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## Classroom Behaviours of Male and Female Teachers of Science Subjects in Senior Secondary Schools

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By

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### **Abstract**

*The study employed systematic observation tool of category system option to assess classroom behaviours of the male and female teachers in science lessons in senior secondary schools in South West Nigeria. The work was a descriptive study which employed survey design. The sample used for the study consisted of 96 science teachers and 1,770 students. The researchers observed and recorded the occurrence of behaviours detailed in the 28-item science interaction sheet during science lessons in the schools. Descriptive and t-test statistics were used to analyse the data obtained from the observation using factor analysis method. The study revealed that there are little differences in the classroom behaviours of male and female teachers. It also revealed that there is no significant difference between their behaviours in science classroom lessons. It was recommended that science teachers especially females should avoid negative activities such as diverting to irrelevant issues or receiving phone calls during science lessons. Also male teachers should give more attention to affective behaviours in science lessons.*

In many traditional Nigerian communities home making and children rearing are the prime responsibilities of women (Heaton and Lawson 1996), where as farming, politics and learning are exclusively reserved for adult males. There are some religious rights in a typical Yoruba land in which women are not allowed to participate. Even in modern religions (i.e Islam and Christianity), restrictions are placed on women on certain issues and matters. Example of such is found in ICorinthians chapter 14 verse 34-35 and 1 Timothy chapter 2 verse 12 of the Holy Bible which bar women from teaching and usurping authority over the men.

However, the labour market is now an acceptable goal of female education, new forms of feminine responsibilities are emerging which seem to militate against this apparently easy relationship between the traditional and religions notions of feminist and less prestigious job. The common slogan now in Nigeria politics are women emancipation, women empowerment or gender equality to mention but a few. These are efforts made to close the gap between males and females participation in different fields. Despite the fact that gender gap in representation in many fields seems to be closing, women continue to be seriously under-represented in many science fields and in most scientific and technical professions. On inside school explanation, Adodo (2006) asserted that the sexism inherent in the school curriculum ensures that science and technology have masculine images, and thus greatly deters female participation and interest.

Many studies have shown that there are no differences, in male and female performances, abilities or interests. Such studies include: Owolabi and Bandele (2000) which found out that sex of students have no effect on their ability or effectiveness in laboratory works. Owolabi (2003) also revealed that sex of teachers have no significant influence on their responses on the prevalence of error in physics practical. Omodara (2003) found out that sex did not influence the performances of under-graduates who got admission through Universities matriculation examination (UME) and pre-degree programme in 300 level cumulative grade point average (CGPA). The work of Adebule (2002) revealed that gender issues did not affect the rating of students as they responded to mathematics anxiety rating scale. Adodo (2006)'s study showed that there was no significant interaction effect of sex and ability by level in the performance of students in integrated science. Aduloju (2002) also found out that there was no significant difference between teachers' sex and their competency in evaluating cognitive achievement in the sciences.

Daramola (1992) found out that gifted girls do not differ from gifted boys. Akinde (1995) noted that both sexes received encouragement to use their intellectual gift without sex discrimination. Studies at the preschool and primary school level have revealed that no sex differences in functions related to quantitative and scientific thinking such as the development of number concepts. However, it was found out that sex differences in science and mathematics increase markedly with age (Omodara, 2003).

As there are many studies which reported no significant difference in sex, so also there are many studies which reported gender differences. It has been found that administration of standardized achievement test revealed sex difference in separate school subjects that correspond to those found in intelligence and aptitude tests. Traxlers and Spanlding (1954) found out that on batteries of the standard achievement test given to a group of elementary school children, boys scored significantly higher in science and arithmetic reasoning, while girls in spelling, arithmetic computation. Many studies associated better performance with boys while many other proved otherwise. Oloyede (1984) indicated that male students performed better than female students in programmed mathematics while in a similar study Akinlua (1987) showed better performance of female students.

