TEACHING CRYSTALLIZATION IN SECONDARY SCHOOLS OF KENYA

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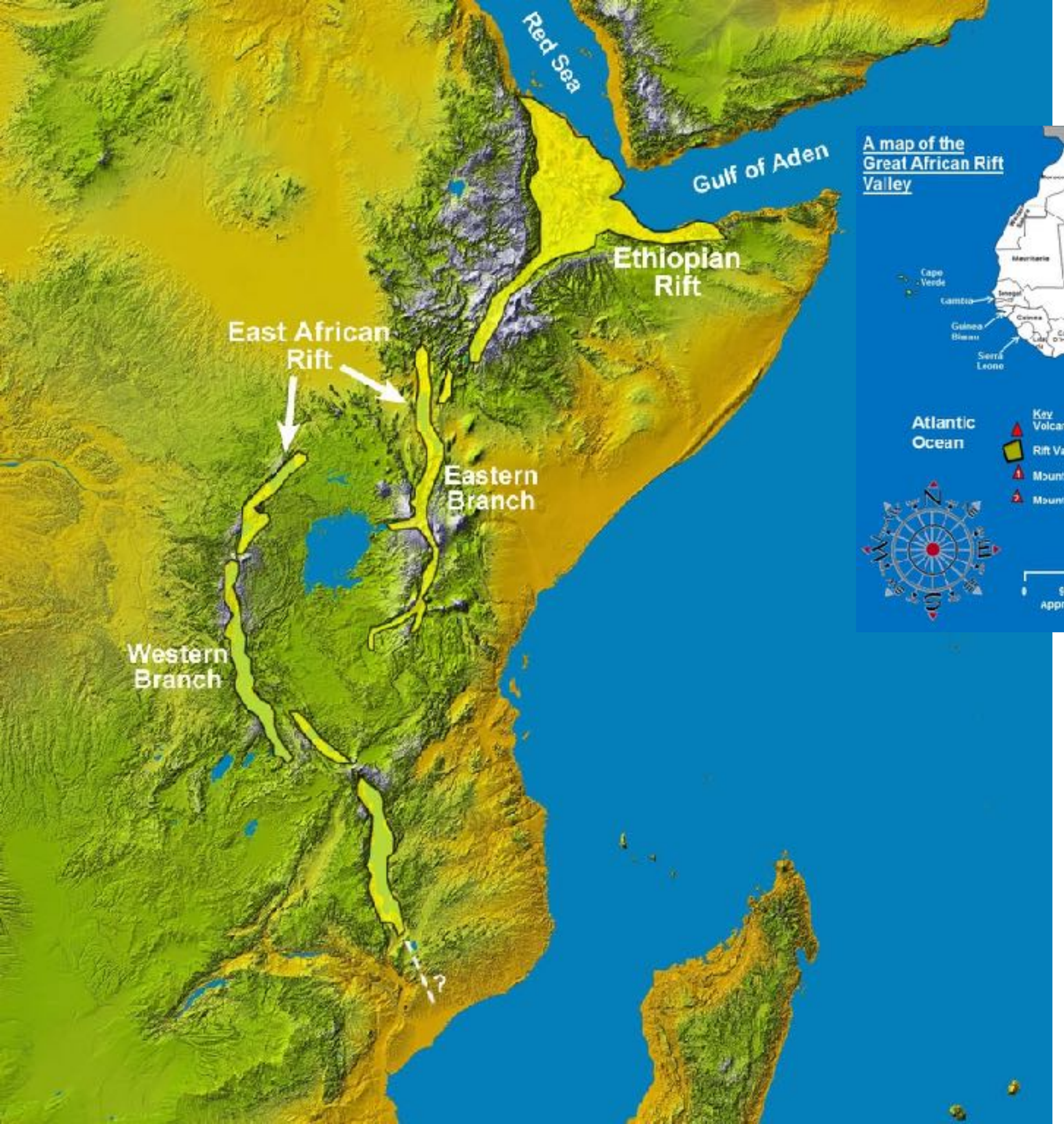
