

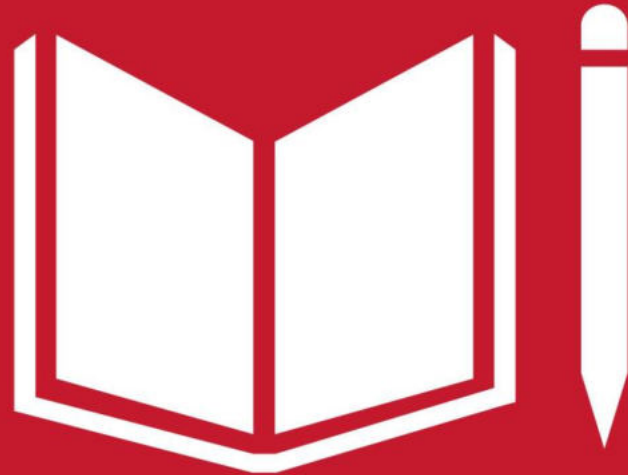
**EQUITABLE  
EDUCATION FOR  
ALL:**

**TEACHERS AS  
LEADERS OF  
CHANGE**

*Clara Vasconcelos*

*Faculty of Sciences, University of Porto,  
Portugal*

# 4 QUALITY EDUCATION



# Sustainable Development Goals



**EDUCATION  
IS THE SOLUTION**

**One Child**

**One Teacher**

**One Book & One Pen**

**Can Change the World**

**Malala Yousfzay**





[Malala Reduce.mp4](#)

# GOAL 4

## TARGET 4.1

### FREE PRIMARY AND SECONDARY EDUCATION

By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.



## TARGET 4.2

### EQUAL ACCESS TO QUALITY PRE-PRIMARY EDUCATION

By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.



## TARGET 4.3

### EQUAL ACCESS TO AFFORDABLE TECHNICAL, VOCATIONAL AND HIGHER EDUCATION

By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.



## TARGET 4.4

### INCREASE THE NUMBER OF PEOPLE WITH RELEVANT SKILLS FOR FINANCIAL SUCCESS

By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.



# GOAL 4

## TARGET 4.5



### ELIMINATE ALL DISCRIMINATION IN EDUCATION

By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

## TARGET 4.6



### UNIVERSAL LITERACY AND NUMERACY

By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.

## TARGET 4.7



### EDUCATION FOR SUSTAINABLE DEVELOPMENT AND GLOBAL CITIZENSHIP

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

## TARGET 4.8



### BUILD AND UPGRADE INCLUSIVE AND SAFE SCHOOLS

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

# GOAL 4

## TARGET 4.9



### EXPAND HIGHER EDUCATION SCHOLARSHIPS FOR DEVELOPING COUNTRIES

By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.

## TARGET 4.A



### INCREASE THE SUPPLY OF QUALIFIED TEACHERS IN DEVELOPING COUNTRIES

By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.



FREE PRIMARY AND SECONDARY EDUCATION

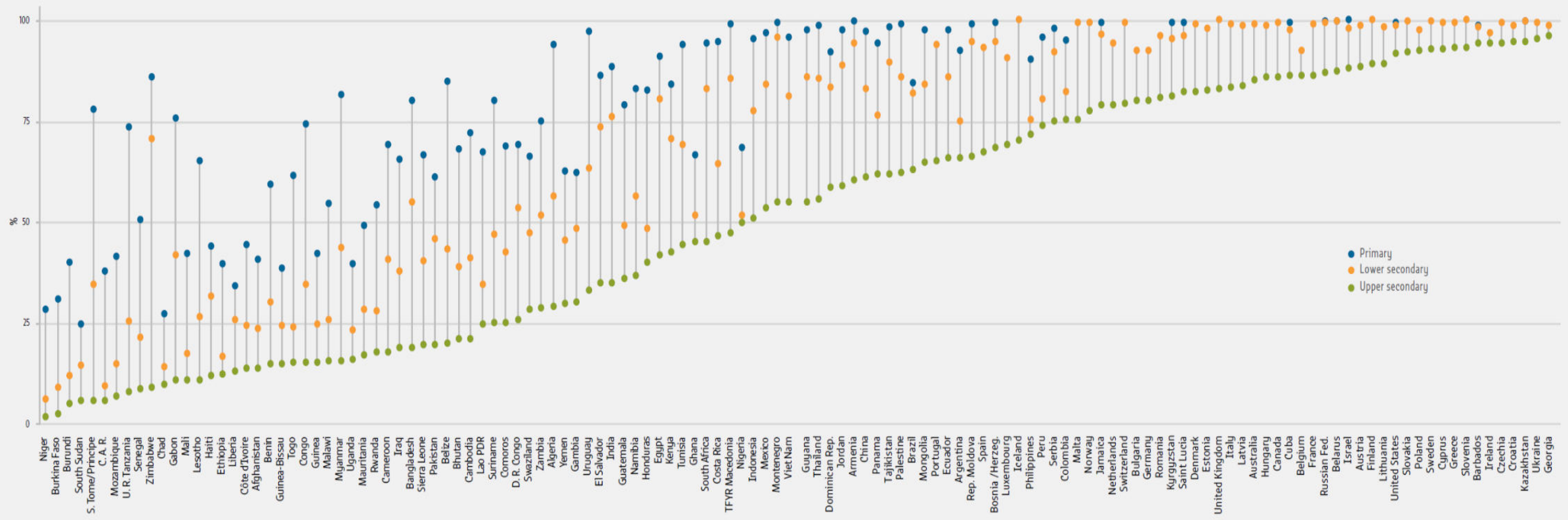
# In almost half of the countries, less than one in two youth complete secondary school