In the work of Kolawole and Adeyeye (1999) it was shown that boys performed significantly better than girls in both chemistry and mathematics at the SSCE in Ekiti State. Terman (1952) made survey on the reading habits of gifted children it was reported that girls read imaginative stories of schools and home life far more often than boys, while the boys showed predominant interest in books on sciences, history, biology information fiction and adventure tales. This is to mention but a few of conflicting reports and facts on gender issues. In as much as gender-based researches on performances, achievements, interests attitudes or aptitudes are inconclusive on gender differences and gender effects, studies will continue to be carried out on gender issues. Hence, this study looked into the aspect of behaviours of male and female teachers in science classroom.

Classroom behaviours of a teacher are manifested as his interactive skills such as motivation and reinforcement, sequencing of component of instruction, communication skills, questioning skill, use of instructional materials, giving direction on experimental procedures, demonstrating how to use equipment and materials or steps of carrying out experiment, evaluation and supervision skills among others.

### **Purpose of the Study**

The study used systematic observation technique of category system option to assess classroom behaviours of male and female teachers in biology, chemistry and physics lessons in senior secondary schools in South-West, Nigeria. The behaviours include the positive and negative, verbal and non verbal behaviours typical of science lessons.

### **Research Questions**

The following questions were raised for the study.

1. Is there any difference in the time spent on positive and negative, cognitive, affective and psychomotor behaviours by male and female teachers in science lessons?

2. Is there any difference in the time spent on verbal and non-verbal behaviours?
3. Is there any difference in the classroom performance of male and female teachers in science lessons?

### **Method**

The study is a descriptive one, which employed survey design. The design was used because it enabled representativeness and generalization of the findings. The population for the study consisted of all teachers of biology, chemistry and physics and their students in senior secondary schools in South-West, Nigeria.

Multistage sampling technique was employed to select 96 science teachers (32 biology, 32 chemistry and 32 physics) and 1,770 students. At the state level, simple random sampling technique was used to select two states. The schools in the selected states were stratified into rural and urban schools, stratification into male only, female only and mixed senior secondary schools was also done. Teachers were stratified into male and female and finally simple random sampling technique was used to select science classes and students in the selected schools.

The research instrument used for this study was 28-item Classroom Interaction Sheet. The items of the instrument were categorized into, Teachers' positive activities, Students' positive activities, Teachers' negative activities and the students' negative activities that occur in the classroom lessons. The activities were also dichotomized into verbal and non verbal behaviors.

### **Abbreviations**

VER •- Verbal activity; NV -Non- verbal activity;

COG - Cognitive; AFF - Affective; PSY -Psychomotor

The construct validity coefficient of the instrument was established using Kerlinger (1979) convergent approach, which gave high positive value of 0.989. While the inter-observer reliability coefficients of 0.938, 0.955 and 0.973 were obtained when the scores of three observers (who took records of the same lessons) were correlated pair wise. These values fall within acceptable range of valid and reliable observation instrument.

The researchers took the copies of the instrument with stop watch to schools, watched the teachers interact with the students and materials in the science lessons. The instrument was used to record the verbal and non-verbal activities as they occurred in the lessons. The period of observation was 40 minutes. One time unit was 60 seconds. Three observations were made in each class. Equal numbers of lessons were observed in biology, chemistry and physics classes. The data collected were subjected to descriptive and t-test analyses after collapsing it using factor analysis method.

**Results**

**Question 1:** Is there any difference in the time spent on positive, negative, cognitive, affective and psychomotor behaviours by male and female teachers in science lessons?

