

Women in Physics in Zimbabwe

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Abstract. This paper reports on the state of women in physics in Zimbabwe since 2002. Three universities have physics departments: the University of Zimbabwe, National University of Science and Technology, and Midlands State University. These institutions are all state owned. A 10-year survey shows a limited female enrollment at the undergraduate level. We report on the challenges faced by women in physics starting from the primary level of education due to culture and custom. Another reason is the lack of resources owing to the economic hardships currently experienced in the country. The authors suggest possible solutions to the current shortage of women in physics and in science in general.

INTRODUCTION

Generally, the participation of women in the disciplines of science, technology, engineering, and mathematics is limited when compared to that of men. This situation persists due to the archaic notion that science careers, including ones in physics, are better suited for men. According to Hazari *et al.* [1], there is a general disempowerment in physics. Students perceive physics to be difficult as well as unpleasant and masculine. In Zimbabwe, culture and custom dominate over religion and the law, and traditional patriarchal ideologies strip women of equality, so they mostly assume subordinate roles [2]; this negatively affects gender parity in the discipline of physics. Another factor is the harsh economic climate. In most family settings, because of limited resources, parents channel funds toward educating their sons, who are perceived to have better chances of completing a full course of studies than are daughters, who are responsible for doing a greater part of the daily household chores, both before and after school [3]. Furthermore, aspiring physicists face limited career prospects, a situation that deters many students from undertaking the study of physics, fearing lack of employment. Currently, a person holding a bachelor's of science degree in physics is most likely to end up teaching elementary physics. This is an unfavorable situation, so the majority end up leaving the country for greener pastures. This situation is exacerbated by a general lack of career guidance services for students in elementary school.

Organizations such as the Zimbabwe Association of University Women sponsor financially disadvantaged girls to pursue a general education. Unfortunately, most of these existing organizations offer assistance only at the university level, yet for women's education the greater need is at the high school and undergraduate level [3]. Sponsorships for undergraduate studies in the form of scholarships from the corporate world are limited to high performing students. This overlooks the inherent disparity that girls from marginalized rural areas face because, from an early stage, they are deprived of equal study time in comparison to their male counterparts. The Zimbabwean government has introduced affirmative action when considering admission of female applicants to universities and other institutions of higher learning by using lower entry qualifications than for their male counterparts. This initiative, although it might appear to disparage women's abilities, is aimed at equalizing opportunity and seems to have increased the number of women enrolled in physics [3]; however, the problem needs to be addressed at the grass-roots level—that is, in primary schools.

THE SURVEY

Three institutions in Zimbabwe award bachelor's of science degrees in physics: the University of Zimbabwe (UZ), National University of Science and Technology (NUST), and Midlands State University (MSU). We managed to gather some information on the enrollment of women in physics at two of the institutions—NUST and MSU.

NUST was established in 1991. The university's enrollment of male and female undergraduate physics students from 2002 to 2016 is shown in Fig. 1.

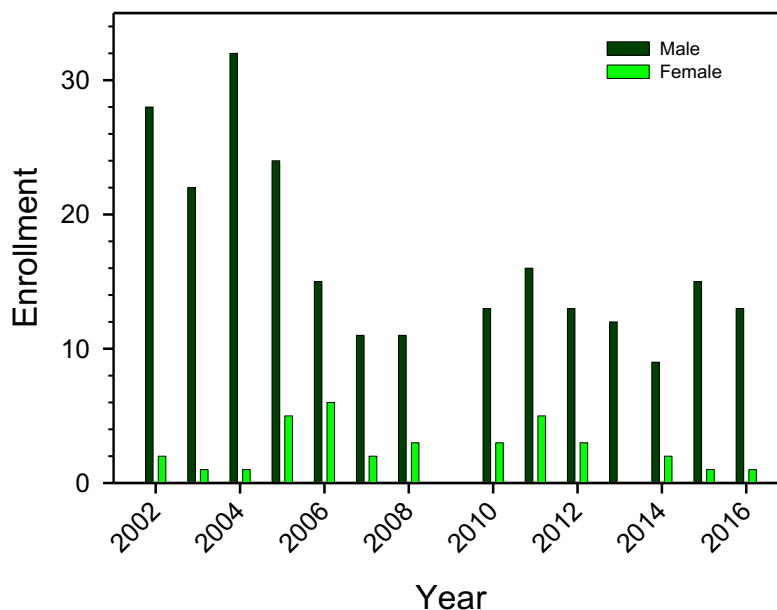


FIGURE 1. Enrollment of men and women in undergraduate physics at NUST, 2002–2016.

MSU opened its doors in the year 2000. Figure 2 shows the number of women graduating from the undergraduate physics program from 2006 to 2016. Initially, enrollment and graduation numbers for women were very low, but they have increased in recent years. However, these numbers remain low in comparison to those for men.

RECOMMENDATIONS

Organizations such as the Third World Organization for Women in Science should assist with funding for girls who want to study science subjects in high school. At an early stage, students should be exposed to science and its applications through programs such as science fairs hosted in elementary schools. We strongly recommend the establishment of a “Women in Physics Zimbabwe” website, which should provide a platform for communication and awareness in order to stimulate interest in physics among both girls and women. The website should also provide a support structure for women already pursuing a career in physics.

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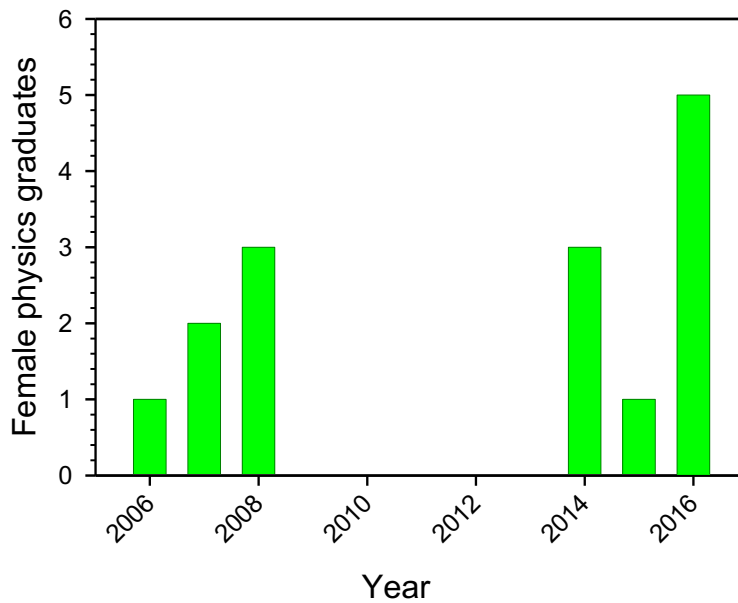


FIGURE 2. Number of women graduating with undergraduate physics degrees from MSU, 2006–2016.

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