United Nations Educational, Scientific and Cultural Organization



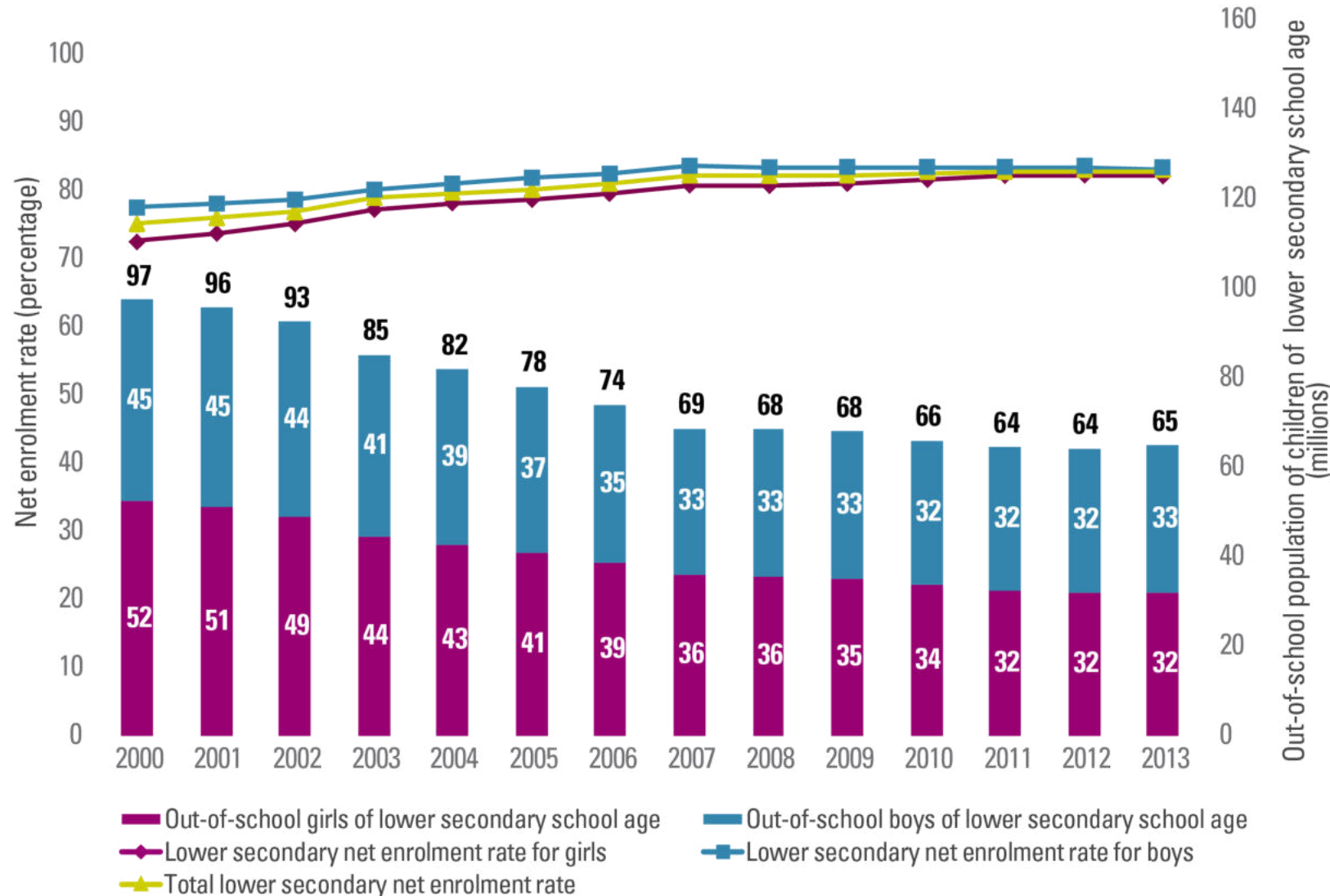
Completion rate, by level of education, selected countries, 2010–2015



Source: GEM Report team analysis using household surveys.



# Globally, four out of five children of lower secondary school age are enrolled in school



According to international human rights legislation, primary education must be mandatory and free.

The cost of secondary and higher education will gradually be eliminated.

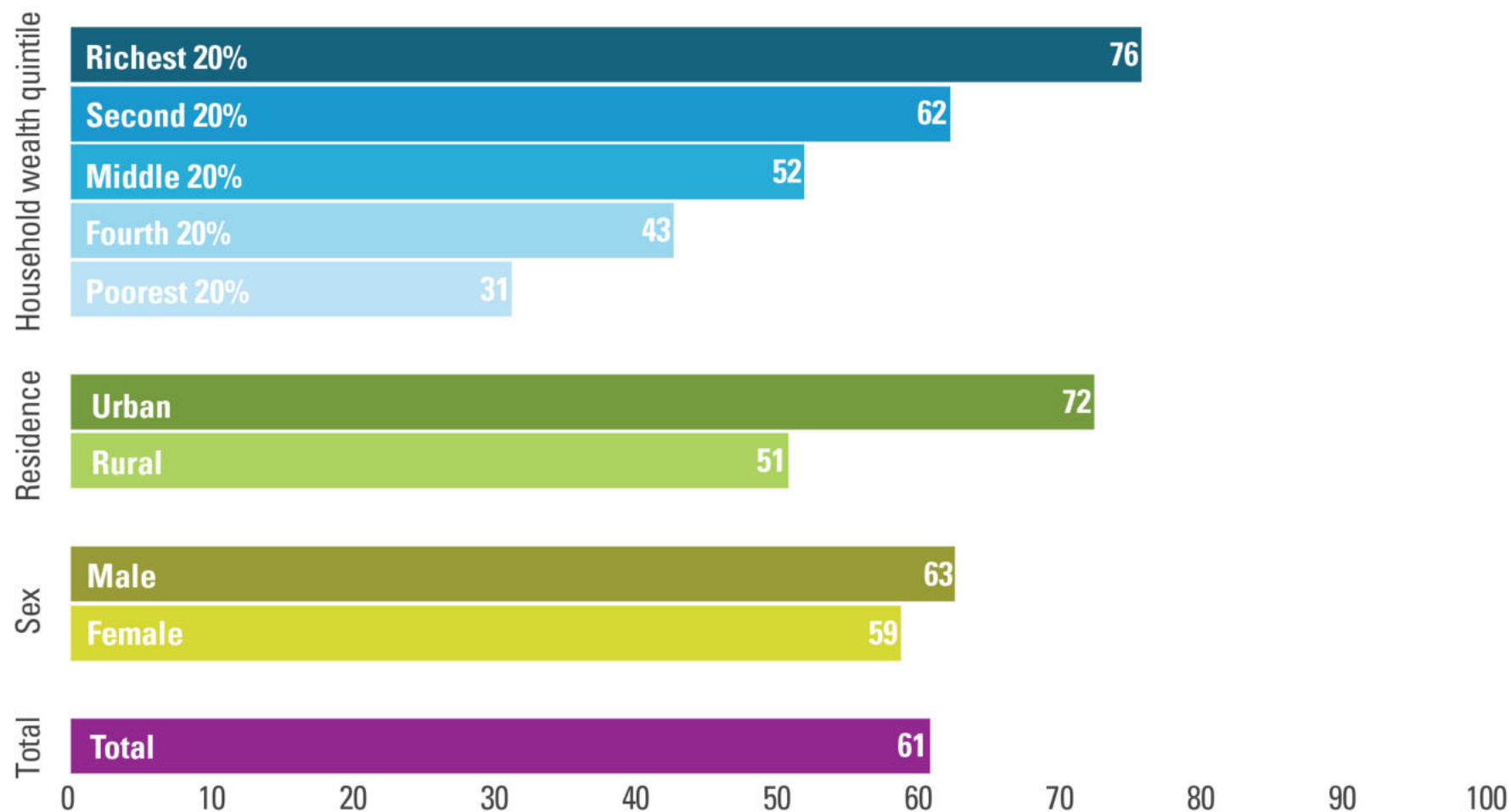
*The net enrolment ratio is the number of boys and girls of the age of a particular level of education enrolled in that level of education, expressed as a percentage of the total population in that age group.*

