

External Examiners' Characteristics and Examinees' Performance in West African Examination Council's Biology Examinations in Akwa Ibom State, Nigeria

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Abstract: *The purpose of this study was to examine external examiners' characteristics and examinees' performance in West African Examinations Council's (WAEC) Biology Examinations in secondary schools in Akwa Ibom State, Nigeria. To achieve this purpose, four research questions and four hypotheses were formulated to guide the study. Ex-post facto research design was adopted for the study. A sample size of 668 senior secondary three students (examinees) who took the 2019 May/June West African Senior Secondary Certificate Examinations (WASSCE) was used for the study and they were selected using simple random sampling technique. "External Examiners' Characteristics Questionnaire" was the instrument used for data collection. The instrument was face validated and subjected to Cronbach Alpha reliability analysis which was 0.88. The students' Biology raw scores from the results of the May/June 2019 WASSCE were used to measure the examinees' performance. The four research questions were answered using mean while the four hypotheses were tested using independent t-test at 0.05 alpha level. The results showed that there was significant difference in the examinees' performance in Biology based on external examiners' age, gender, experience and appearance in Akwa Ibom State. Based on the results of the study, it was concluded that external examiners' characteristics significantly influence examinees' performance and it was recommended that differential age, gender, experience and appearance of external examiners should be important aspects of examiners training prior to administration of the examinations.*

Key words: *External examiners' characteristics, Examinees' performance*

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I. Introduction

In standardized assessment situations like the West African Senior Certificate Examinations (WASSCE) conducted by West African Examination Council (WAEC), two interacting parts can be differentiated. Firstly, an examinee who is requested to show certain behaviour. Secondly, a person who administers the examinations commonly called external examiner. The external examiner is supposed to conduct the examination, establish a focused, positive working atmosphere, give information to the test taker, and check cheating (Posthuma & Champion, 2009; Ortner & Vormittag, 2011). Examiner can possibly influence the course of testing (Reis, Wheeler, Tucker & Salinas, 2011; Redman & Snape, 2012). His/her attitudes, motivations, and/or expectations could impact on aspects of his or her administering behaviour. This includes verbal behaviour in testing procedures. According to Van Houtte (2014), irrespective of the content of the information given, the way to talk to the test takers, including voice, intonation, talking speed, or accent is more or less individual and cannot easily be standardized in testing. Apart from such paraverbal characteristics, visible nonverbal behaviour may also be a source of influence, as for example, examiner's expressiveness, mimics, or gait (Vormittag & Ortner, 2011; Sui & Liu, 2009). However, some of these verbal and nonverbal behaviours could also be more standardized as a consequence of a very strict and consequent training (Cieutat, 2015). With reference to effects found in experiments, Rosenthal (2006) distinguished active and passive effects. Active effects arise from such described behavioural differences of the experimenters. Passive effects refer to the perception of experimenter characteristics that evoke a different performance of the participant. Therefore, even if the examiner was perfectly trained in verbal, vocal, and nonverbal behaviour, there would still be biosocial characteristics left that may influence the testing procedure. These include demographic characteristics like gender, age, but also non-behavioural aspects of experience, appearance and persons' attractiveness. Besides particular attributes related to such characteristics like pitch of the voice, there may be effects that emanate from the associations and perceptions external examiners evoke. As a consequence, external examiners with different attributes may not only influence test takers' associations and perceptions, but may also lead to a change in

interpreting the whole situation (Karremans, Verwijmeren, Pronk & Reitsma, 2009; Spence & Buckner, 2010). This possible difference in interpretation of the test situation may, in turn, affect test takers' motivation, attention, well-being, and behaviour.

In testing situation, the physical interaction between the external examiner and the examinees may also be described as a kind of social interaction between examinee and external examiner. This situation can be influenced by attributes, personal beliefs, and opinions of the individuals involved (Van de Vijver & Poortinga, 2007; Domino & Domino, 2016). Such a situation provides different demands for both sides. In many standardized tests, the test taker is requested to perform in a mostly unfamiliar setting and has to handle a more or less socially demanding situation while aiming to show a maximum performance at the same time. Furthermore, external examiners' behaviour is more predetermined due to the specified instructions and conventions (Swami & Furnham, 2008; Argyle, 2009). However, the risk of undesired external examiner's influence on the test taker may be a substantial issue in standardized testing. The demographic variables of external examiners are believed to be very potent in influencing examinees' performance. Such demographic variables like age, gender, experience and appearance were considered. In line with these concerns, this study therefore examined if examinees' performance in Biology as standardized tests conducted by WAEC may be influenced by characteristics of the external examiner who administer the standardized achievement tests.