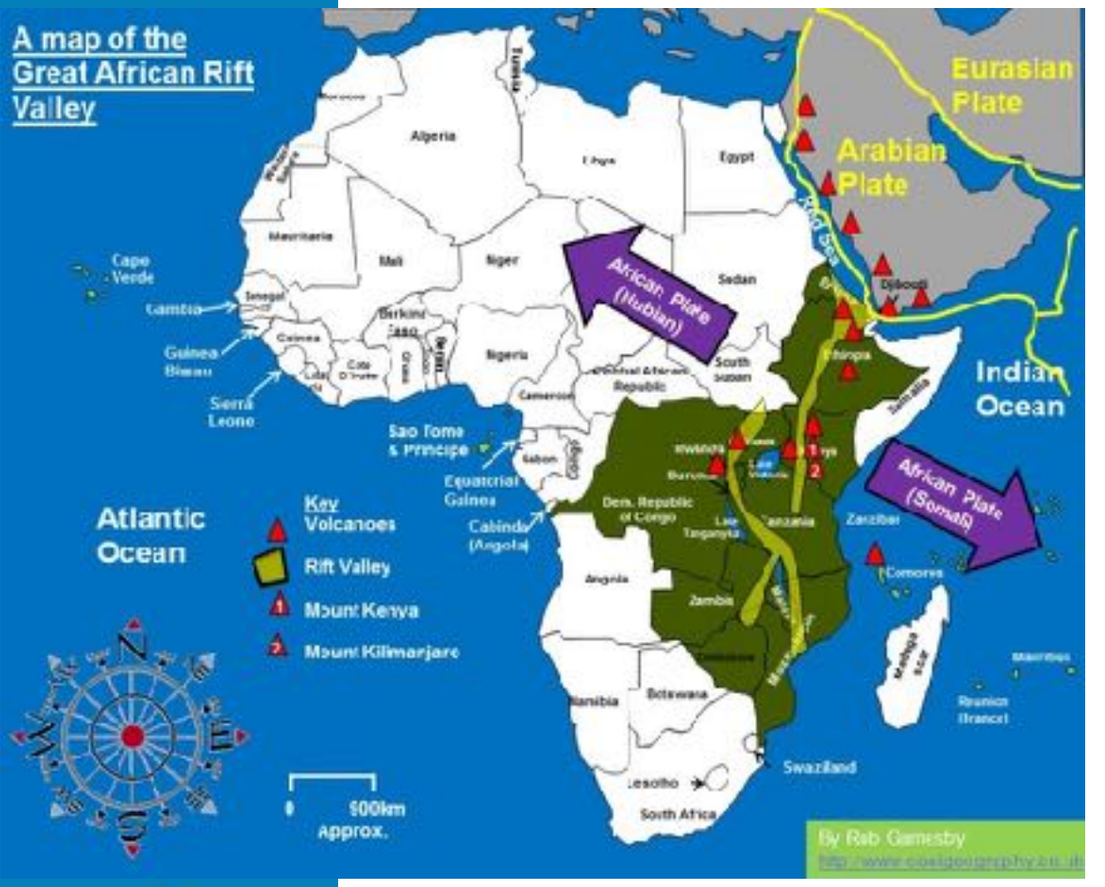
Thanks to CSIC Outreach Department and IUCr for providing material for students and teachers