Source: UNESCO Institute for Statistics global databases, 2015

**Secondary school net attendance rate (percentage) by household wealth quintile, sex, and residence, 2009–2014.**

**In many countries, poorer children are far less likely to attend school than their wealthier peers.**

Notes: Calculation is based on the most recent household surveys conducted from 2009–2014 except 2005–06 data from India. The average was calculated based on weighted net attendance rates. Secondary school-age populations were used as the weights.



Source: UNICEF global databases, 2016

# GOAL 4

TARGET 4.5



ELIMINATE ALL  
DISCRIMINATION IN  
EDUCATION

## Target 4.5

By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with:

- disabilities,
- indigenous peoples and
- children in vulnerable situations.





## Education

We believe every child has the right to education. That's why we're part of the global movement to promote inclusive education for children with disabilities, and we work with partners to transform education systems.

# Inclusive Education



unicef

# Inclusive Education

To close the education gap for children with disabilities, UNICEF supports government efforts to foster and monitor inclusive education systems. UNICEF work focuses on four key areas:

**Advocacy:** UNICEF promotes inclusive education in discussions, high-level events and other forms of outreach geared towards policymakers and the general public.

**Awareness-raising:** UNICEF shines a spotlight on the needs of children with disabilities by conducting research and hosting roundtables, workshops and other events for government partners.

**Capacity-building:** UNICEF builds the capacity of education systems in partner countries by training teachers, administrators and communities, and providing technical assistance to Governments.

**Implementation support:** UNICEF assists with monitoring and evaluation in partner countries to close the implementation gap between policy and practice.



**Only 50% of children with disabilities in developing countries go to school.**

Source: Every Child Learns UNICEF Education Strategy 2019–2030

# Education is vital to meeting the Sustainable Development Goals

## *Every child learns*

UNICEF released its own [Education Strategy 2019–2030](#), ‘Every Child Learns’, outlining three distinct goals:

- (1) Equitable access to learning opportunities;
- (2) Improved learning and skills for all; and
- (3) Improved learning and protection for children in emergencies and fragile contexts.

Source: Every Child Learns UNICEF Education Strategy 2019–2030

## Refugee and migrant integration into education and training

Students with a refugee or migrant background often face difficulties adjusting to a new learning environment.

Source; EuroEuropean Education Area  
Quality education and training for all



## Inclusion of Refugees into the Rwandese national education system

In partnership with UNHCR, the Government of Rwanda strives to integrate 100% of refugee children into national school systems.



