45	0.17
geo4	-1.28	0.12	-2.69	0.20	-1.74	0.13
geo5	2.55	0.19	-2.86	0.21	3.63	0.28
geo6	2.70	0.20	-1.09	0.13	2.94	0.21
geo7	2.19	0.16	-0.54	0.12	3.29	0.24
geo8	1.93	0.15	1.40	0.13	4.01	0.34
geo9	0.21	0.10	-1.71	0.14	-1.59	0.13
geo10	-0.23	0.10	-0.12	0.11	2.81	0.20
geo11	1.14	0.12	-1.84	0.15	0.42	0.10
geo12	3.60	0.29	-0.68	0.12	1.01	0.11
geo13	2.87	0.21	-0.99	0.12	1.42	0.12
geo14	3.60	0.29	-0.70	0.12	1.16	0.11
geo15	0.93	0.11	0.48	0.11	1.08	0.11
geo16	2.55	0.19	-1.28	0.13	0.87	0.11
geo17	-1.62	0.13	-0.76	0.12	0.45	0.10
geo18	-0.77	0.11	1.32	0.13	-0.09	0.10
geo19	1.85	0.14	1.42	0.13	0.66	0.10
geo20	1.48	0.13	-0.89	0.12	1.06	0.11
geo21	2.87	0.21	-0.89	0.12	0.38	0.10
geo22	-0.03	0.10	0.09	0.11	-0.64	0.10
geo23	3.30	0.26	-0.26	0.11	0.61	0.10
geo24	2.87	0.21	-0.84	0.12	-0.77	0.11
geo25	1.50	0.13	0.69	0.12	0.71	0.10
geo26	3.30	0.26	0.50	0.11	0.55	0.10
geo27	0.54	0.11	-1.42	0.13	0.32	0.10
geo28	-0.60	0.11	-2.06	0.16	0.58	0.10
geo29	-1.39	0.12	-2.65	0.20	0.79	0.11
geo30	3.44	0.27	-0.09	0.11	0.66	0.10
geo31	1.48	0.13	-0.92	0.12	-0.17	0.10
geo32	1.48	0.13	-1.53	0.14	0.01	0.10
geo33	2.19	0.16	-2.03	0.16	-1.00	0.11
geo34	1.40	0.13	-2.25	0.17	0.38	0.10
geo35	-0.93	0.11	-0.86	0.12	-0.15	0.10
geo36	2.09	0.16	0.16	0.11	0.20	0.10
geo37	1.22	0.12	0.93	0.12	0.43	0.10
geo38	1.47	0.13	2.04	0.16	-0.24	0.10
geo39	-0.23	0.10	0.05	0.11	0.89	0.11
geo40	1.17	0.12	-0.32	0.11	1.20	0.11
geo41	1.13	0.12	1.02	0.12	0.79	0.11
geo42	3.06	0.23	-0.12	0.11	1.32	0.12
geo43	0.79	0.11	-1.84	0.15	0.17	0.10
geo44	0.51	0.11	-0.51	0.12	0.22	0.10
geo45	-0.31	0.10	-0.62	0.12	-0.20	0.10
geo46	0.24	0.10	-0.49	0.12	0.12	0.10

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geo47	0.54	0.11	0.52	0.11	1.39	0.12
geo48	-1.37	0.12	0.58	0.12	1.21	0.11
geo49	-1.03	0.11	-1.73	0.15	0.35	0.10
geo50	-0.54	0.11	0.60	0.12	0.55	0.10
geo51	0.27	0.10				
geo52	-0.72	0.11				
geo53	-0.42	0.10				
geo54	-0.64	0.11				
geo55	0.17	0.10				
geo56	-0.29	0.10				
geo57	1.40	0.13				
geo58	-0.34	0.10				
geo59	-0.56	0.11				
geo60	0.62	0.11				
Mean	**0.92**	**0.15**	**-0.60**	**0.13**	**0.79**	**0.13**
Std. Dev.	**1.60**	**0.06**	**1.17**	**0.02**	**1.22**	**0.05**

