

# STRATEGIES FOR PROMOTING WOMEN ACCESS TO SCIENCE AND TECHNOLOGY EDUCATION IN NIGERIA

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## **Abstract**

This paper dealt with the strategies for improving women access to science and technology education. Some of the factor militating against women access to science and technology education in Nigeria are early marriage, difficult nature of science and technology courses, teacher behaviour and sex role expectations. The author posits that the access of women to science and technology education can be improved through science teachers' re-examination of teaching approaches, encouragement of high degree of positive interaction between boys and girls in sciences and technology classes by teacher, teachers' avoidance of criticisms that would dampen the image and enthusiasm of girls in science and technology classes.

Science and technology education refers to teaching and learning of, science and the- application of tools and materials by man to produce goods and services for the benefit of mankind [imhanlahimi; 1998]. Science and technology has drastically and astronomically increased our knowledge of universe. It has opened astoundingly new and improved ways of diagnosing and treating illness, Rapid advances in electronics has ushered in the computer age which is rapidly altered lives better. Science has even ventured into the hitherto unknown environments of the moon and other planets .. Not minding the drastically increase in knowledge brought about by science technology there is still low participation of females in science and technology education in Nigeria, (Williams, 1987). This notwithstanding various science education literatures had revealed low participation of , females in science and technology education in Nigeria compared to their female. counterparts. (Williams, 1987).

The National Policy on education [2004] gave premium to the study of science and technology by prescribing admission ratio of 60:40 percent sciences to liberal arts respectively into Nigeria universities. The policy did not discriminate between boys and girls in their access to the study of science and technology in school in other words the intention of the government was to provide equal educational opportunities to all citizens of the country. Therefore it is proper to discuss the factors that militate against women access to science and technology education in Nigeria. The factors militating against women access to science technology education generally include early marriage, socialization process, sex roles expectations, difficult nature of science and technology courses.

## **Factors Militating Against Women Access to Science and Technology Education in Nigeria**

### **Early Marriage:**

In some parts of the country, particularly in the North, early marriages are a permanent feature, in which case girls are given out in marriage at the age of between twelve and thirteen years. Some miss the chance of furthering their educational career. For those that had the opportunity to further their educational career were not encouraged to study science subjects so that they will combine their career, opportunities and household activities.

### **Negative Attitude of Some Parents to Women Education**

Some parents do not encourage females to study science and technical subjects in schools. They regard it as waste of money because they think females will be married and will not take care of them while boys will stay with them and take care of them at their old age for this reason parents, encourage boys and spend money on them to study science and technical subjects

### **Socialization Process**

Socialization is the process by which a child learns to respond to socially approved values in the society through the guidance of adults. In Nigeria culture, female children, are reared differently from, males. While girls are protected and discouraged from explorative and risky activities, boys are encouraged to be assertive and challenge their mental powers. This socialization process leads to certain personality characteristics regarded as masculine or feminine: independent qualities, initiative and assertiveness for boys; and dependency, submissiveness, and complacency for girls. These personality characteristics affect the attitude of girls towards science and technology education, as they believe they are inferior to boys physically and mentally.

### **Sex Roles Expectations**

The sex of a child to a large extent determines the choice of career in, many cultures, especially in Nigeria. Before the advent of western education in Nigeria traditional education was practised. Boys received training from their fathers in farming, blacksmithing and other masculine activities, while girls stayed at home to prepare food, washed utensils and take care of little children. In schools, boys are encouraged to do the brain storming mathematics, physics and chemistry, which could lead them to great scientists, doctors, engineers, etc; while girls are encouraged to offer biology and home economics that could enable them become successful housewives. In other words, girls as a result of marriage, child bearing and rearing opt out of science and technology careers.

### **Difficult Nature of Science and Technology Courses**

Science subjects particularly physics, chemistry and mathematics are being perceived by females to be very difficult and unrelated to daily life as they deal with abstract concepts, principles, theories and laws (Gardner, 1984). Consequently, females regard these subjects as masculine subjects, while liberal arts and humanities are feminine. This erroneous believe has resulted in females losing interest in science.

### **The Role of the School**

Schools specifically play an important role in women access to science and technology education by the manner in which the school curriculum is being implemented in Nigeria. While the school curriculum did not discriminate between boys and girls in science and technology education, the implementation of the curriculum discriminates. Subject like Home Economics for instance, is given preference in girls schools in Nigeria, while it is not taught in boys' schools. Conversely. Subjects such as technical drawing and woodwork are given preference in boys schools, but are hardly taught in girls' schools. This practice tends to prevent women from learning science and technology subjects. The school system encourage boys to be tough engineers or medical doctors, while the girls are encouraged to be gentle nurses and teachers.