supported by



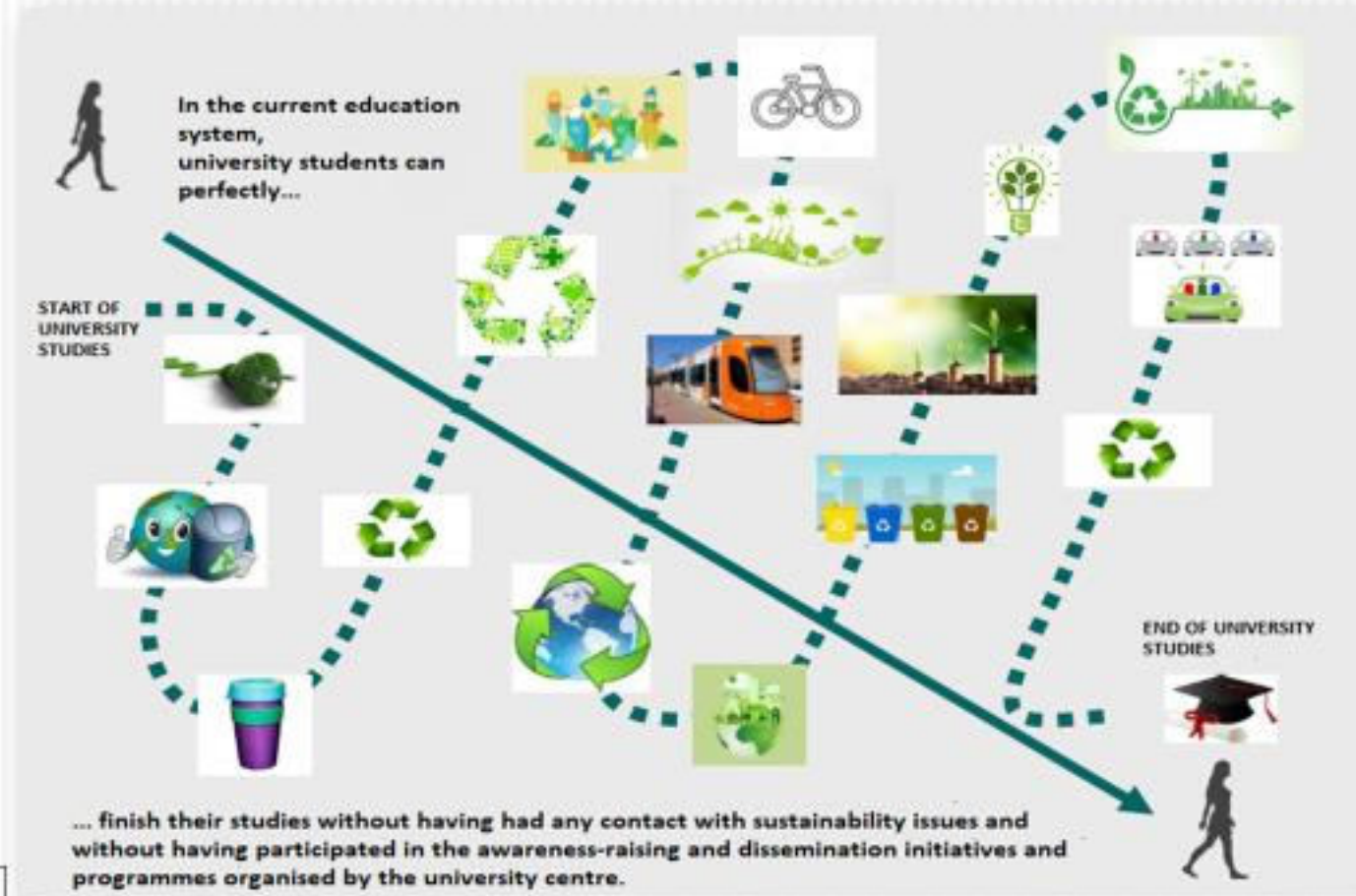
# GOAL 4

TARGET 4.7



EDUCATION FOR SUSTAINABLE DEVELOPMENT AND GLOBAL CITIZENSHIP

## 1. The role of teachers in education for Sustainable Development



Javier Martínez Falco  
Assistant Professor at UA  
javier.falco@ua.es

Source: Own elaboration



# GEOSCIENCE FOR THE FUTURE

Geoscientists will be crucial in meeting society's future challenges, be that through the United Nations Sustainable Development Goals, the Paris Agreement to avoid dangerous climate change, or through other important policies to protect the environment and ensure the availability of vital resources for all.

Geoscientists will be critical in:

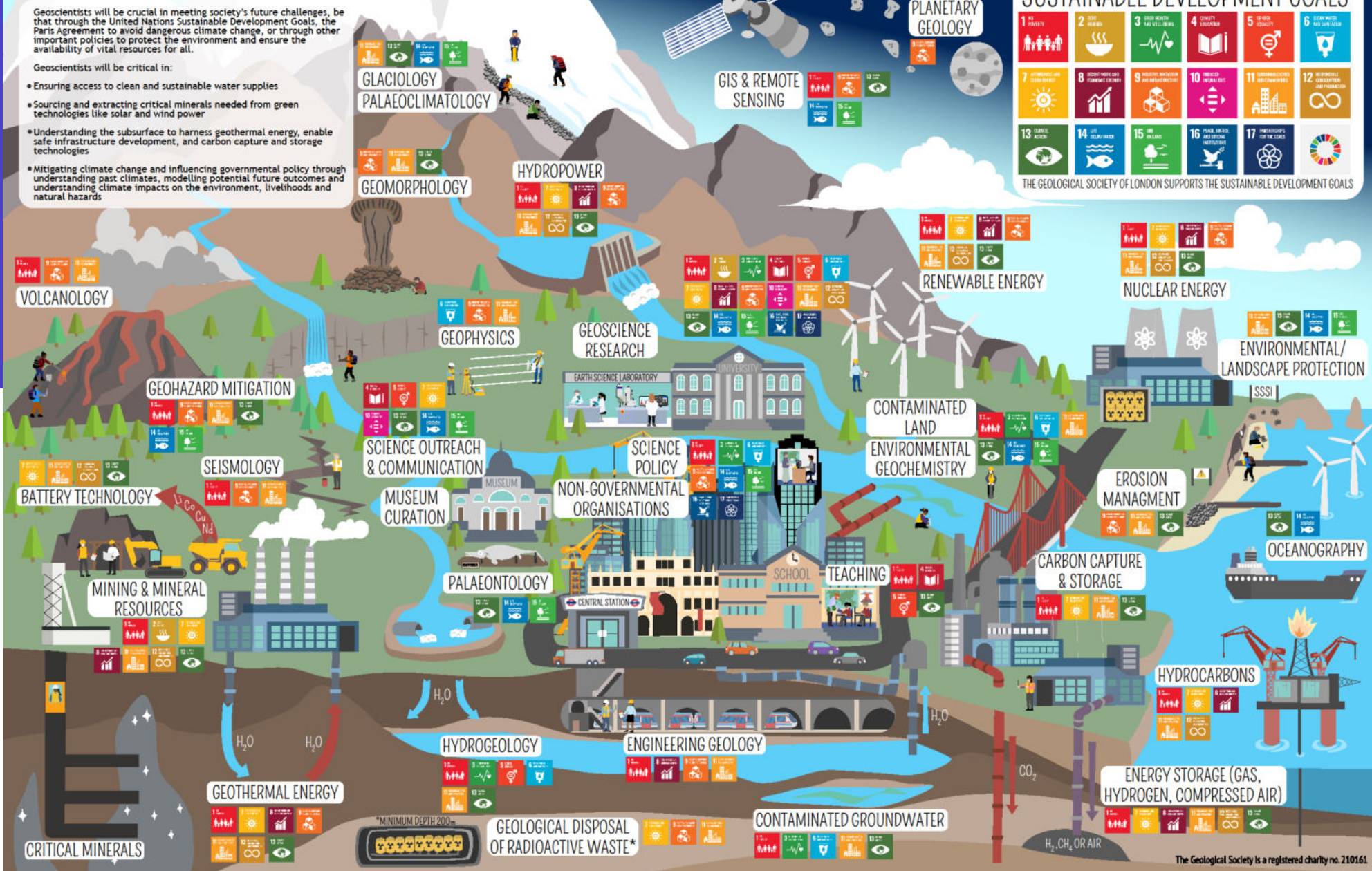
- Ensuring access to clean and sustainable water supplies
- Sourcing and extracting critical minerals needed from green technologies like solar and wind power
- Understanding the subsurface to harness geothermal energy, enable safe infrastructure development, and carbon capture and storage technologies
- Mitigating climate change and influencing governmental policy through understanding past climates, modeling potential future outcomes and understanding climate impacts on the environment, livelihoods and natural hazards