The result in Table 1 reveals that for Ogun State, 1 (1.7%) item was very easy, 19 (31.7%) easy, 10 (16.7%) moderate, 13 (21.6%) hard and 17 (28.3%) very hard. For Ekiti State, 7 (14.0%) were very easy, 28 (56.0%) easy, 10 (20.0%) moderate, 4 (8.0%) hard and 1 (2.0%) very hard, while Oyo State had 10 (20.0%) easy, 23 (46.0%) moderate, 9 (18.0%) hard and 8 (16.0%) very hard. Based on Baker's (2017) classification where difficulty values below -2 indicate very easy items and above +2 indicate very hard items, the mean difficulty was highest for Ogun State (M = 0.92, SD = 1.60, SE = 0.15), followed by Oyo (M = 0.79, SD = 1.22, SE = 0.13) and Ekiti (M = -0.60, SD = 1.17, SE = 0.13). This implies that Geography items were most difficult for Ogun State test-takers, followed by Oyo State, while Ekiti State items were relatively easy, suggesting low-ability students in Ogun and Oyo States were less likely to perform well compared to those in Ekiti State.

➢ *Research Question 2:*

How effective are the functioning power of the two parameters of geography items of the qualifying examination constructed for students in Senior Secondary School 2 (SSS 2) in each of the states in Southwest?

Table 2 Two-Parameter Statistics for Qualifying Geography Items in Ogun, Ekiti and Oyo States

	Ogun		**Ekiti**		**Oyo**	
Item	**aparam**	**bparam**	**aparam**	**bparam**	**aparam**	**bparam**
geo1	0.10	27.64	1.05	-1.82	0.05	62.01
geo2	1.23	-3.37	0.70	-2.90	0.03	79.79
geo3	0.18	15.47	0.98	-0.58	0.03	80.52
geo4	0.09	-12.72	1.16	-2.52	1.74	-1.37
geo5	0.08	29.53	1.16	-2.67	0.06	57.04
geo6	0.07	37.39	2.00	-0.86	0.03	85.62
geo7	0.03	60.39	1.92	-0.49	0.05	57.27
geo8	0.03	66.23	0.04	32.34	0.08	51.43
geo9	0.23	0.88	0.48	-3.34	2.05	-1.18
geo10	0.51	-0.46	-0.55	0.22	0.03	77.67
geo11	0.87	1.43	1.54	-1.51	0.61	0.69
geo12	0.06	59.18	1.98	-0.58	0.04	21.74
geo13	0.03	79.91	2.12	-0.78	0.05	25.20
geo14	0.05	74.99	1.14	-0.74	0.40	2.83
geo15	0.04	24.88	0.07	5.92	0.43	2.48
geo16	0.06	37.93	1.67	-1.05	0.04	22.54
geo17	2.33	-1.16	1.84	-0.65	0.34	1.26
geo18	1.69	-0.69	0.07	17.18	0.82	-0.12
geo19	0.07	26.05	0.03	39.24	0.47	1.38
geo20	0.05	28.48	1.95	-0.73	0.67	1.62
geo21	0.05	55.61	1.84	-0.74	0.07	5.32
geo22	1.10	-0.07	1.24	0.03	0.59	-1.08
geo23	0.05	61.08	1.35	-0.30	0.76	0.85
geo24	0.16	16.85	1.69	-0.73	0.94	-0.90
geo25	0.04	36.89	0.13	4.65	0.50	1.41
geo26	0.15	21.64	0.02	24.99	0.51	1.08