Statement of the Problem

Several factors are assumed to influence students' performance in external examinations including the WASSCE. Prominent among them are study skills, attitude towards schooling, motivation, resources available for teaching/learning among others and many studies have been carried out in these areas. But little attention has been paid to the effects generated by the external examiners who administer the testing procedure, especially with reference to their characteristics. It is believed that the personality of external examiners has a lot to do with the performance of examinees in external examinations. External examiners are situational characteristics of the test, and could possibly evoke bias and affect test takers' performance. Hence, one need to know more about systematic effects related to external examiners' characteristics. With these concerns, this study therefore examined external examiners' characteristics and examinees' performance in West African Examinations Council's Biology examinations in secondary schools in Akwa Ibom State, Nigeria.

Purpose of the Study

The purpose of this study was to examine external examiners' characteristics and examinees' performance in West African Examinations Council's Biology examinations in secondary schools in Akwa Ibom State, Nigeria. Specifically, the objectives of the study were to:

1. Determine the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age.
2. Assess the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender.
3. Examine the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience.
4. Ascertain the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance.

Research Questions

The following four research questions were formulated to guide.

1. What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age?
2. What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender?
3. What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience?
4. What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance?

Hypotheses

The following four null hypotheses were formulated for this study.

1. There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age.
2. There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender.

3. There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience.
4. There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance.

II. Research Method

The ex-post facto research design was adopted for the study. Ex-post facto research design is a design where the researcher carries out an empirical inquiry into a phenomenon and does not have control of the independent and dependent variables because their manifestations have already occurred. This design was suitable for this study since there was no treatment and manipulation of independent and dependent variables. It involved the collection of data for the independent and dependent variables which had already occurred. The sample size for this study consisted of 668 SS III students. Simple random sampling technique was used to select the participants for the study. A researcher-developed instrument named "External Examiner Characteristics Questionnaire" (EECQ) was used for data collection concerning the age, gender, experience and appearance of the external examiners while the students' Biology raw scores from the May/June 2019 West African Senior Secondary Certificate Examinations were used to measure the examinees' performance. Face validity was carried out on the EECQ by three experts in Measurement and Evaluation. The EECQ was used to elicit information on the four variables- external examiners' age, gender, experience and appearance. Age and experience were structured in terms of years while gender was categorized into male and female. Appearance had five items structured in a 4-point scale of strongly agree, agree, disagree and strongly disagree. In order to establish the reliability of the EECQ, copies were administered on 40 external examiners who were not to be part of the main study in the education zone. The data collected were subjected to Cronbach Alpha reliability analysis using SPSS software version 20.0. The reliability index was 0.88 which shows that the instrument was reliable and appropriate for the main study. Data concerning external examiner characteristics were collected through the use of the EECQ by administering them on the sampled students from the respective sampled schools. Students' Biology raw scores from the May/June 2017 West African Senior Secondary Certificate Examinations which measured the examinees' performance were collected from the computerized result sheets sent by West African Examinations Council to the schools after the results were released. Mean and standard deviation were used for answering the research questions while independent t-test statistical technique was used for testing the hypotheses at 0.05 alpha level.

III. Data Analysis and Results

Research Question One

What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age?

Mean and standard deviation were used in answering research question one as shown on Table 1.

Table 1: Summary data showing the mean and standard deviation of the difference in examinees' performance in West African Examinations Council's Biology examinations based on external examiners' age.

External Examiners' Age	N	Mean	SD	Mean difference	Remark
36 and above (Old)	266	74.19	11.95	15.08	Great difference
25 - 35 (Young)	402	59.11	10.72		

To answer research question one, the result on Table 1 shows that there is a great difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age. Examinees that were examined by external examiners of age range 36 and above performed better with a mean of 74.19 than examinees that were examined by examiners of age range 25 to 35 with a mean of 59.11. This result shows that the age of an external examiner is very important in test administration and preferably old examiners are better test administrators than young examiners.

Research Question Two

What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender?

Mean and standard deviation were used in answering research question two which is shown on Table 2.

Table 2: Summary data showing the mean and standard deviation of the difference in examinees' performance in West African Examinations Council's Biology examinations based on external examiners' gender.

External Examiners' Gender	N	Mean	SD	Mean difference	Remark
Female	244	75.47	10.62	16.12	Great difference
Male	424	59.35	10.20		

To answer research question two, the result on Table 2 reveals that there is a great difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender. Examinees that were supervised by female external examiners performed better with a mean of 75.47 than examinees who were supervised by male external examiners with a mean of 59.35. This result reveals that the gender of an external examiner is a significant factor in test administration and female examiners administer test better than their male counterparts.