### **Teacher Behaviour/Attitude**

It has been found that the sex, attitude and teaching approach of teachers negatively influence the attitude of female students towards science and technology education. Spear (1985) in his study of the views of teachers about the importance of science to boys and girls, found that teachers even science teachers, expressed the opinion that science education was of greater importance to boys than girls. A teacher who believes for instance that a woman's place is in the kitchen might not bother to motivate his/he female students if they lag behind their male counterparts in science' subjects. This negative attitude militates against women access to science and technology education in Nigeria.

### **Guidance Counsellors**

Guidance counsellors have the civic responsibility of directing students to choose subjects or careers in areas in which they are naturally talented. This enormous responsibility has been discovered to be carried out with gender bias. School counsellors overtly or covertly scare girls from science by regarding them as masculine subjects and unsuitable for girls. According to Macdonald (1985); "talented girls are discouraged from advance science and mathematics courses by guidance counselors, convincing them that the subjects are difficult and unnecessary for them". Such misinformation seriously militates against girls entry into science and technology education.

## **Strategies for Promoting Women Access to Science and Technology Education in Nigeria**

Science teachers, women and professional associations and the government have important roles to play in promoting women and girls participation in science and technology education as follows:

### **Science Teachers**

1. Science teachers should re-examine their teaching approaches. The guided inquire method of teaching, which requires students' active involvement in experimentation in the laboratory should be employed. This will not only help to bring abstract concepts in science: to observational level of students, but also disprove the belief by females that science is very difficult and meant for boy only.
2. High degree of interaction between boys and girls should be encouraged in science and technology classes by science teachers. This could be achieved through sitting arrangement and grouping of students, will enable females learn science from males.
3. Teachers should avoid criticisms which could affect girls self-image or perception of their capabilities to learn science .
4. Teachers should work on, sex role awareness so that students can understand and question stereotypic attitudes and behaviours. This will enable them to develop the skills required to succeed in science and technology education

### **Women and Professional Associations**

Several women and professional associations, which can facilitate women and girls' access to science and technology education, exist in Nigeria. Such associations include: Nigerian Association of Women Scientist (NA WS); Nigerian Association of Women in Science, Technology and Mathematics (NA WSTEM); Forum of African Women Educationist (F AWE) Nigeria chapter; Nigerian Academy of Education; Science Teachers Association of Nigerian (STAN); Mathematics 'Association of Nigeria, etc. These associations can promote female access to science and technology education through

- (i) organizing conference and 'seminars around gender issues in the practice of science and technology education
- (ii) Granting scholarships to girls in science and technology education;
- (iii) organizing vocational remedial courses for girls offering science and technology subjects and
- (iv) organizing career talks to feature different women in science and technology education.

### **Government Role in Promoting Female Participation in Science and Technology**

Governments role in promoting women's participation in science and technology includes:

- (1) formulating policies that will increase females enrolment in science in secondary school;
- (2) giving scholarships to women and girls who demonstrate ability in science and technology education.
- (3) Recognizing and publishing the contributions of women scientists and technologists through the award of national honours,
- (4) Making concrete moves to remove sex stereotyping in science textbooks;
- (5) Providing adequate science laboratory facilities in schools; adequately remunerating science and technology teachers to boost their moral and increase their level of commitment and
- (6) Funding research projects on various aspects of the problems of women access to science and technology education (Imhanlahimi, Eleobhoge, 2006)

### **Conclusion and Recommendations**

Science and technology education is recognized world wide as the fulcrum around which the quick development of any nation revolves. It is also the basis for the full promotion and improvement of the status of women. Women's involvement in science and technology education in Nigeria reveals abysmal low levels in spite of all the laudable benefits derived from science and technology. This low involvement of women in science and technology militates against their personnel development and their contribution to national development.

To remedy the above situation it is recommended that, parents and the entire society should be encouraged and support females to study science and technological subjects in schools through measures such as award of scholarships to females that study science, and technical subjects, discouragement of early marriage and encouragement of husband to send back their wives to school .

Teacher, parents, and societies at large should encourage and support females to study science and technical subject in schools.

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