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geo27	0.33	1.59	1.44	-1.24	0.38	0.83
geo28	1.36	-0.60	2.00	-1.47	0.36	1.55
geo29	1.39	-1.28	1.10	-2.58	0.05	16.02
geo30	0.11	30.88	-0.67	0.13	0.50	1.30
geo31	0.02	66.47	2.20	-0.73	0.20	-0.77
geo32	0.03	52.78	0.88	-1.82	0.91	0.01
geo33	0.03	69.77	1.04	-2.10	0.76	-1.37
geo34	0.08	16.92	1.34	-1.95	0.90	0.47
geo35	1.14	-0.99	1.11	-0.91	0.52	-0.28
geo36	0.03	63.46	1.45	0.06	0.55	0.37
geo37	0.02	59.22	0.04	18.81	0.13	3.07
geo38	0.02	65.88	0.06	31.07	0.90	-0.29
geo39	1.03	-0.29	0.92	0.01	0.65	1.40
geo40	0.02	59.74	1.17	-0.36	0.35	3.31
geo41	0.07	14.87	0.02	51.56	0.05	15.45
geo42	0.14	21.58	-0.72	0.17	0.21	5.91
geo43	0.03	27.08	1.20	-1.74	0.87	0.21
geo44	0.82	0.65	1.19	-0.55	0.60	0.38
geo45	0.58	-0.55	1.18	-0.65	1.54	-0.19
geo46	1.43	0.17	0.68	-0.74	0.78	0.17
geo47	0.08	5.91	0.02	19.51	0.23	5.68
geo48	2.52	-0.99	0.08	5.95	0.06	20.50
geo49	2.65	-0.78	1.56	-1.42	1.11	0.36
geo50	1.04	-0.63	0.08	5.97	0.46	1.18
geo51	1.91	0.14				
geo52	1.30	-0.73				
geo53	1.28	-0.45				
geo54	1.49	-0.62				
geo55	1.20	0.13				
geo56	1.92	-0.30				
geo57	0.05	28.93				
geo58	1.32	-0.37				
geo59	1.15	-0.62				
geo60	0.02	23.64				
Mean	**0.60**	**22.41**	**0.94**	**4.33**	**0.49**	**14.21**
Std. Dev.	**0.73**	**26.35**	**0.79**	**12.06**	**0.46**	**25.49**

The result in Table 2 reveals that Geography items from Ekiti State had the highest mean discrimination index (M = 0.94, SD = 0.79) compared to Ogun (M = 0.60, SD = 0.73) and Oyo (M = 0.49, SD = 0.46), indicating better discrimination between high and low ability test-takers. For difficulty, based on Baker (2017) and DeMars (2010) criteria where values below -2 are very easy and above +2 are very hard, Ogun State items were most difficult (M = 22.41, SD = 26.35), followed by Oyo State (M = 14.21, SD = 25.49), while Ekiti State had the least difficulty (M = 4.33, SD = 12.06). This implies that although items across the three states were generally difficult, Ekiti State items were relatively better.

➢ *Research Question 3:*

What are the three parameters' values of the geography items of the qualifying examination constructed for students in senior secondary schools 2 (SSS 2) in each of the states Southwest?

Table 3 Three Parameter Statistics for Qualifying Geography Items in Each of the State.

	Ogun			**Ekiti**			**Oyo**		
Item	**aparam**	**bparam**	**cparam**	**aparam**	**bparam**	**cparam**	**aparam**	**bparam**	**cparam**
geo1	1.87	3.64	0.06	0.97	-1.56	0.50	1.44	5.96	0.06
geo2	1.91	-1.35	0.87	0.82	-1.43	0.50	1.46	5.96	0.11
geo3	1.31	5.96	0.06	1.54	0.31	0.32	1.46	5.96	0.09
geo4	0.15	-5.81	0.24	1.90	-0.52	0.78	2.36	-1.11	0.19
geo5	1.38	5.96	0.08	1.54	-0.90	0.76	1.46	5.96	0.03
geo6	1.28	5.95	0.07	2.31	-0.46	0.26	1.46	5.96	0.06
geo7	1.44	5.96	0.11	2.43	-0.11	0.20	0.82	25.50	0.05
geo8	1.45	5.96	0.14	1.27	5.95	0.22	0.82	26.60	0.03
geo9	0.46	2.69	0.29	2.03	0.95	0.76	2.54	-1.05	0.13