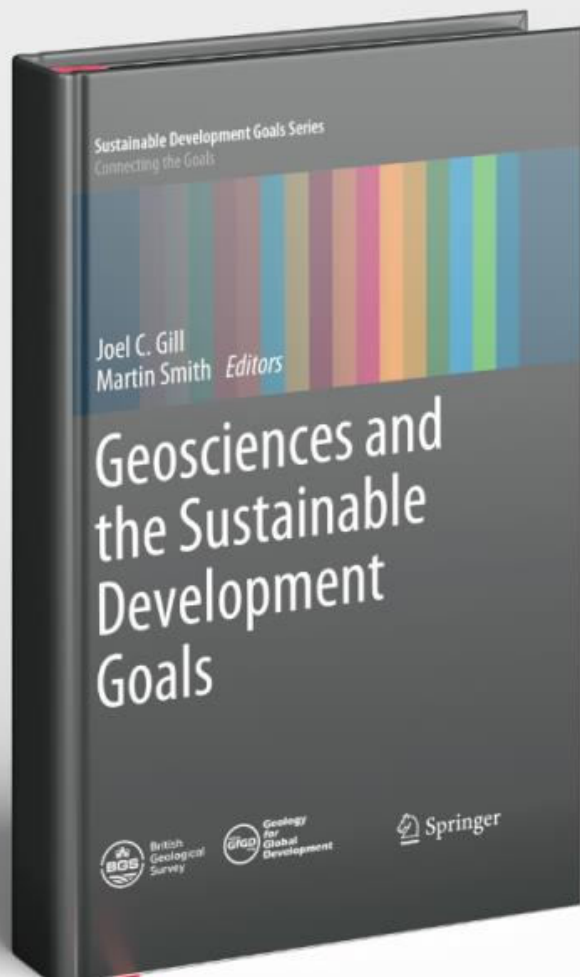


## SUSTAINABLE DEVELOPMENT GOALS



THE GEOLOGICAL SOCIETY OF LONDON SUPPORTS THE SUSTAINABLE DEVELOPMENT GOALS



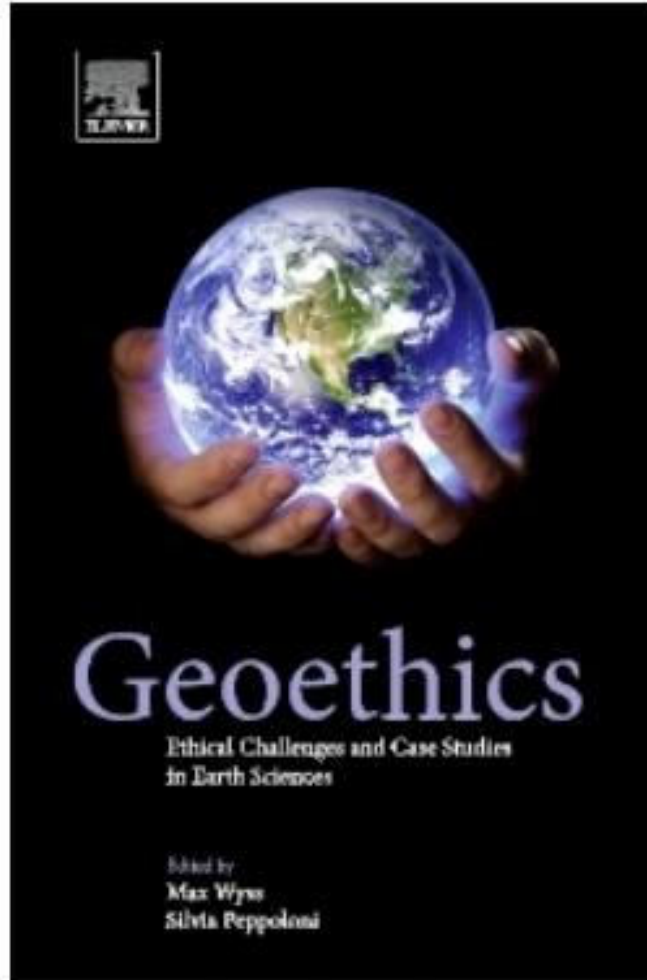


# BOOK LAUNCH

## GEOSCIENCES AND THE SUSTAINABLE DEVELOPMENT GOALS

Editors: Joel C. Gill and Martin Smith

Delivered by the British  
Geological Survey and Geology  
for Global Development,  
involving 42 authors from six  
continents



# Geoethics

Ethical Challenges and Case Studies in Earth Sciences

1st Edition - November 13, 2014

★★★★★ [Write a review](#)

Editors: Max Wyss, Silvia Peppoloni

eBook ISBN: 9780128000762

Hardcover ISBN: 9780127999357

# GOAL 4



unesco

## Three means of implementation

### 4.a Effective learning environments

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

### 4.b Scholarships

By 2020, substantially expand the number of scholarships available to developing countries globally, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programs, in developed countries and other developing countries.

### 4.c Teachers and educators

**By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.**



## Afghanistan: A country that bans girls' education

By Tooba Neda Safi

Girls not  
allowed to  
go to  
schools



# Teachers murdered when they go school

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**INTERVIEW: In 11 years, 2,295 teachers were killed in North-east Nigeria – UNICEF Chief**

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*In the first half of 2021, Borno has faced a drastic reduction in humanitarian access with an escalation of actions of Non State Armed Groups (NSAGs) targeting teachers and threatening those who support educational activities*

**By Mojeed Alabi**



As **Nigeria** joins the world today, September 9, 2021, to mark the second anniversary of the International Day to Protect Education from Attacks, the United Nations Children’s Fund (UNICEF) **Chief of Maiduguri Field Office in Borno State, Phuong Nguyen**, speaks with **PREMIUM TIMES’ Mojeed Alabi**, on the impacts of **violent attacks on education in North-east Nigeria and the country as a whole.**

# COVID-19 pandemic

147 million children are estimated to have missed more than half of their in-class instruction over 2020-2022 due to school closures caused by the **COVID-19 pandemic**. This generation of children could lose a combined total of \$17 trillion in lifetime earnings in present value.