The ERC project Prometheus aims to explore the role of mineral self-assembly in the early Earth and its plausible role in primitive life detection and origin of life.

Within the project, we have to travel to remote places in search of silica-rich alkaline waters and other extreme geochemical environments

We like to explain people of the regions we visit what we are looking for and why. When possible we also like to deliver popular lectures for high school students and teachers on fundamental aspect of crystallization and its application to everyday life

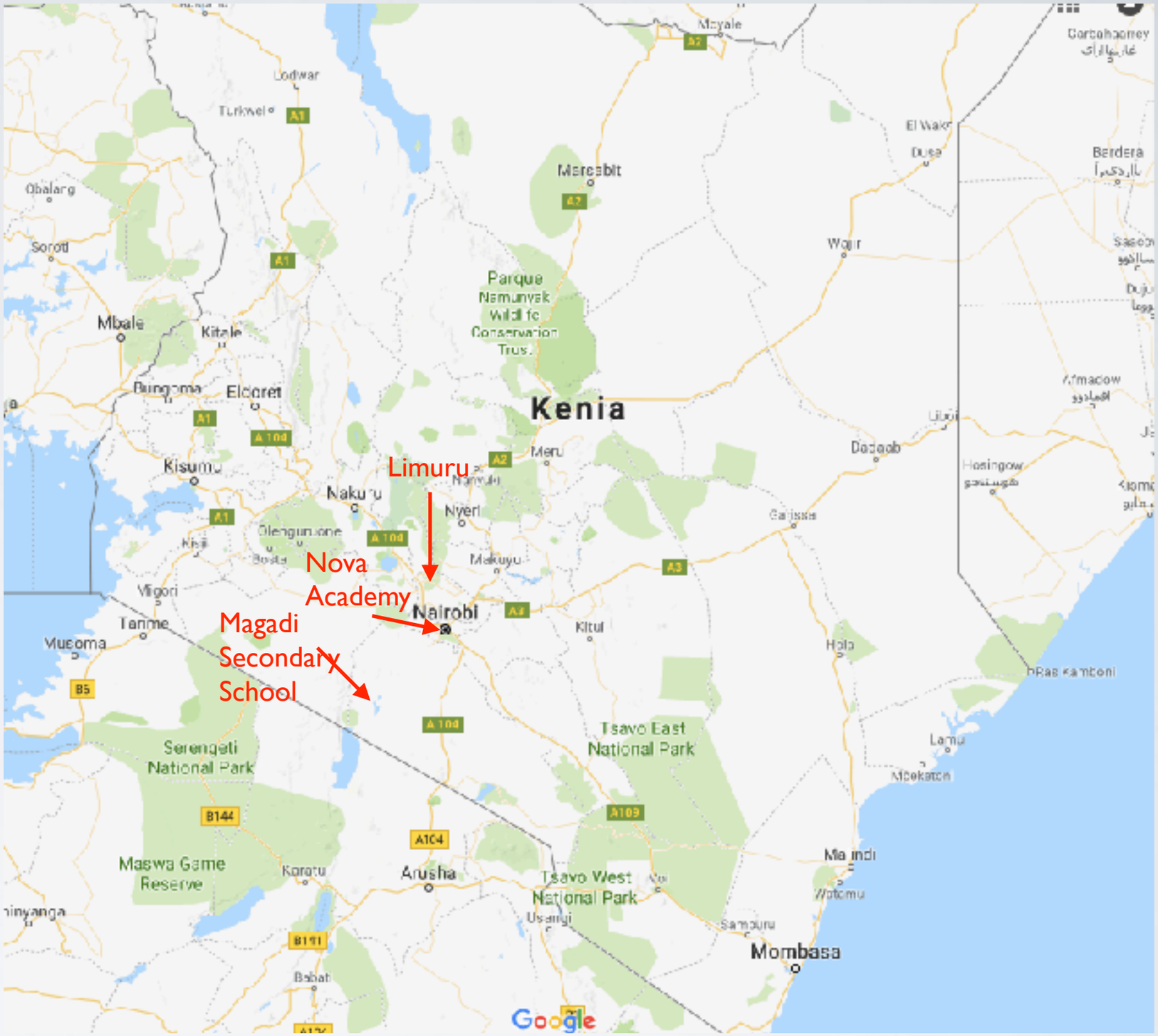




One of the places we are investigating is the Eastern branch of the East African Rift Valley, the so-called Soda Lakes

In March 2016 we delivered a course of four hours for teachers, students and authorities in Limuru, north of Nairobi. I also delivered a lecture in the Louis Leakey auditorium at the National Museum o Kenya.

