IOP for Africa works to encourage students, train teachers and provide equipment for local schools in a growing number of African countries. Thanks to the work and dedication of our members and volunteers, we at IOP hope to be able to enhance the impact of this unique development programme in years to come.

Prof. Sir Peter Knight, President of the Institute of Physics
In Africa, science is learned without an understanding of its potential applications. There is little or no experimental equipment in many African countries. Science classes are much larger than in the UK, with as many as 100 students per class. Science education is highly valued in Africa, but education budgets are much smaller than governments there would like. As a result, teachers’ pay is low and they often need to take additional jobs to support their families.

For these reasons, it is difficult to attract the best graduates into teaching and provide them with training throughout their careers.

**How IOP for Africa makes a difference**

**We train teachers** to enhance their subject knowledge and give them the practical skills needed to show students the myriad applications that physics can have.

**We encourage students** at all levels to embrace physics and make the most of the opportunities that a knowledge of the subject has to offer.

**We provide ICT equipment** by setting up local ICT centres, which are also made available to other schools in neighbouring communities.

**We train local craftsmen to build experimental equipment**, ensuring that projects can ultimately become self-sustaining and enhance employment levels in the community.
Giving young people a good science education can make a huge difference to their prospects and to those of their communities. I am deeply impressed by the enthusiasm and the commitment of the teachers I met here at the Ada Centre and delighted that IOP has been able to support this worthwhile project.

Jocelyn Bell Burnell at the opening of the Ada Centre, May 2010
How it began

IOP for Africa started in 2005 with the donation of equipment to a school in Kigali, Rwanda, thanks to the efforts of IOP member and physics teacher David Richardson. Working with IOP and Nature, today the Rwandan project delivers teacher-training courses and includes a staffed workshop for building and maintaining experimental equipment. IOP for Africa today includes similar projects in Ethiopia, The Gambia, Ghana, Malawi, Tanzania and Uganda.

Progress so far

IOP for Africa has made huge steps forward in the last few years, especially since IOP launched a fundraising campaign to support this invaluable work. The campaign enabled IOP to fund a new centre in Nkhata Bay District, north Malawi, in close partnership with the charity Ripple Africa. The building was finished in late 2011 and the first teacher-training workshop took place soon after.

IOP’s newest project in The Gambia developed quickly over the course of only one year. IOP for Africa identified a building to be renovated for a new resource centre in Banjul. Valuable links have also been established with The Gambian Ministry of Education.

The centre in Tanzania is based in Morogoro and was set up in 2011. It is permanently staffed by a technician and a centre manager, both of whom are also trained teachers. Work on this project has included assessing the need for equipment in schools, to ensure that the right amount and type are supplied where the need is greatest.

In early 2011, IOP for Africa finalised plans with the government in Ethiopia to set up a resource centre and teacher-training facility in Addis Ababa.

The centre in Ada, Ghana, has recently grown at a considerable pace. Plans are underway to set up a mobile science lab to bring practical physics experiments to remote schools and communities.
IOP for Africa contributes to upholding IOP’s mission to promote physics for the economic and social benefit of people worldwide. It is a crucial area of work, with enormous potential for impact and return on investment. We know what a difference good-quality teacher training can make in the UK – IOP for Africa aims to bring about the same changes for good in less fortunate parts of the world.

Dr Dipali Bhatt-Chauhan, manager of the IOP for Africa programme
"Physics used to be really hard for me."

“I couldn’t see what a lot of the theory meant or how it worked. Now we do lots of experiments, where we are allowed to find out things for ourselves. It has also given me an understanding of physics in the home, for example why lights in a house are connected in parallel. I really enjoy studying physics, and when I leave school I want to use what I’ve learned. I would like to become a midwife in the future, and I feel sure that a good knowledge of practical physics will help me keep up to date with all the latest medical equipment.”

Portia Nketia is a final-year student at Ada Secondary High School, Ghana

“I have been teaching physics and mathematics for 21 years.

“Right from the start I liked these subjects because they are real, practical, exact. They involve things that we live with every day – we can’t part from them. But children often have a bias that science is hard. The job of a teacher is to show them that science is all around them and about real life. Helping them discover real-life situations in which they can see science applications is really important. They are eager to learn by discovery. At our school, there is a problem with absenteeism, but if I announce that a lesson will involve practicals, everyone always attends.