Source: The Sustainable Development Goals Report 2022



ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

**COVID-19 PANDEMIC**  
— HAS DEEPENED A —

**GLOBAL LEARNING CRISIS**

**147 MILLION CHILDREN**  
MISSED OVER HALF  
OF IN-PERSON  
INSTRUCTION  
IN 2020-2021



ENTRENCHED INEQUITIES IN EDUCATION HAVE  
ONLY **WORSENERD** DURING THE PANDEMIC



**24 MILLION LEARNERS**

(PRE-PRIMARY TO UNIVERSITY LEVEL)

**MAY NEVER**

**RETURN TO SCHOOL**



**EDUCATION IS A LIFELINE**  
FOR CHILDREN IN CRISES



**REMOTE LEARNING**

IS OFFERED TO  
**3 MILLION**  
UKRAINIAN CHILDREN  
IN THE CHAOS OF WAR  
(APRIL 2022)

MANY COUNTRIES ARE **IMPROVING** SCHOOL INFRASTRUCTURE AS CLASSROOMS REOPEN

**GLOBALLY,**  
**PRIMARY SCHOOLS**  
(2019-2020)



ELECTRICITY



DRINKING  
WATER



BASIC  
SANITATION



COMPUTERS



INTERNET  
ACCESS



**Catherine Inglehearn**  
British Ambassador to Niger

# Nigeria and COVID 19 Pandemic

- According to the Nigerian National Education Plan for 2020-22, only **42 per cent of girls** are enrolled in basic education. Compare this with 58 per cent of boys.
- **HOW** many children in Niger were reported as being out of school at the start of 2020: **2.6 million**
- **Extreme poverty, unsafe schools, and low-quality education contribute to low access. The pandemic has exacerbated this learning crisis, with a further 1.2 million children estimated to be out of the classroom** due to restrictive pandemic measures in July 2020.



# War in Ukraine

Ukraine: More than half of children missing out on education due to blackouts

Survey 17 Nov 2022/source Save the Children



Save the **Children Country Director in Ukraine** said:

*"Thousands of schools have been damaged by shelling and missile strikes, and hundreds are completely destroyed. The power cuts and rolling blackouts rob the millions of children who learn online of their education.*

*Knowledge is important, but the school also provides an opportunity to connect with their peers and to support one another through a very difficult time. "*

A **teacher** from Kyiv region said:

*"The teachers do their best. We attach video lessons, we create presentations, we send out lessons to those who couldn't connect to the internet."*

# WHERE DOES CHILD MARRIAGE HAPPEN MOST?

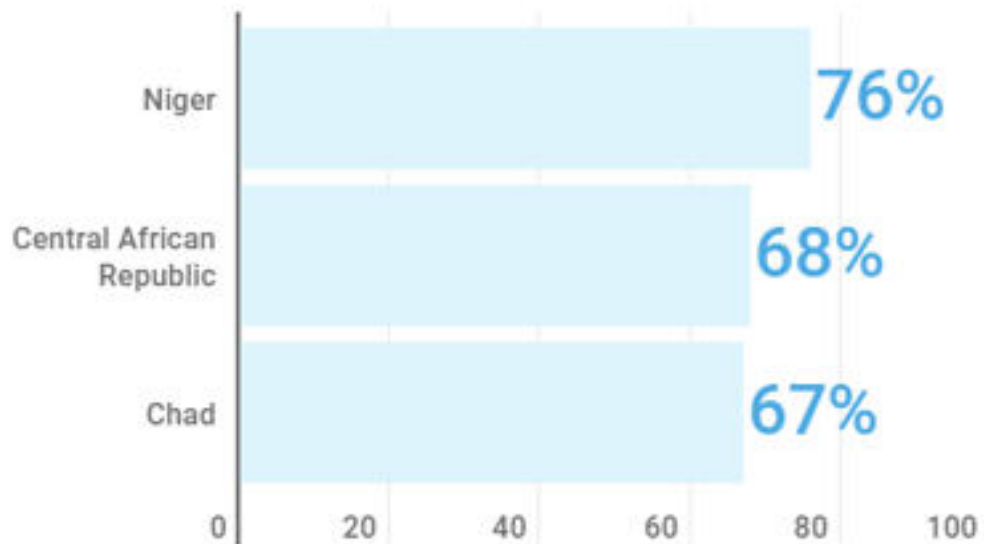
37%



of young women in sub-Saharan Africa married before age 18.



% of young women who married before their 18th birthday



# Child marriage

Source: UNICEF

# Children with bad nutrition and no water



**Water doesn't come from a tap | UNICEF**

**Thirteen-year-old** Aysha spends about 8 hours fetching water daily in Ethiopia, where she lives.

Children  
in the  
labour  
market :  
mining



[F8EAFFAA-8730-469C-B4C2-CF329E946862 \(1\).mov](#)



**Congo and the last call: Educational resource**

# Child traffic

**ERASE  
ERASE  
CHILD TRAFFICKING**

Children make up almost one-third of all human trafficking victims worldwide

*World Trafficking Day 2018 - UNICEF*



An alarming number of refugee and migrant children are trafficked into prostitution



**(Geo) TEACHERS AS LEADERS OF CHANGE**

# What is a leader of change?

Social innovators, or **Leaders of Change**, are the individuals, movements, or organisations that can bring to light social issues and suggest novel solutions while garnering support from the rest of society. Therefore, social innovators must be able to identify societal problems and earn the trust, passion, and commitment of many people regarding an issue they find worthy of being solved to be able to **successfully promote and implement social change through the collective action of society.**

(Silva, J. & Vasconcelos, C., 2021)





