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Women in Physics in Ghana: Improvement on the Horizon

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In Ghana, the number of women involved in physics has been rather small compared with that of men. We report a gratifying increase in the number of women studying physics in Ghana during the past 5 years. This is the positive result of various intervention strategies that have been put in place in Ghana during the past 15 years.

It is estimated that the developing countries of Africa need at least 2000 scientists per 1 million in population for effective industrial development. If this critical mass of scientific personnel is to be assembled, with the relevant supporting technical personnel, no country can afford to leave 50% of the population—the half that consists of women—out of scientific, technological, and mathematics education. It is imperative that many more women study physics if the country is to move forward and have the critical mass of scientists needed for economic growth.

One of the basic problems that have put women on the sidelines in the pursuit of scientific studies and careers is gender stereotyping. Gender stereotyping of school courses and careers finds expression in the expectation that certain courses like physics, mathematics, engineering, and other technical work are “boys courses” or “men’s jobs” and girls will study languages, typing, cooking, and sewing, which will lead to jobs in catering and junior-level office work. These societal expectations are projected in the school into what has been described as “the hidden curriculum.” On paper, all subjects are open to all students, but in practice there is often gender bias toward certain subjects. The result has been a categorization of careers into “men’s jobs” and “women’s jobs.” In fact, some well-meaning people have, in the past, advised that the study of science and mathematics could harm the delicate feminine frame.

WOMEN IN PHYSICS IN GHANA: THE PAST SCENARIO

Women have been underrepresented in physics in Ghana. This trend has been created by the widely held notion that physics is the reserve of men. Sociocultural factors, discrimination, and lack of self-confidence on the part of women in the choice of their careers are some of the causes of this problem. There is actually no policy in Ghana that prevents girls from enrolling in school, pursuing higher education, or opting for science subjects, such as physics. In Ghana, the traditional key role of women in the society has been that of homemakers and childminders. In the past, the economic activities of women have been mostly work that did not take them away from the home or the children for long periods of time. These economic activities include farming, trading, and traditional food processing.

Although formal education for girls in Ghana started by the turn of the last century, such education was really channeled toward enhancing the perceived traditional role of women. The courses taught were essentially the basic homecrafts of sewing, cooking, etc. It was not until the 1940s that the first batch of Ghanaian girls started taking courses in science. Female representation in pure and applied science courses in universities ranged from 22% down to 1% in some departments. Until quite recently, there were hardly any girls at all in technical schools or courses in Ghana. Under such a scenario, physics, which is erroneously considered a “masculine” subject, attracted very few girls indeed.

CASE STUDY: KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Figure 1 shows that the number and percentage of women studying physics at Kwame Nkrumah University of Science and Technology has increased steadily from zero in the 1980s to nearly 10% today. In Ghana we are encouraged by this evidence that the intervention strategies put in place in the past have started yielding fruit. This eventually will be reflected in the total number of graduate women that will be produced in the country.

Research shows that with the proper training and home support, women can make useful contributions in the pursuit of physics. However, because of various factors, women have been excluded from physics. These factors that need to be

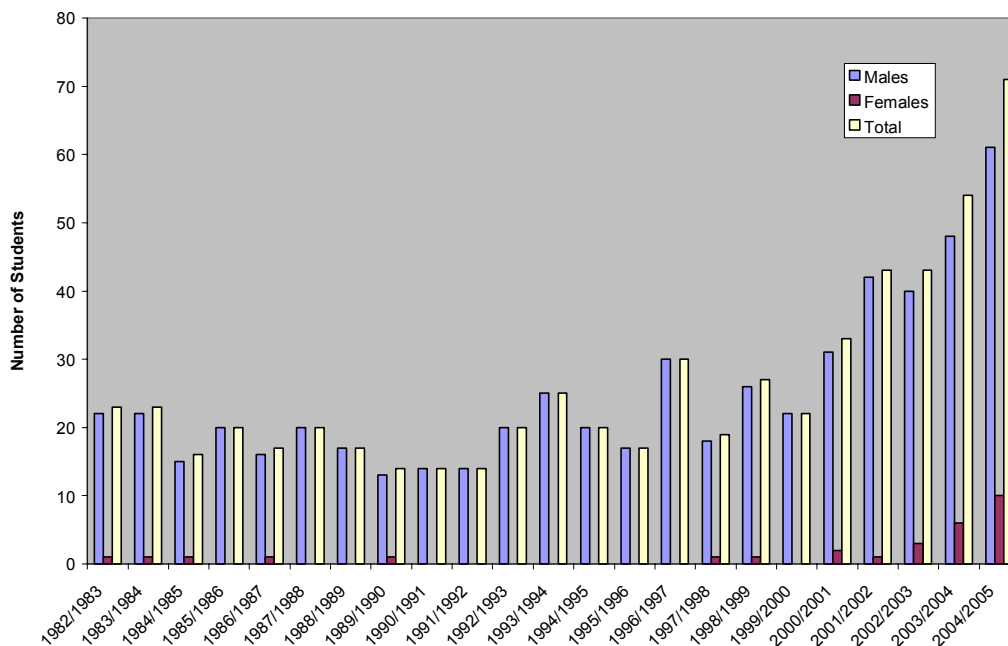


FIGURE 1. Women and men physics students at Kwame Nkrumah University of Science and Technology each academic year between 1982/1983 and 2004/2005.

addressed in order to have more women in scientific research. To overcome this barrier women must be up and doing, bold, confident, hardworking, determined, and persistent in their pursuit of courses that are male dominated.

THE SCIENCE, TECHNOLOGY, AND MATHEMATICS EDUCATION CLINIC

Parents, teachers, policy makers and the general public have a collective responsibility to work toward breaking down the barriers or removing the filters that impede the study of science by girls. The Ghana Education Service, recognizing the important role of women in both the family and society, has for the past 18 years made the promotion of girls' education in science and mathematics one of its priorities. Science clinics have been held annually since 1987 as a means of encouraging girls to study physics and other science subjects. The clinics have proved to be an effective intervention strategy for the promotion of science and mathematics study among girls.

Ghana has received international recognition for organizing annual science clinics for girls. The effort made to promote girls' education in science and mathematics is highly commended and considered worthy of emulation by many countries. The impact of the clinics has been great and very encouraging. Begun with 110 girls, it has now reached close to 9000 girls. This increase has been possible by decentralizing clinic activities to the regional and district levels. The program is being sustained so that a greater proportion of our girls become scientifically literate.

Globalization in our era makes scientific and technological literacy indispensable. This was confirmed by the Honourable Zambian Minister of Education, Mr. R. Musakabantu, at the recent opening of the African Congress on Girls Science Education. He said: "Science is too important to be left to only men and a few women." The popularization of science and technology among girls should therefore be seen as crucial and requiring each other's support. It is only from a base of equal participation of girls and boys in science courses in schools that we may see a significant change in the numbers of women scientists in the country.

CONCLUSION

In Ghana, the participation of women in scientific research has been rather low, mainly because the educational system is not producing enough women graduates in science who can go on to take positions in higher education and research institutions. Lack of scientific manpower has contributed to the slow progress of development in Ghana. To break the cycle of poverty-underdevelopment-poverty, a firm commitment must be made to raise the level of scientific literacy in the country. Such commitment must include science education for girls and science careers for women.