Research Question Three

What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience?

Mean and standard deviation were used in answering research question three which is indicated on Table 3.

Table 3: Summary data showing the mean and standard deviation of the difference in examinees' performance in West African Examinations Council's Biology examinations based on external examiners' experience.

External Examiners' Experience	N	Mean	SD	Mean difference	Remark
Experienced (5 years and above)	281	75.80	10.57	17	Great difference
Inexperienced (Below 5 years)	387	58.80	9.94		

To answer research question three, the result on Table 3 shows that there is a great difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience. Examinees that were invigilated by experience external examiners performed better with a mean of 75.80 than examinees that were invigilated by inexperience examiners with a mean of 58.80. This result indicates that the experience of external examiners plays a great role in test administration and experienced examiners are better test administrators than inexperienced test administrators.

Research Question Four

What is the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance?

Mean and standard deviation were used in answering research question four as shown on Table 4.

Table 4: Summary data showing the mean and standard deviation of the difference in examinees' performance in West African Examinations Council's Biology examinations based on external examiners' appearance.

External Examiners' Appearance	N	Mean	SD	Mean difference	Remark
Attractive to students	295	76.49	10.28	17.5	Great difference
Unattractive to students	373	58.99	9.99		

To answer research question four, the result on Table 4 indicates that there is a great difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance. Examinees that were tested by attractive external examiners performed better with a mean of 76.49 than examinees that were tested by unattractive examiners with a mean of 58.99. This result shows that the appearance of external examiners during test administration is very important as attractive examiners influence examinees' to perform better compared to the unattractive examiners.

Hypothesis one

There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age.

Independent t-test was employed in testing hypothesis one as presented on Table 5.

Table 5: Independent t-test analysis of the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age

External Examiners' Age	N	Mean	SD	Crit-t	Cal-t	Decision at P<.05 alpha*
36 and above (Old)	266	74.19	11.95	1.96	5.73	Significant
25 - 35 (Young)	402	59.11	10.72			

*Significant at P < .05 alpha level, N = 668, df = 666

The result on Table 5 indicates that the critical t value of 1.96 is less than the calculated t value of 5.73 with degree of freedom of 666 at 0.05 alpha level. The null hypothesis is therefore rejected which means that there is a significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' age.

Hypothesis Two

There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender.

Independent t-test was employed in testing hypothesis two as presented on Table 6.

Table 6: Independent t-test analysis of the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender.

External Examiners' Gender	N	Mean	SD	Crit-t	Cal-t	Decision at P<.05 alpha*
Female	244	75.47	10.62	1.96	7.35	Significant
Male	424	59.35	10.20			

*Significant at P < .05 alpha level, N = 668, df = 666

The result on Table 6 indicates that the critical t value of 1.96 is less than the calculated t value of 7.35 with degree of freedom of 666 at 0.05 alpha level. The null hypothesis is therefore rejected and it means that there is a significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' gender.

Hypothesis Three

There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience.

Independent t-test was employed in testing hypothesis three as presented on Table 7.

Table 7: Independent t-test analysis of the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience.

External Examiners' Experience	N	Mean	SD	Crit-t	Cal-t	Decision at P<.05 alpha*
Experienced (5 years and above)	281	75.80	10.57	1.96	8.75	Significant
Inexperienced (Below 5 years)	387	58.80	9.94			

*Significant at P < .05 alpha level, N = 668, df = 666

The result on Table 7 reveals that the critical t value of 1.96 is less than the calculated t value of 8.75 with degree of freedom of 666 at 0.05 alpha level. The null hypothesis is therefore rejected which means that there is a significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' experience.

Hypothesis Four

There is no significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance.

Independent t-test was employed in testing hypothesis four as indicated on Table 8.

Table 8: Independent t-test analysis of the difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance.

External Examiners' Appearance	N	Mean	SD	Crit-t	Cal-t	Decision at P<.05 alpha*
Attractive to students	295	76.49	10.28	1.96	9.54	Significant
Unattractive to students	373	58.99	9.99			

*Significant at P < .05 alpha level, N = 668, df = 666

The result on Table 8 reveals that the critical t value of 1.96 is less than the calculated t value of 9.54 with degree of freedom of 666 at 0.05 alpha level. The null hypothesis is therefore rejected and it means that there is a significant difference in examinees' performance in West African Examinations Council's Biology examinations in secondary schools based on external examiners' appearance.