# Teachers as leaders of change

Education for

Sustainable Development Goals

Learning Objectives



- **Educators are powerful change agents** who can deliver the educational response necessary **to achieve Sustainable Development Goals (SDGs).**

- **Their expertise and skills are essential** for restructuring educational processes and institutions **to promote sustainability.**

**"Education is the most powerful weapon  
which you can use to change the world"**

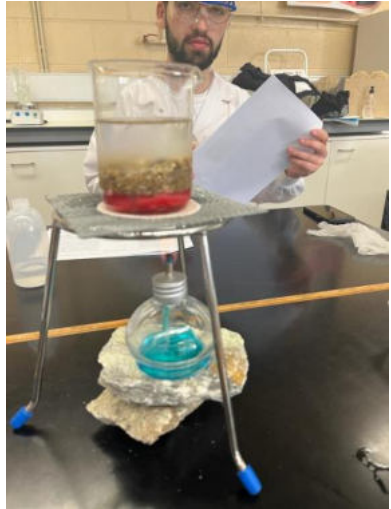
**Nelson Mandela**

**"There was a great teacher  
somewhere in your life."**

**Barack Obama**

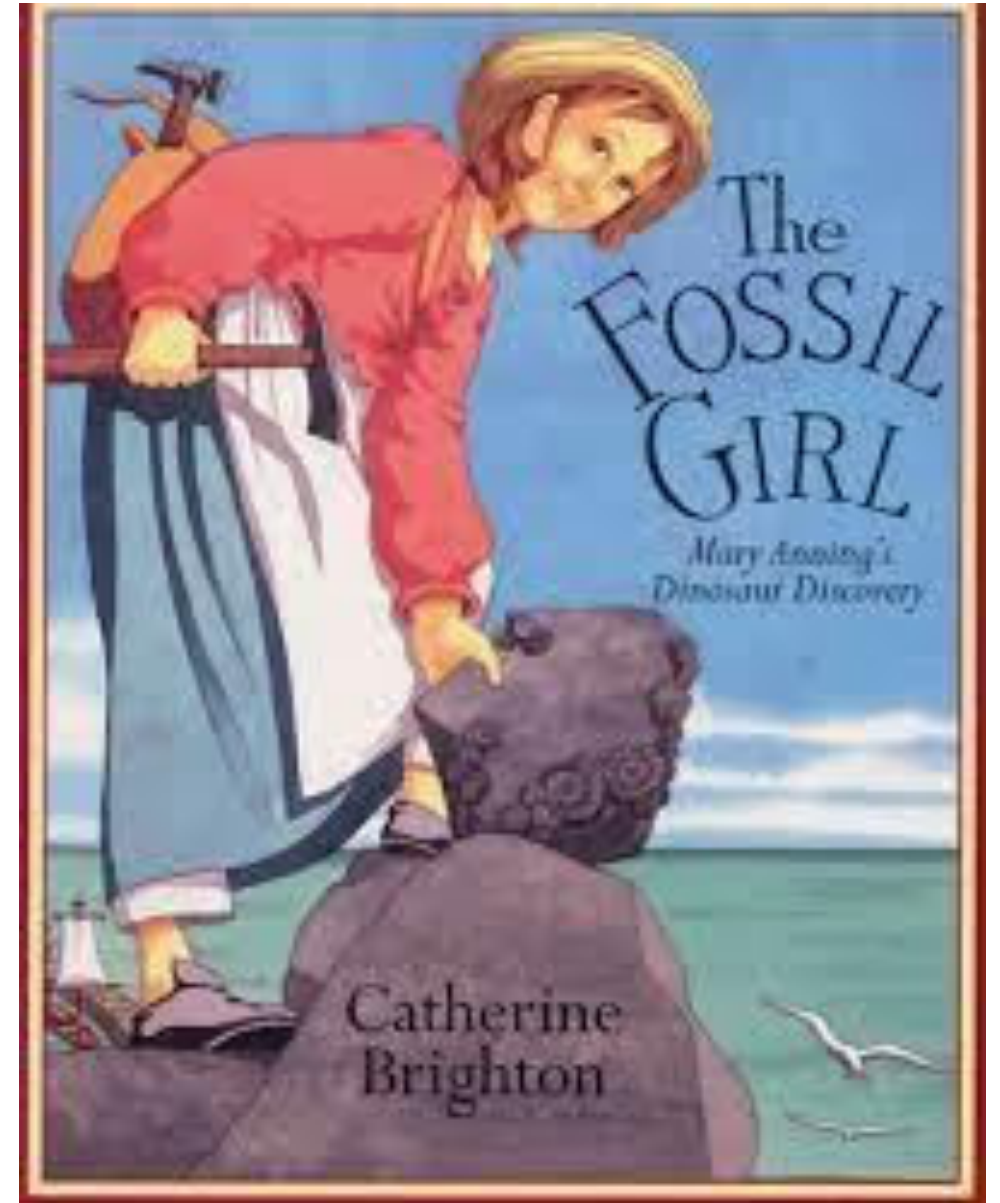
**TEACHERS AS LEADERS OF CHANGE**

# Traditional activities





# Women in Geosciences



# Activities to engage students with educational special needs

## Earth Learning Idea

- Identifying minerals - use your sense(s)!

Minerals in the dark: identifying minerals when the lights fail.

The screenshot shows a web browser window with the following content:

Earthlearningidea - <http://www.earthlearningidea.com/>

### Identifying minerals – use your sense(s)!

#### Minerals in the dark: identifying minerals when the lights fail

Explain to pupils that there is more than one way in which we can examine geological materials. We are going to try to identify several minerals, using senses other than sight, so most people will be blindfolded!

Use good examples of any minerals that you have available, so long as they pose no risk to pupils, e.g. by being toxic or by having long fibres. Prepare trays of minerals in groups, as shown in the diagram, and cover them up.

Seat a group of pupils around each covered tray and ask them to study a key to mineral identification, which you have prepared in advance. (An example is given for a particular suite of eleven minerals, with one duplicate to make twelve, shown in the photographs. These minerals have been divided into groups of three to be used by four groups of pupils). Explain any technical terms used in the key, using pictures of good minerals like these, so that everybody knows what to expect.