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geo10	0.68	0.70	0.28	0.04	5.90	0.18	1.46	5.96	0.07
geo11	2.04	1.46	0.14	1.37	-1.39	0.23	0.72	1.17	0.13
geo12	0.82	26.28	0.04	2.45	-0.24	0.19	0.82	20.14	0.28
geo13	1.46	5.96	0.06	2.23	-0.58	0.16	1.12	5.90	0.21
geo14	1.48	5.96	0.04	1.28	-0.26	0.22	0.71	2.91	0.14
geo15	0.82	19.51	0.29	0.11	13.48	0.26	1.37	2.18	0.19
geo16	1.78	3.88	0.08	1.76	-0.80	0.20	0.82	21.21	0.30
geo17	2.09	-1.33	0.12	2.07	-0.36	0.18	1.68	1.73	0.31
geo18	2.54	-0.25	0.31	1.30	5.96	0.24	1.05	0.50	0.21
geo19	1.18	5.83	0.15	0.82	22.90	0.22	0.76	2.19	0.21
geo20	1.25	5.92	0.20	2.42	-0.32	0.25	1.47	1.65	0.15
geo21	0.82	21.78	0.06	2.29	-0.36	0.23	0.82	21.15	0.40
geo22	1.73	0.55	0.28	1.77	0.49	0.19	0.72	0.06	0.30
geo23	1.47	5.96	0.04	1.60	0.01	0.14	1.47	1.32	0.20
geo24	1.05	5.87	0.06	1.80	-0.47	0.17	1.44	0.22	0.50
geo25	1.35	5.96	0.19	0.28	5.75	0.23	0.99	1.90	0.21
geo26	1.39	5.96	0.04	0.82	23.02	0.38	0.90	1.83	0.22
geo27	1.92	2.05	0.32	1.50	-0.89	0.25	0.61	2.04	0.24
geo28	1.40	-0.49	0.15	1.78	-0.94	0.50	0.72	2.25	0.22
geo29	2.33	-0.51	0.50	1.20	-1.78	0.50	1.67	3.12	0.31
geo30	0.82	23.88	0.04	0.02	25.83	0.25	0.68	1.77	0.14
geo31	1.45	5.96	0.20	2.17	-0.62	0.10	0.22	2.22	0.25
geo32	1.42	5.96	0.20	0.88	-1.54	0.19	1.21	0.55	0.20
geo33	1.46	5.96	0.11	1.03	-1.21	0.50	0.82	-0.76	0.24
geo34	1.15	5.94	0.21	1.43	-1.21	0.50	1.25	0.90	0.17
geo35	2.52	-0.09	0.50	1.22	-0.49	0.20	0.67	0.62	0.22
geo36	1.45	5.96	0.12	2.18	0.53	0.19	1.10	1.18	0.26
geo37	0.82	20.09	0.24	0.82	18.42	0.30	1.51	2.60	0.36
geo38	1.45	5.96	0.20	0.82	20.10	0.14	1.77	0.58	0.32
geo39	1.01	-0.17	0.11	2.45	0.87	0.31	1.54	1.60	0.19
geo40	0.82	21.98	0.25	2.07	0.40	0.30	1.16	2.60	0.18
geo41	1.76	3.15	0.24	0.82	21.14	0.29	1.22	5.94	0.32
geo42	1.37	5.96	0.05	0.03	5.90	0.16	0.81	4.48	0.20
geo43	0.82	20.83	0.32	1.14	-1.62	0.19	1.02	0.70	0.16
geo44	2.46	1.21	0.27	1.93	0.15	0.29	0.86	1.14	0.21
geo45	2.40	0.87	0.50	1.48	-0.03	0.26	2.16	0.14	0.17
geo46	1.91	0.40	0.15	0.84	0.20	0.27	0.98	0.73	0.18
geo47	0.82	18.29	0.37	0.82	17.73	0.38	0.67	5.48	0.19
geo48	2.59	-1.13	0.08	0.20	5.97	0.20	0.82	19.71	0.24
geo49	2.63	-0.89	0.07	1.41	-1.22	0.25	1.29	0.56	0.09
geo50	1.11	-0.38	0.18	0.82	19.36	0.37	1.55	1.75	0.28
geo51	2.67	0.23	0.11						
geo52	2.59	-0.07	0.50						
geo53	2.44	0.18	0.33						
geo54	2.08	-0.25	0.26						
geo55	2.52	0.48	0.22						
geo56	2.00	-0.26	0.10						
geo57	1.38	5.96	0.21						
geo58	1.25	-0.37	0.08						
geo59	1.76	-0.02	0.31						
geo60	0.82	23.39	0.35						
Mean	**1.54**	**5.48**	**0.20**	**1.37**	**4.00**	**0.30**	**1.17**	**4.67**	**0.20**
Std. Dev.	**0.62**	**7.54**	**0.15**	**0.70**	**8.10**	**0.16**	**0.46**	**6.97**	**0.10**

