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Trends and Status of Women in Physics in Uganda

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Abstract. Most women in Uganda with an advanced degree in physics find employment at a university, teaching and conducting research. Very few take jobs in by industry or at government research laboratories. This paper discusses the trends in Uganda in women's participation in the field of physics and their status. The paper also highlights factors that hinder girls from pursuing the study of physics and describes interventions the government is initiating to alleviate the situation.

INTRODUCTION

Uganda has nine public universities and a number of private ones. Only the public universities offer degrees in basic sciences, of which physics is one; and only three of these universities offer graduate-level physics degrees. Generally, the total number of students studying physics is low compared to those studying other subjects, and few of the physics students are female.

PARTICIPATION OF WOMEN IN PHYSICS EDUCATION AND CAREERS

The largest university in Uganda is Makerere University, which admits many more students than do other public universities. Nevertheless, the number of female students admitted to the physics department is much lower than that of their male counterparts. Figure 1 shows admission figures to the physics department for the past eleven years. It is evident that the numbers of women admitted are very small, and that during this period these numbers show a decreasing trend. This decrease is attributed to the introduction of new programs in computer science and petroleum studies in the College of Natural Sciences that have prerequisites of A-level physics. These programs seem to be more attractive than the physics program is to students, and more students, including women, have opted to enroll in them.

The participation of women in careers in physics in Uganda is influenced by the number of female students admitted to undergraduate courses in physics as well as by the number who graduate as physics majors. Figure 2 shows the numbers of graduates compared to incoming students. The decreasing trend is attributed to students' opting to major in subjects other than physics, including mathematics, computer science, chemistry, and geology. Therefore, the numbers of physics graduates is small, and it is from these few that selections are made for admission to programs leading to an advanced degree in physics.

Most women in Uganda with an advanced degree in physics find employment at a university, teaching and conducting research. Very few take jobs by in industry or at government research laboratories. The majority of those with only a bachelor's degree find employment as teachers in secondary schools; a few take jobs in government or at private firms. Table 1 shows the number of female physicists at Ugandan universities who are pursuing advanced degrees and those who have become faculty members. Areas of specialization are varied: space physics, astronomy and astrophysics, materials science, solar energy, and nuclear materials/energy.

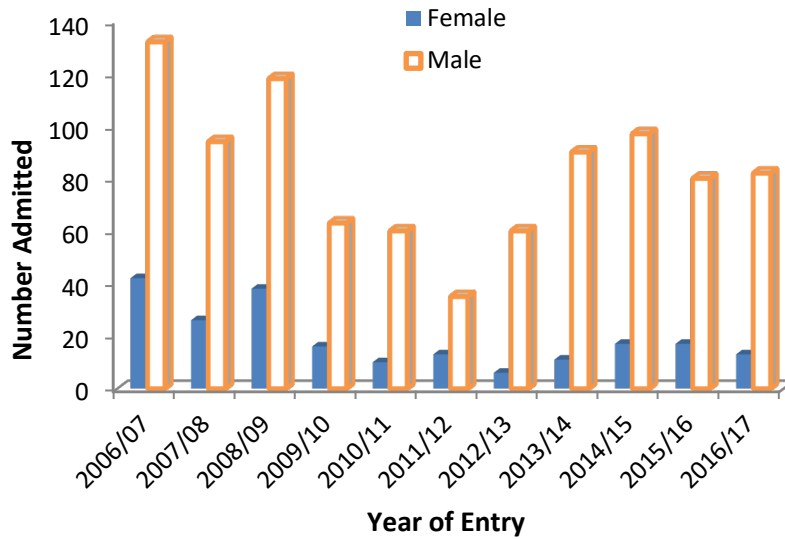


FIGURE 1. Number of students admitted to the physics department at Makerere University.

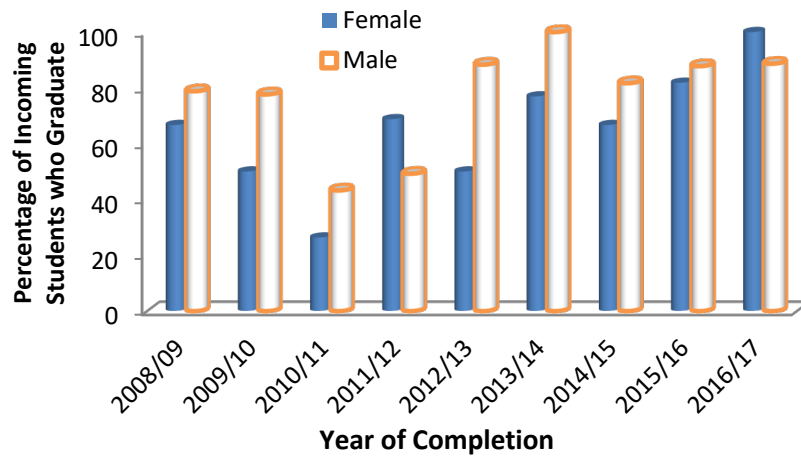


FIGURE 2. Percentage of students who graduate in physics compared to admission figures.

TABLE 1. Female Physicists at Ugandan Universities

| Public Universities in Uganda | Staff Members | | | Area of Specialization |
|----------------------------------------------|---------------|-------------|---------------------|-----------------------------------------------------------|
| | PhD Holders | MSc Holders | Total Staff Members | |
| Makerere University | 1 | 2 | 3 | Materials science, space physics, radiation physics |
| Mbarara University of Science and Technology | 2 | 4 | 6 | Space physics, astronomy and astrophysics |
| Busitema University | — | 4 | 4 | Nuclear materials/energy, solar energy, materials science |

FACTORS AFFECTING FEMALE PARTICIPATION AND GOVERNMENT'S INTERVENTIONS TO ADDRESS THEM

The relative lack of female physicists may be due to a number of factors, including the following:

1. The small numbers of female physics teachers in schools means that female students lack role models to emulate.
2. There has been a notion that “physics is for men,” which discourages girls and women from embracing the study of physics.
3. The study of physics requires more time than many other subjects do, and yet traditionally, compared to their male counterparts, girls have to do more chores at home.

Generally, science subjects are not particularly popular at school for either boys or girls. As described above, the situation is worse for girls [1]. The government of Uganda has noted this and has made the following interventions.

1. Science subjects (including physics) have been made compulsory at the lower secondary school level.
2. The introduction of universal primary and secondary education has increased enrollment of girls, which had lagged that of boys, because in rural areas, parents would prefer to pay school fees for boys rather than girls if money was in short supply.
3. There has been a deliberate effort by the government of Uganda to have at least one school in every sub-county, which has increased girls' access to education in general and hence to the study of sciences.
4. The government has increased slots for government-sponsored students offering sciences at universities, thus increasing the enrollment of both male and female students into science programs.
5. Female students joining tertiary institutions gain an additional 1.5 points over their male counterparts [2].
6. Some universities—for example, Busitema University (a science-only university)—have adjusted the selection process so that males compete with other males, and females with other females. This has improved the access of women to a university education in science fields.
7. There have been continuous efforts by both the government and nongovernmental organizations to promote the education of girls, to encourage the sharing of household chores equally between boys and girls, and to convince the populace that science is also for girls.

CONCLUSION

Women's participation in physics in Uganda, both in school and in employment, is very low. However, the government has taken initiatives to address this issue, and it is expected that the situation will change for the better.

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