In the community: Physics in Rwanda

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**Nature** and the Institute of Physics (IOP) are working together to provide equipment for teaching physics in Rwanda. Funded by the IOP, volunteer physics teacher David Richardson started a project in 2005 that donated equipment to one school in Rwanda’s capital, Kigali. Today, a local workshop funded by **Nature** and the IOP builds 100 sets of equipment a year, and training is being provided for teachers in other schools in the country. A similar project is being rolled out in Ethiopia, and plans are in place to extend the programme to Malawi and Ghana. **Nature** takes a look at how the determination of one teacher led to a project that brings physics to life for hundreds of children in Africa.

Physics teacher David Richardson first went to Rwanda in 2004, when he visited a fellow teacher on a Voluntary Services Overseas placement there. He was stunned by how little equipment was available to science teachers — even batteries and bulbs were a rare resource.

None of the local schools that David visited in Kigali had any apparatus for physics demonstrations. Teachers in Rwanda do not enjoy a valued social status and are not well paid. Often, the small amount of equipment they do have is incomplete or broken — or they haven’t been trained to use it. This means that students are usually taught only theory — they don’t get the chance to do any practical activities.

David resolved to give Rwandan schools access to physics equipment in a lasting, sustainable way. He recognized that although importing physics equipment from Britain was a good short-term solution, in the long term the apparatus would have to be built locally and distributed to schools around the country.

In 2005, the IOP approved funding for David and four other UK teachers to go to Rwanda with enough equipment for five schools to do demonstrations in each area of the physics syllabus. A series of workshops was arranged at Apred Ndera school to train the local teachers how to use the equipment.

In 2006, the project expanded, importing double the amount of physics equipment so that ten schools could benefit. This time, Rwandan teachers carried out the training, with five of the teachers who had been trained the previous year acting as teaching assistants.

The IOP agreed to fund a workshop to build the equipment locally — including construction of the building, importation of machinery and training two technicians to build the teaching apparatus. The workshop and a distribution centre were built during the summer of 2006. In the first 12 months of the workshop project, the two technicians produced 65 complete sets of high-quality apparatus including bulbs, switches and lens holders.

At this point **Nature** joined the project and offered to fund the production of the electrical and optical apparatus. **Nature** now pays the salaries of the two technicians and provides funds to buy enough components to build 100 sets of apparatus each year. The two technicians are using the money they earn to complete their studies on a university course in leisure, tourism, and information and communication technologies (ICT).

In 2007, Francis Gatete was hired as project manager to run the workshop, as part of the process of handing over the project to the local Rwandans. Appointed on a three-year contract, funded by the IOP, Francis is a teacher with 25 years’ experience. He has good contacts with physics teachers across the country, as well as links with the Ministry of Education.

The Rwandan Ministry of Education has backed the project throughout, facilitating the importation of equipment from Britain and lending its support. During his visits to the country, David has met with representatives from the Rwandan government to discuss how valuable the inclusion of practical demonstrations is to secondary school education.

As a result of these talks, the IOP and **Nature** are working towards signing a memorandum of understanding with the Kigali Institute of Education, which will formalize the Rwandan school project and make important moves towards its sustainability.

The agreement will see the IOP and **Nature** expand both production at the workshop and distribution of the equipment across the country. Components that cannot be sourced locally will continue to be imported from Britain, and the project will carry on providing vital training to local teachers.

The Kigali Institute will support the project by recommending the apparatus produced in the workshop to the schools it works with, and by offering help and advice on how to promote the project across Rwanda. It will also support the model of practical work within the school curriculum by recommending it to the relevant higher-education authorities.

The IOP and **Nature** would also like to promote the use of ICT within the classroom in Rwanda. If initial teacher training carried out by the IOP is successful, local physics teachers could soon be given access to full training and the necessary software.

A similar project to support physics education, based on the sustainability model used in Rwanda, has now been successfully initiated in Ethiopia with endorsement from the government in Addis Ababa. There are plans to roll out the initiative to other African countries including Ghana, Tanzania, Uganda and Malawi.

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If you would like to support school projects in Africa please visit http://bit.ly/9PvXpJ or contact the international relations manager at the IOP: dipali.chauhan@iop.org.

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