“I love teaching this way. But there is a serious lack of experimental equipment and many teachers are a lot less experienced than me in this style of teaching: their approach is theoretical. I also get paid very little for all the effort I put into my work. But when I see a child go far, I know that I have helped them get there, and it makes me proud.

“I’ve not missed any of IOP’s teacher-training courses. Today, I am a member of a committee that works with IOP to develop courses for the future here at Bukinda Secondary School. I have seen how much new teachers learn. I really hope that IOP will go even further to train more teachers in this practical approach.”

Turyamubugana George is a teacher at Bukinda Secondary School, Uganda
IOP strives to make local communities ultimately self-sustaining in their ability to use physics as a vehicle out of poverty, through education, professional development and an effective use of resources.
Ghana

In 2009, IOP signed an agreement with the Ghanaian government to reinvigorate a local school in Ada, a town on the banks of the great Volta estuary in the south-east of the country.

The plan was to refurbish its premises, set up workshops for teachers and enhance its physics and ICT resources. Within six months, in May 2010, IOP and the Ghana Education Service inaugurated the Physics and Electronics Centre at Ada Secondary School. The centre has since run several teacher-training workshops and has become a physics-education resource hub for neighbouring communities.

Uganda

IOP’s involvement in Uganda began in 2009, when Francis Gatete, manager of the Kigali centre in neighbouring Rwanda, travelled to Kabale to run a training course and bring experimental equipment.

It was clear that the Rwandan model – a resource centre based at a local school to build equipment and train teachers – would also be beneficial in Uganda. The IOP resource centre opened in January 2011 and is based at Bukinda Secondary School in western Uganda. IOP volunteers have run several teacher-training workshops on their visits and transported experimental equipment to the centre.
I have tutored over 200 physics teachers all over Ghana.

“I have good contacts with the national Ministry of Education – everywhere I go I am recognised as ‘the IOP person in Ghana’. Working with IOP has been a wonderful experience. The educational centre has been a great success and is much talked about in science education circles in Ghana, with visits from professors of science education and scientists. The Ada Centre was set up in just a few months thanks to IOP’s work and the enthusiasm of Prof. Allotey, president of the Ghanaian Institute of Physics, and local teachers and students. It plays a very important role in stimulating science education – the positive effects of it are so clear to us here.”

“But there is still so much left to do – the project is only just starting. IOP has a lot to contribute to Ghana and to developing countries generally. The IOP for Africa programme makes it possible.”

Roger Green is the IOP international co-ordinator for Ghana. He taught physics and electronics for over 20 years before volunteering for IOP.

Find out more about IOP for Africa

For updates on the IOP for Africa programme, check the IOP website at www.iop.org/international

You can also access other information, interviews, videos and photos on:

the IOP blog
www.iopblog.org/

IOP on Twitter
http://twitter.com/physicsnews

IOP on Facebook
www.facebook.com/instituteofphysics

For any enquiries on our projects, e-mail international@iop.org

You can also make a donation to IOP for Africa to help us in our vital work promoting physics in African countries. Find out more on how to donate from www.iop.org/international or you can make a direct donation at www.justgiving.com/iopforafrica.
Members’ views on IOP for Africa

“Excellent idea! I am really pleased to see IOP involved in this sort of activity.”

“I support the work of IOP for Africa wholeheartedly. Education empowers people in a way that almost nothing else can.”

“A good teacher and a pencil and graph paper make all the difference!”

“What a wonderful cause. And something that will enable physics and knowledge to flourish where it is truly needed.”
IOP for Africa would like to give special thanks to Roger Green, James Barr and all the students and teachers of Ada Senior High School and Asi Daahey International Junior High School in Ada, Ghana, and Bukinda Secondary School, Apostles of Jesus Seminary, St Aloysius Girls School and St Paul’s Secondary School in Bukinda, Uganda.

Photos by Ernest Nanor and Roger Green (Ghana), James Barr (Uganda), Joe Brock (Tanzania), Eileen Nugent (Malawi), and El Kirby (Rwanda)

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