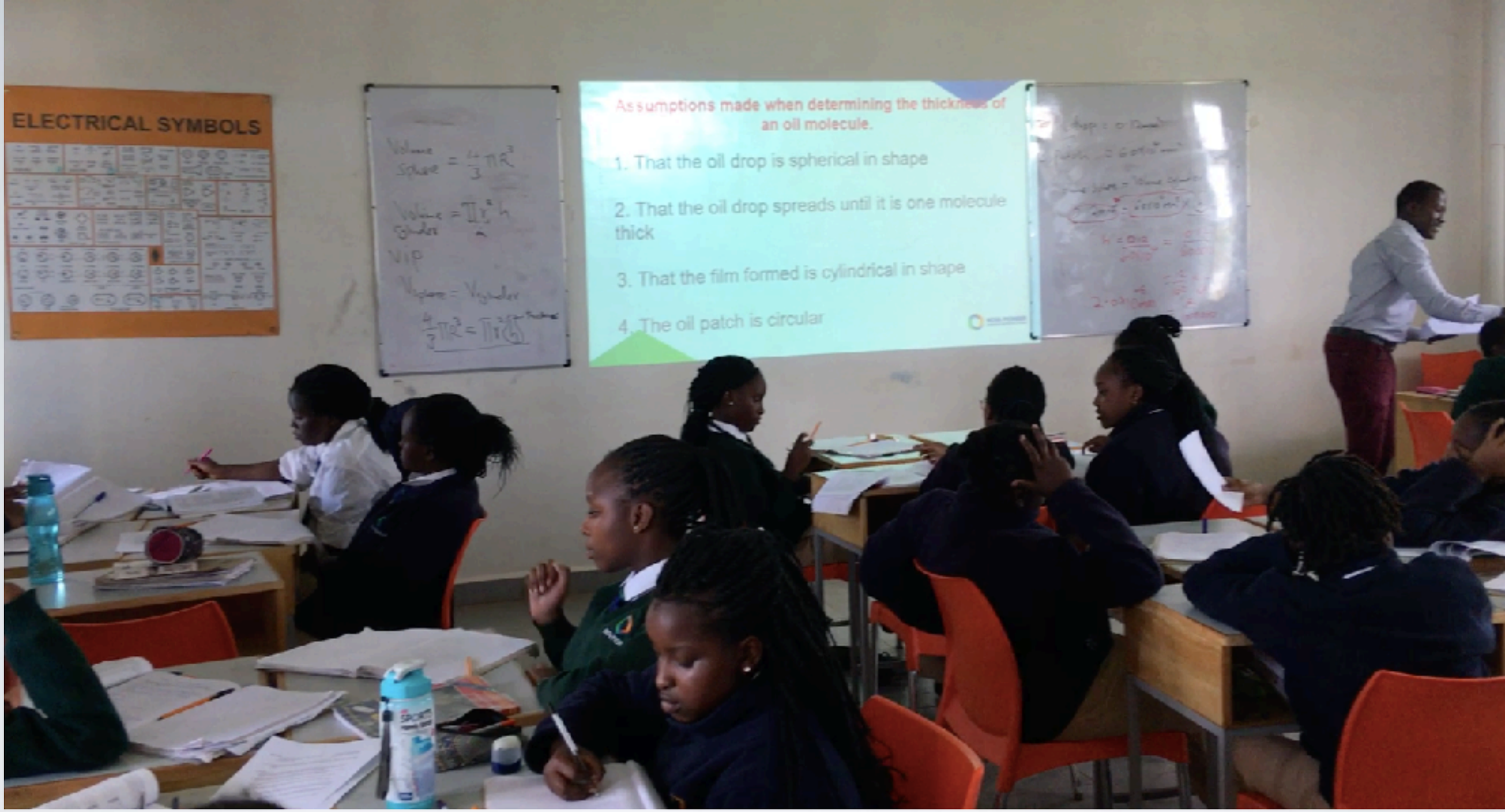
In March 2018, I give lectures in two very different Kenyan secondary Schools. The first one a private School called Nova Academy near Nairobi. The second one, a public school in a remote site called Magadi, in the land of Masai people.



