



Submission Template

Good Practices in South-South and Triangular Cooperation for Sustainable Development on Quality Education (SDG 4)

(Please submit the [Word document](#), and upload it online on [South-South Galaxy](#))

[Physics Without Frontiers]

Inspiring and educating physics and mathematics university students worldwide, with a focus on science and technology lagging countries

Metadata

Initiative Title: Physics Without Frontiers
Countries/territories/regions involved: Developing countries
Nominated by (organization and country name): Abdus Salam International Centre for Theoretical Physics (ICTP), Italy
Primary SDG: 4 – Quality Education **Specify SDG 4 Targets:** 4.3, 4.4, 4.5
Secondary SDG(s): SDG 5, SDG 10 **Specify SDG Targets:** 5.b, 10.2
Supported by (technical or financial): ICTP
Implementing entities: ICTP
Project status (ongoing or completed): Ongoing
Project period (indicate the implementation timeframe - start and end month/year): 2012 – ongoing
URL of the practice: <https://www.ictp.it/physics-without-frontiers.aspx>

Challenge (100 - 150 words)

This section should provide an overview of the challenges the project that focuses on education is seeking to overcome in the country or region in which the initiative is being implemented in (or has been implemented), as well as what is required to address them for the achievement of SDG 4 and other relevant SDGs.

Physics Without Frontiers (PWF) is about breaking down barriers to accessing physics and mathematics research and training for university students in developing countries. This means connecting with students and scientists worldwide, and with those from less represented groups, for example from a poorer economic background, women and girls, ethnic minorities within regions, or those who may lack access due to geographic barriers or isolation within a region, and those from conflict regions. PWF projects are tailored to a community's specific needs, supported by the global PWF network of volunteers scientists, all passionate about promoting physics and mathematics.

Towards a Solution (Max 600 words).

Physics Without Frontiers aims to achieve the following:

- To train university students in core topics and cutting-edge research in physics and mathematics using enquiry-based learning and hands-on sessions by PWF Volunteers who are experts in their research fields, and teach transferable skills in computing, programming and machine learning.
- To identify and mentor top students studying at universities without MSc/PhD programmes to go on to further study abroad, such as the ICTP diploma programme, or MSc and PhD placements.
- To support physics and mathematics departments in universities with little or no research, by providing faculty training, taught university courses, curriculum support, research infrastructure, efforts towards the public understanding of science, and outreach to high school students and teachers.

This is achieved through the Physics Without Frontiers Volunteer Network, comprised of over 80 passionate scientists primarily originally from the partnered countries. Working with each projects' organising committee, goals are defined and corresponding activities are designed, and written into a detailed project proposal. A component of outreach and diversity is incorporated into all projects. We promote networking and collaborative environments, and our mentoring scheme is open to all students.

In its 10 years of activities, PWF has reached more than 4000 students from 50 countries. Some 200 of those students have gone on to further study for masters and PhD programmes, thanks to the mentoring provided by PWF. The Programme now has more than 100 volunteers worldwide, who have assisted PWF to reach countries in desperate need of science education. This includes the special programmes PWF has held in conflict countries such as Iraq, Afghanistan, Libya, Palestine, Syria and Ethiopia.

Contact Details

Please provide the contact information of a focal point who can be contacted for more information on the good practice?

- a. **Name:** Kate Shaw
- b. **Title:** PWF Co-Coordinator
- c. **Organization:** Abdus Salam International Centre for Theoretical Physics
- d. **Email address:** kshaw@ictp.it

Photos of the Initiative

Please include **3-4 high resolution** photos for the initiative

High-resolution photos are available at <https://www.scidev.net/global/multimedia/women-physics-palestinian-territories-photos/>

Related Resources
<p>What training manuals, guidelines, technical fact sheets, posters, pictures, video, audio documents, websites have been created as a result of identifying the good practice?</p> <p>Most PWF projects have posters promoting their activities. For a full list of projects with links to these materials, see https://www.ictp.it/physics-without-frontiers/current-country-projects.aspx</p>