NEW STUDY SHOWS A WORRYING LOW ENROLLMENT OF STUDENTS IN PHYSICS IN ONE OF THE COUNTIES IN KENYA

The Centre for Mathematics, Science and Technology education (CEMASTEA) conducted a study in 2016 to understand the process of selection of science subjects (i.e., biology, chemistry and physics) at Kenya Certificate of Secondary Education (KCSE) and factors influencing the selection in one of the counties in Kenya. The study involved principals of selected schools in the county, careers' masters and mistresses in the schools as well as science teachers and Form Three students. A total of 23 principals, 23 careers masters/mistress, 70 science teachers and 1081 Form Three students participated in the study. Data were collected from teachers and students through questionnaires and one-one interviews with principals and careers masters/mistress.

The findings of the study showed that:
All the students who participated in this study take chemistry, 85% take biology and only 38% take physics. These findings are consistent with the statistics available from the Kenya National Examination Council (KNEC) on the candidature in these subjects. In most of the schools, students were not given opportunities to decide the science subjects to study. Rather, the subjects were taken based on what most principals and careers masters/mistresses referred to as "school policies" bluntly stated, "chemistry is compulsory in this school" or "chemistry and biology are compulsory". Such “policies” left students with no option but abide.

In some of the schools, students were asked to take no more than two science subjects. This was ensured through timetabling where two of the science subjects (i.e., biology and physics) were taught at the same time thereby inhibiting students from taking both subjects. Indeed, five schools were found not to have presented any candidates in physics at KCSE in 2-3 years preceding this study even when they had presented candidates in other subjects. Further examination of the data revealed that the students preferred to be left to decide the science subjects they would like to study and even some yearned for opportunities to study more than two science subjects where they were limited to taking only two science subjects.

A number of factors were found to be influencing some schools to navigate away from physics as follows:

- **Careers**- most principals and careers masters stated that careers in science-related fields require chemistry.
- **Resources**- in some schools, inadequate resources especially laboratories, equipment and materials were cited as reasons for fewer students in physics.
- **Personnel especially teachers**- in terms of number and personal characteristics. For example, it was noted that some teachers discouraged students from taking physics.
- **Performance in mathematics and physics**- in some schools, it was noted that if students were perceived to be performing poorly in physics and/or mathematics, they would not be allowed to take physics.

These findings have implications for the attainment of goals of science and by extension Vision 2030. The low enrolment of students in physics may mean that the ability of some students to understand the natural world involving ideas in physics is greatly hampered. Consequently, getting

a critical mass of human capital with sound understanding of physics concepts which, is requisite to economic and technological development, is negatively affected.

To mitigate this challenge, the Ministry of Education (MOE), needs to put in place a mechanism for sustained monitoring of schools for purposes of determining the level of implementation of MOE guidelines on selection of science subjects. In addition, CEMASTEA needs to sensitise science teachers and principals on their role in guiding students in the selection of science subjects. The MOE and/or BOM as is appropriate need to provide adequate resources to schools to enhance effective teaching and learning of all science subjects.