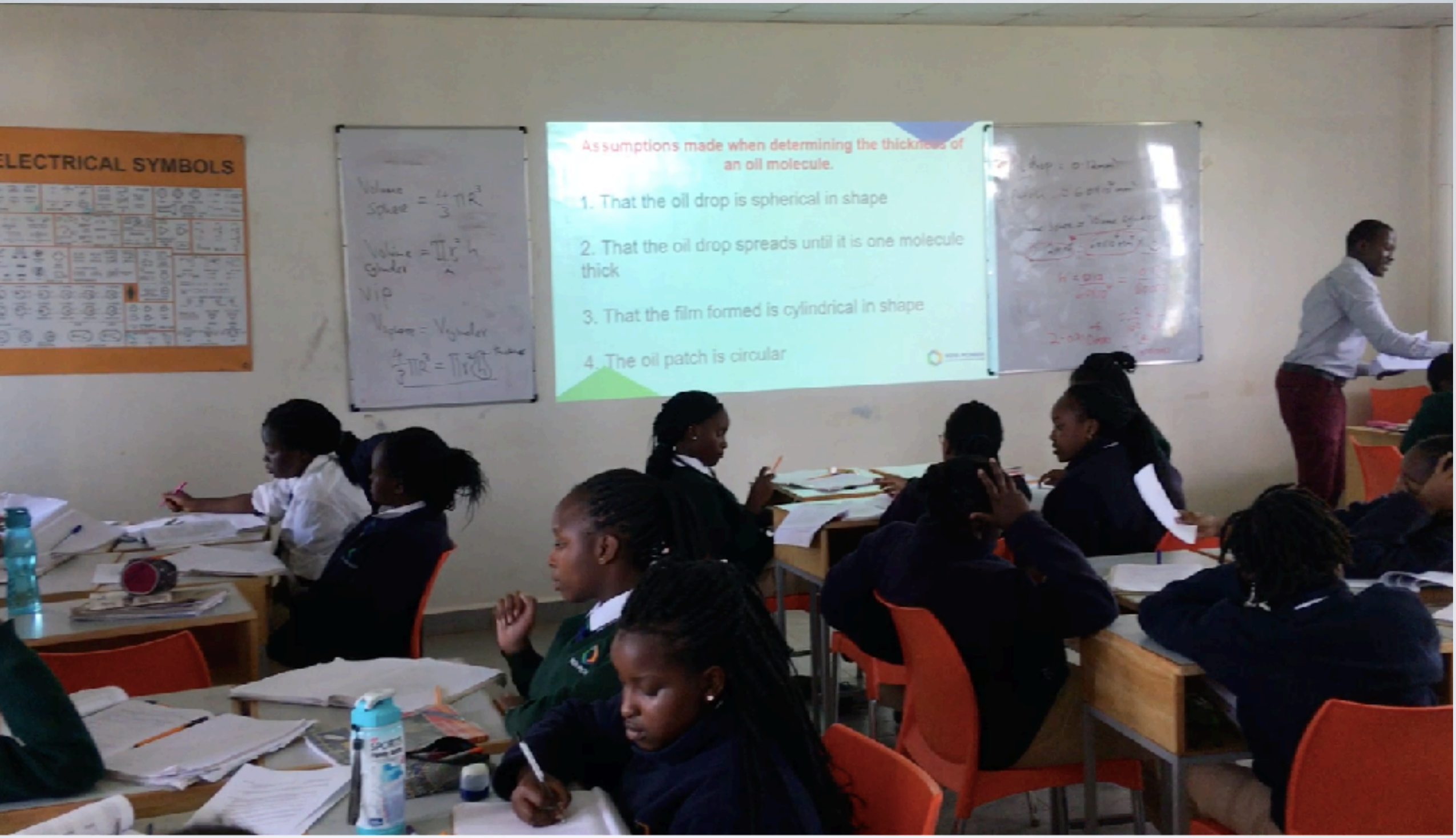
In the Louis Leakey Auditorium of the National Museums of Kenya

Talk in Limuru

With the teachers, students and authorities in Limuru



My experience with Kenyan school system is that primary and secondary education is a priority issue for this country. All schools in the country, from those in Nairobi or Mombasa to the schools in the remote parts of the African savannah, electricity is compulsory, and in many of them, students have access to PC tablets.