IV. Discussion of Findings

The result of hypothesis one showed that there is a significant difference in examinees performance in Biology as a standardized achievement test conducted by WAEC based on external examiners' age as examinees who were examined by old external examiners performed better than examinees who were examined by young external examiners. The implication of this result is that older external examiners are reliable, conscientious and effective than young external examiners. The older external examiners are more careful with the examinees and make sure they response neatly, orderly and appropriately to test items in a way that would not be complicated for the scorers. All these would not lead to loss of marks and ensures that the merited scores are awarded to the examinees. Ortner & Vormittag (2011) found that older examiners to elicit better performance than their young examiners. This finding agrees with the finding of Van Houtte (2014) because he found out in his study that students achieved better when tested by older examiners than young examiners because young external examiners poor behaviour in test administration is contributed by their school underachievement. This result is also in line with the finding of Posthuma & Champion (2009) because they also reported better performance among examinees supervised by older examiners than young examiners. They attributed their result to the nature of young examiners as less warm and less sensitive to other people's needs compared to older examiners.

The result of hypothesis two revealed that there is a significant difference in examinees performance in Biology as a standardized achievement test conducted by WAEC based on external examiners' gender as examinees who were supervised by female external examiners performed better than examinees who were supervised by male external examiners. The implication of this result is that female examiners are more emotional, motivating, understanding, sensitive, creating a more positive or relaxed atmosphere and compassionate towards examinees. These qualities make examinees more comfortable in clarifying issues, especially concerning questioning and wording which leads to understanding and proper response for better performance. Male examiners are more competitive, forceful, and aggressive towards examinees which hinders the way examinees approach examinations and then their performance. This finding is in line with the finding of Vormittag & Ortner(2011) because they found out in their study that testees scored high in achievement test when tested by females than males. This finding also agrees with the finding of Sui & Liu (2009) as they reported that school children performed better when tested by a woman on an intelligence test than a man as individual differences could not be ruled out. Cieutat (2015) found female examiners eliciting better results from children on an intelligence test compared to their male counterparts.

The result of hypothesis three indicated that there is a significant difference in examinees performance in Biology as a standardized achievement test conducted by WAEC based on external examiners' experience as examinees that were invigilated by experience external examiners performed better than examinees that were invigilated by inexperience external examiners. The implication of this result is that experience external examiners are conversant with test administration procedures like giving instructions to students, warning in case of abnormal behaviour, proctoring, answering questions and timing which help to elicit good response and better performance by examinees. But the reverse is the case for inexperience external examiners. This finding agrees with the finding of Spence & Buckner (2010) because they reported in study that students who were tested by competent and expertise examiners had better scores compared to students who were tested by students who were tested by incompetent and non-expertise examiners. The finding of Reis et al., (2011) is also

in line with this finding as they found out in their study that good test administration was associated with competent examiners which lead to good academic achievement on the part of the examinees. Karremans et al., (2009) and Argyle (2009) also found better performance on the part of examinees when assessed by more competent examiners compared to examinees assessed by less competent examiners.

The result of hypothesis four showed that there is a significant difference in examinees performance in Biology as a standardized achievement test conducted by WAEC based on external examiners' appearance as examinees that were tested by attractive external examiners performed better than examinees that were tested by unattractive external examiners. The implication of this result is that attractive external examiners are important determinants of social interactions with test takers because in test administration. Social interaction takes place between an external examiner and a test taker, brings about familiarity and proximity between them, eliminate fear, boost the confidence of examinees and give them positive image about themselves and enhance their performance. If the external examiner is attractive, a rapport can easily be created between the examiner and the examinee which enhances better performance on the part of the test taker. This finding is in line with the finding of Redman & Snape (2012) because their study revealed that attractiveness– independent of expertise is positively correlated with successful persuasion. Swami & Furnham (2008) also found interaction effects of gender and attractiveness as test takers evaluated an attractive opposite-gender examiner more positively than an attractive same-gender examiner. Furthermore, Domino & Domino (2016) found out in their study that perceived attractiveness can draw on attention and elicit better response.

V. Conclusion

This study examined external examiners' characteristics and examinees' performance in West African Examinations Council's Biology examinations in secondary schools in Akwa Ibom State, Nigeria. From the results of the study, it is concluded that external examiners' characteristics do influence examinees performance in Biology in the WASSCE.

VI. Recommendations

It is clear evidence that external examiners characteristics do influence the outcome of examinees' scores in external examinations. Therefore, it is imperative that examining bodies like WAEC who conduct standardized tests pay adequate attention to external examiners' characteristics during training in order to reduce the influence of their characteristics on examinees performance in such tests.

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