**Table 1: Time Spent on Positive, Negative, Cognitive, Affective and Psychomotor Behaviours of Teachers in Science Lessons Along Gender.**

Behaviour Category	Male				Female			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Teachers' Positive	9.45	30.15	20.69	3.34	8.42	25.60	18.62	4.41
Teachers' Negative	0.10	8.16	1.16	1.43	0.32	17.89	3.28	4.30
Cognitive	15.27	38.12	27.18	3.94	12.90	33.43	25.68	4.85
Affective	0.00	15.64	1.94	2.38	0.00	10.40	2.23	2.09
Psychomotor	1.88	18.13	10.86	3.47	3.58	24.84	12.09	4.61

Table 1 shows that the average time of positive behaviours of male is 20.69 minutes which is more than 18.62 minutes for the females. Negative behaviours of males and females are respectively 1.16 and 3.28 minutes. The time of cognitive behaviours of male is 27.18 minutes, while that of the females is 25.68 minutes. The affective behaviours of male is 1.94 minutes which is less than (2.23 minutes) those of females. The psychomotor behaviours of males occupy 10.86 minutes while those of the female occupy 12.09 minutes.

The standard deviation of positive, negative, cognitive and psychomotor behaviours of males are respectively less (more homogenous) than those of the females. The standard deviation of affective behaviours of the males are more (heterogeneous) than the females.

**Question 2:** Is there any difference in the time spent on verbal and non verbal behaviours of the science teachers?

**Table 2: Time Spent on Verbal and Non-Verbal Behaviours of Male and Female Teachers in Science Lessons.**

Behaviour Category	Male				Female			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Teachers' Verbal	5.68	21.29	14.97	3.26	8.39	22.69	15.44	3.40
Teachers non-verbal	1.58	21.47	6.88	2.89	2.99	14.67	6.40	2.45

Table 2 shows that the time occupied by the male teachers' verbal behaviours is 14.97 minutes while the time for the females is 15.44. Non verbal behaviours of males occupied 6.88 minutes and female nonverbal behaviours is 6.40minutes.

**Question 3:** Is there any difference between the classroom behaviours of male and female teachers in science lessons?

**Table 3: Test of significant difference between male and female teachers' classroom behaviours**

<b>Variable</b>	<b>No of cases</b>	<b>Df</b>	<b>t-cal</b>	<b>t-critical</b>
Male teachers	71	94	1.646	2.00
Female teachers	25			

Table 3 shows that t-calculated value 1.646 is less than the critical value 2.000 at 0.05 level of significance. This implies that there is no significant difference between the classroom behaviours of male and female teachers in science lessons.

### **Discussion**

The study revealed that there are little differences in classroom behaviours of male and female teachers. The fact that positive behaviours of male teachers are more than those of the female teachers and also that the negative behaviour of male teachers are less than negative behaviours of the female teachers means that, male teachers performed better than female teachers in science lessons. This report corroborated the findings of Oloyede (1984) which indicated that male students performed better than female students in programme mathematics but contradicted Akinlua (1987)'s finding in a similar study which showed better performance of female students. The study is also in line with the view that females are relatively more affectionate, show emotions and the likes than males because the study revealed that female teachers manifested affective behaviours more than male teachers.

It was revealed in the study that there was no significant difference between the classroom behaviours of male and female teachers in the science lessons in Senior Secondary Schools. The result agreed with the work of Aduloju (2002) which found out that there was no significant difference between teachers' sex and their competency in evaluating the science. The result corroborated many studies such as the works of Owolabi (2003), Akinde (1995), Omodara (2003), Adebule (2002) and many other studies. Others are Owolabi and Bandele (2000) which found out that sex of students have no effect on their ability or effectiveness in laboratory works. Daramola (1992) which reported that gifted girls do not offer from gifted boys.

## **Conclusion**

The following conclusions were drawn from the study based on data analyses and interpretation of results. The study revealed that there are little differences in the classroom behaviours of male and female teachers with male teachers performing better than their female counterparts in science lessons. It was also revealed that female teachers engage in talk activities and affective behaviours more than the males. The study also revealed that there is no significant difference between the classroom behaviours of male and female teachers. Hence, female teachers can perform relatively well just as the males in science classroom activities.

## **Recommendations**

Based on the findings, the following recommendations were made:

1. Science teachers especially females should avoid negative activities such as diverting to irrelevant issues, receiving phone calls and the likes during science lessons.
2. Male teachers should give more attention to affective behaviours during science lessons.
3. Systematic observation tool should be used to monitor classroom behaviour of science teachers.

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