All the pupils except one in each group are then blindfolded. The sighted pupil (the reader) removes the cover from the tray and the blindfolded pupils take it in turns to pick up a mineral. The reader reads out the key in stages and the blindfolded pupil has to decide which answers to follow through the key, until s/he has identified the mineral. The other blindfolded pupils then tackle their own minerals in the same way.

When all groups have finished, cover the trays and move them on to the next group. Ask the pupils to swap jobs, and then to have a go at identifying the new set of minerals.

A tray of three minerals and a blindfold

Diagram for the rotation of the minerals (numbered circles) around four groups (squares). In each rotation, the group of minerals rotates. In this case, there are three different minerals in each group with one repeated mineral ("R").

# From traditional to digital: Virtual or online field trips

**Imperial geoscientists complete UK's first  
MSc virtual field trip** trip by [Murray MacKay](#) 11 May 2020



As part of the College's move to remote learning, thirty-five MSc Petroleum Geoscience students embarked on a simulated overseas trip to the Pyrenees.



# From traditional to digital: online models

**PhET**  
INTERACTIVE SIMULATIONS  
University of Colorado Boulder

SIMULATIONS TEACHING RESEARCH INITIATIVES DONATE 🔍 👤

## Simulations

Browse Filter

SUBJECT × **17 Results** Sort by: Newest

- Physics
  - Motion
  - Sound & Waves
  - Work, Energy & Power
  - Heat & Thermo
  - Quantum Phenomena
  - Light & Radiation
  - Electricity, Magnets & Circuits
- Chemistry
  - General Chemistry
  - Quantum Chemistry
- Math
  - Math Concepts
  - Math Applications
- Earth Science

Earth Science × HTML5 × HTML5 Prototype ×

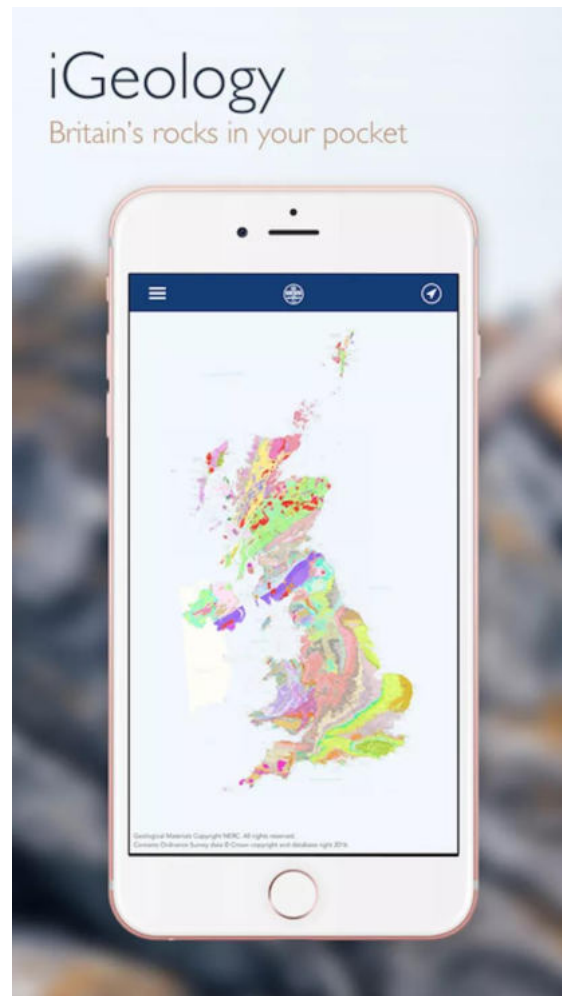
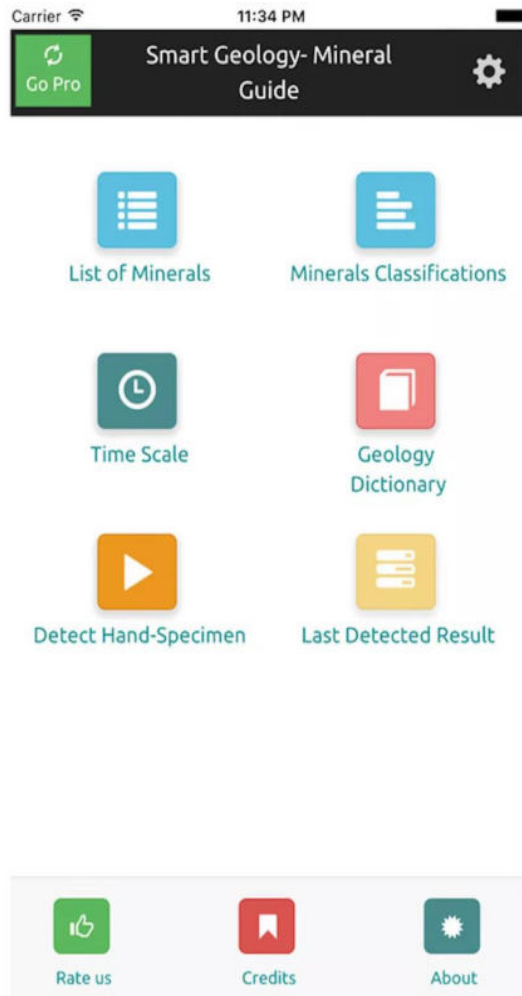
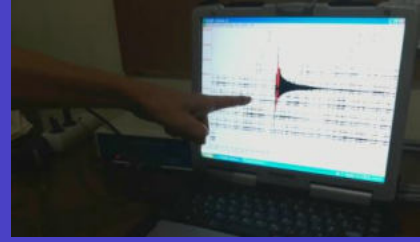
**Greenhouse Effect**

**My Solar System**

**Density**

**Gravity Force Lab: Basics**

# From traditional to digital: apps





# But we all know that ...



# Equitable Education for ALL



[Malala\\_2\(1\).mp4](#)



4 QUALITY  
EDUCATION



Clara Vasconcelos

Interdisciplinary Centre of Marine and Environmental Research (CIIMAR)  
Faculty of Sciences of the University of Porto (FCUP)  
Portugal

Thank you



GIFT 2023