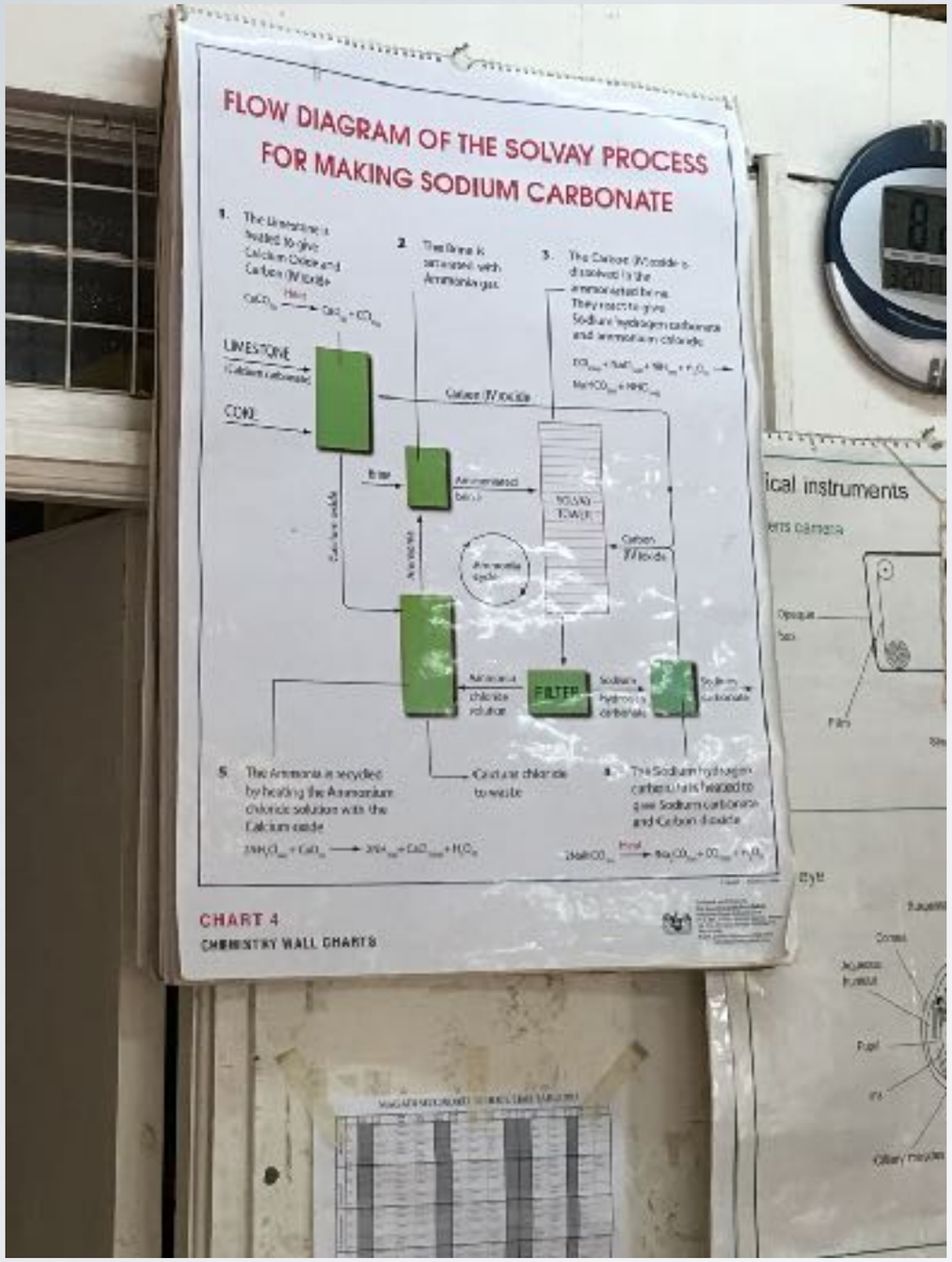
Another feature that is obvious is that the quality of teachers of primary and secondary education is very high and most of them show an enviable degree of professional commitment

Another characteristic of Kenyan schools is the high degree of interest of the majority of students. Either in private or public schools, students show an enormous disposition, a great interest in learning and a clear determination. It is striking that beyond the high quality average, there is a significant number of brilliant students in Kenya. This country thus ensures a pool of leaders for the future.

At the Nova Academy students were the full protagonists. The introduction to the talk was not performed by the staff. The students prepared themselves this lovely introduction with information they collected from the web: Impressive!

The board of Honors of the Magadi Secondary School

The laboratory of the Magadi Secondary School



A poster in the chemistry lab shows the Solvay process for the synthesis of sodium carbonate.

A view of the sports area of the Magadi Secondary School

Preparing the room for the talk and movie presentation

Discussing the teaching plan with Dr. Patricia Gitari, Ing. Anthony Mbuthia (Tata Chemicals Magadi), and Dr. Solomon Derese, from University of Nairobi

The age of the students was very varied, as well as their training.

Starting the conference

This sample of huge crystals of Trona was highly appreciated by the students. These large crystals grow in lake Magadi. The mineral formula is $Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$

The lake of Magadi is a soda lake where sodium carbonate/bicarbonate dihydrate (Trona) is forming by evaporation.