The result in Table 3 reveals that that Geography items from Ogun State had the highest mean discrimination (M = 1.54, SD = 0.62), followed by Ekiti (M = 1.37, SD = 0.70) and Oyo (M = 1.17, SD = 0.46), indicating better differentiation between high and low ability test-takers.For difficulty, in line with Baker (2017) and DeMars (2010) where values below -2 indicate very easy and above +2 very hard, Ogun State items were most difficult (M = 5.48, SD =

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7.54), followed by Oyo (M = 4.67, SD = 6.97) and Ekiti (M = 4.00, SD = 8.10).For guessing, with c > 0.35 considered unacceptable (Baker, 2001), Ekiti State had the highest mean guessing index (M = 0.30, SD = 0.16), followed by Ogun (M = 0.20, SD = 0.15) and Oyo (M = 0.20, SD = 0.10), implying items from all three states were not susceptible to guessing.

- *Research Hypothesis 1:*

There is no significant relationship between the academic performance of male and female students in the Geography items of the qualifying examination for Senior Secondary School 2 students in each of the states in southwest.

Table 4 Correlation Statistics of Performance for Male and Female on the Qualifying Geography Tests in Each of the State.

	Female_Scores_Oyo	**Female_Scores_Ekiti**	**Female_Scores_Ogun**
Male_Scores_Oyo	-0.823 (0.001)		
Male_Scores_Ekiti		0.733 (0.001)	
Male_Scores_Ogun			-0.203 (0.001)

The result in Table 4 reveals that in Oyo, there was significant linear relationship between the performance of female and male students in the test items. The Pearson product moment-correlation coefficient was significant and high (r = -0.823, p = 0.00). Also, similar trend of result was observed in Ekiti and Ogun between female and male students' performance in the test (r = 0.733, p = 0.001 and r = -0.203, p = 0.00). Therefore, the abilities of students on the test are not related across all three states. There may be a difference in the perceived difficulty of the test and the extent that female and male students respond correctly to the test.It was revealed in the findings that Geography qualifying items were most difficult for Ogun State test-takers, followed by Oyo State, while Ekiti State items were relatively easy. Findings from the 2-Parameter model showed that Ekiti State items discriminated better between high and low ability test-takers than Ogun and Oyo States. However, the 3-Parameter model revealed that Ogun State items provided better discrimination and information, were harder than items from the other two states, and were not vulnerable to guessing across all three states. Furthermore, Pearson product-moment correlation showed a significant and high relationship between male and female students' performance in Oyo, Ekiti and Ogun States.Conclusion and Recommendations of the study are as follows:

Based on the findings, the study concluded that there was a significant relationship between the academic performance of male and female students in the Geography qualifying examination across the three states. It is therefore recommended that item analysis should be prioritized in item selection before final administration of qualifying examinations by experts and test developers in the Ministry of Education, and government should employ qualified Geography teachers to replace transferred, retired or resigned teachers rather than substituting with teachers from related subjects or PTA teachers.

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