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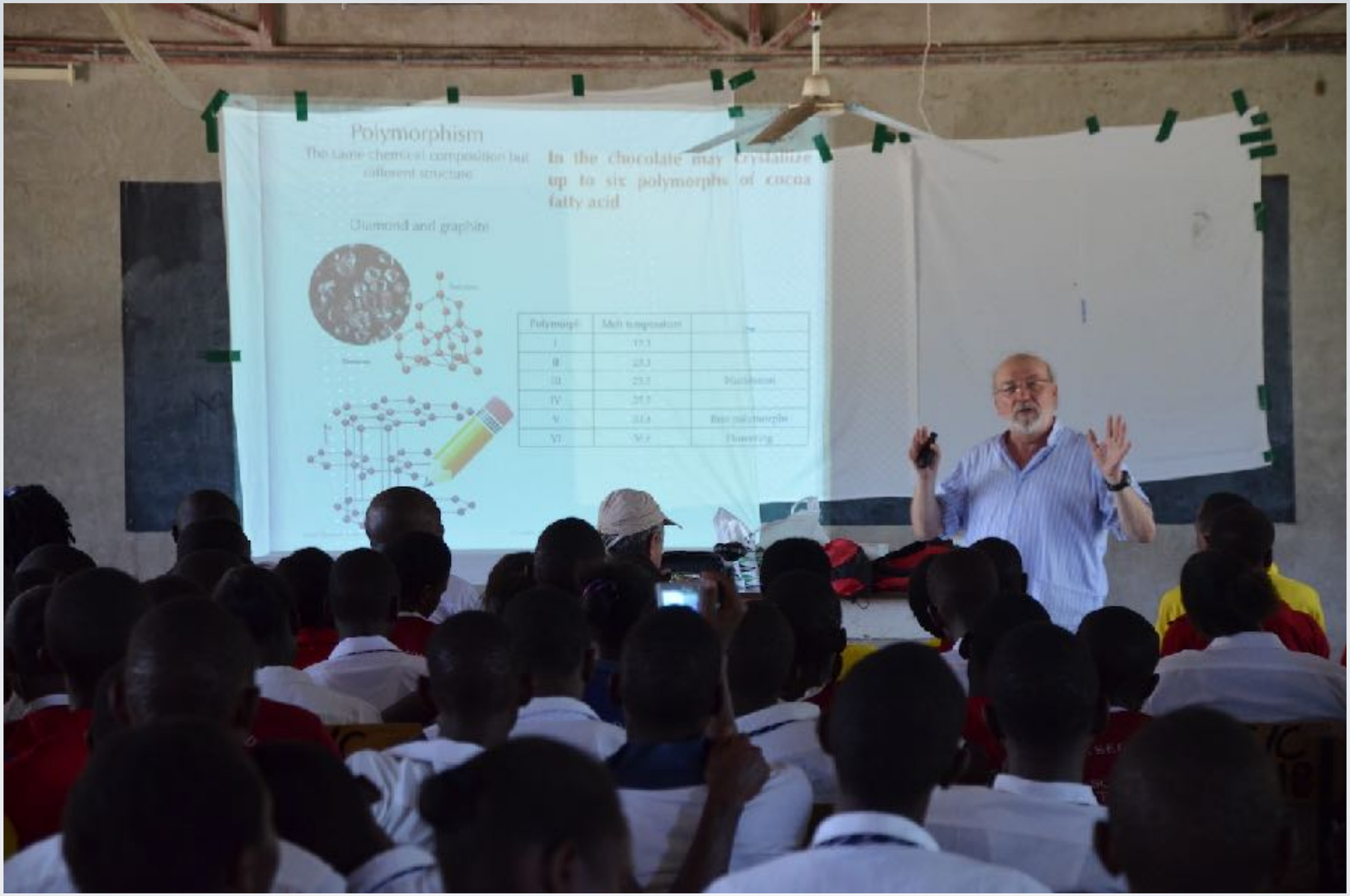
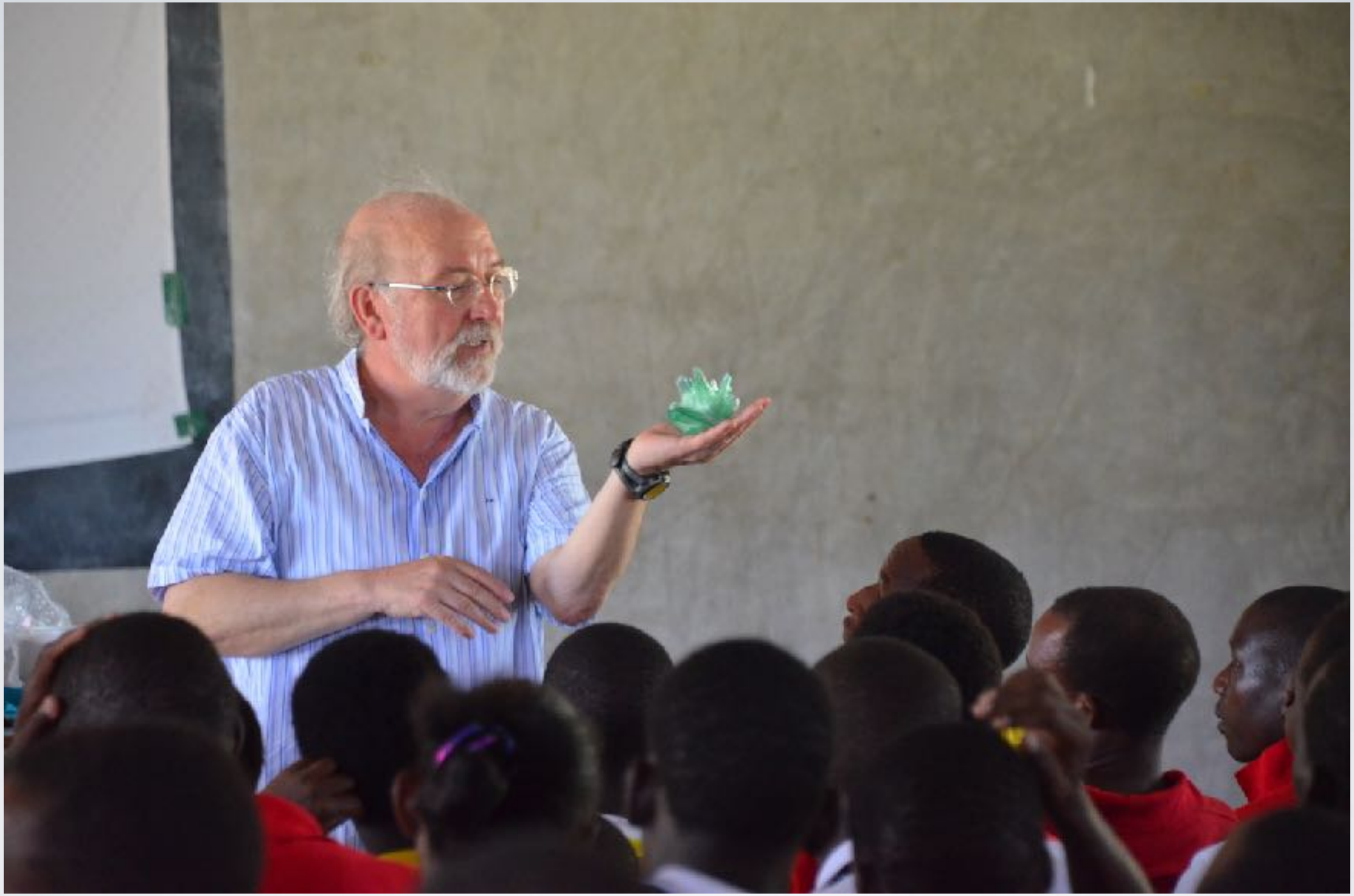


The level of the information of the lectures must be carefully selected



We gifted the School crystallization kits and a collection of minerals donated by Fernando Palero

Photo!

Tata Chemicals Magadi, and previously Magadi Soda Company, is mining trona from Magadi lake since 1911.

We are working in a collaboration agreement with Tata Chemicals Magadi to develop a "Crystallization kit" to trigger the teaching of crystallization in the schools of Kenya and throughout Africa. The University of Nairobi and Dr. Patricia Gitari from D-Orbital Limited will collaborate in this project.

In lake Natron, Tanzania, with our Masai guide Lucas Sosoika

These children got recently a small school in the shoreline of lake Natron. A very remote place. I promise to bring some crystal science useful to them in the next trip