

Problem Based Learning: Teaching engineers to tackle the SDGs



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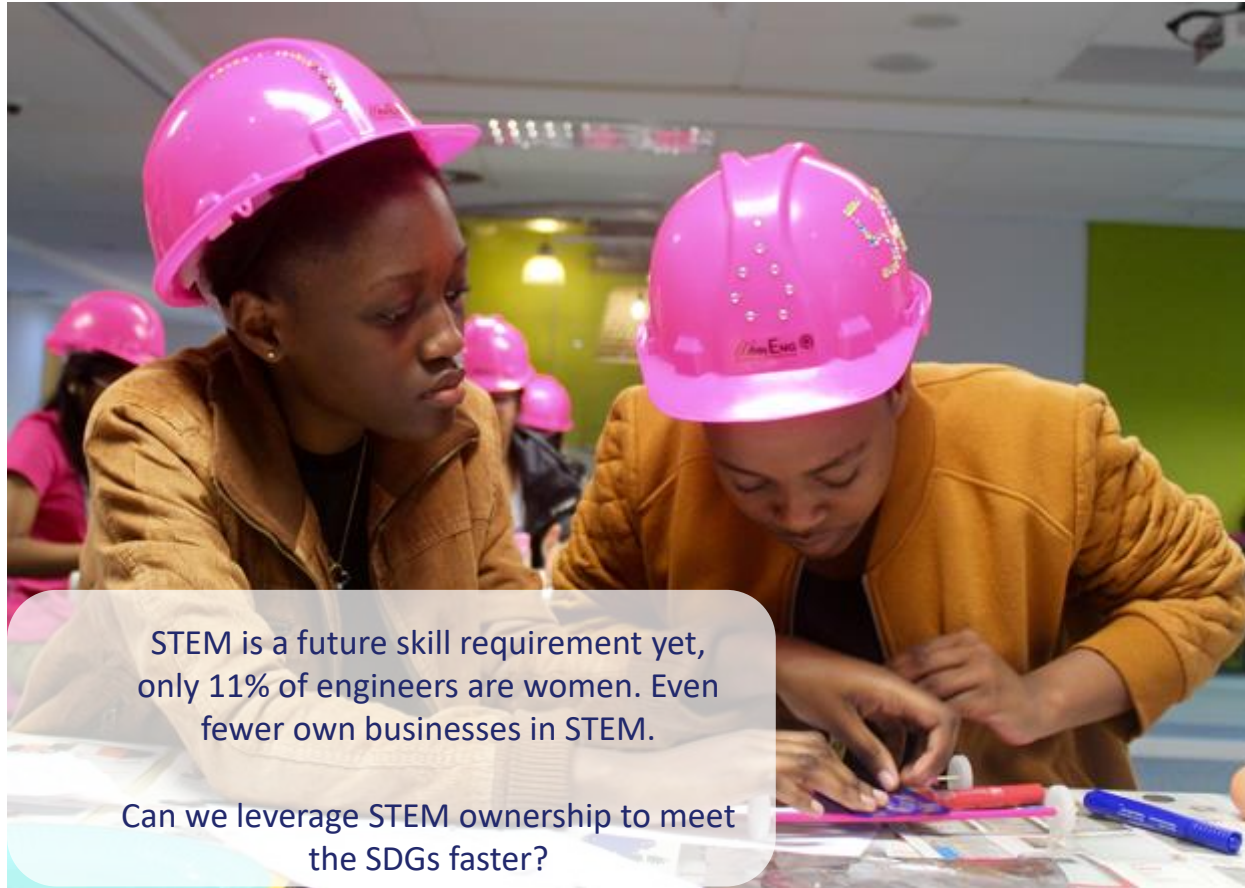


**From Participation to
Ownership to meet the
SDGs**

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EQUALITY



STEM Opportunity



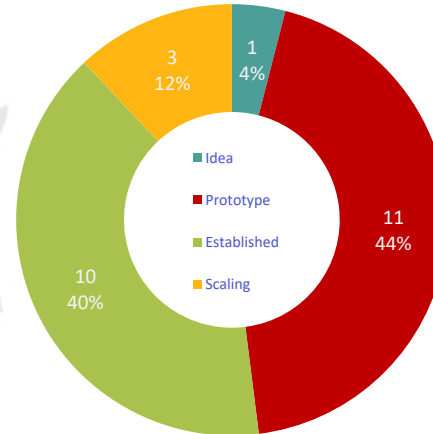
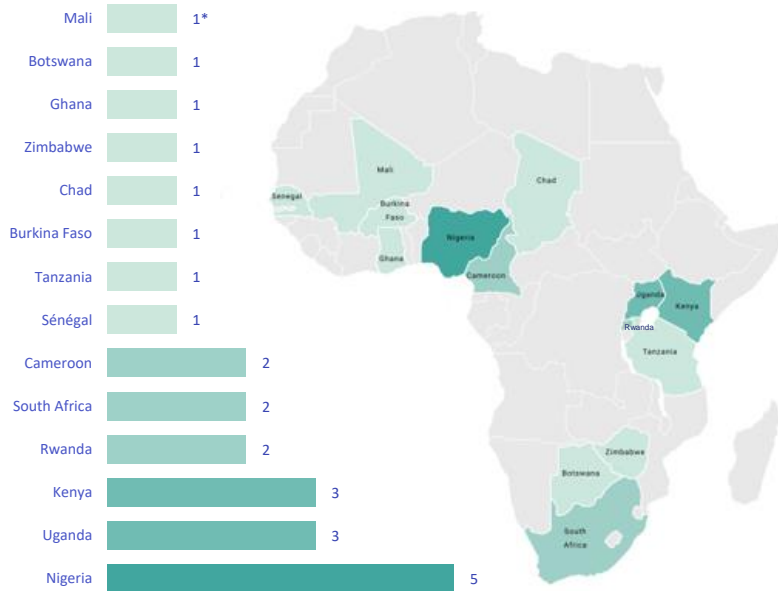
STEM is a future skill requirement yet, only 11% of engineers are women. Even fewer own businesses in STEM.

Can we leverage STEM ownership to meet the SDGs faster?

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Africa Innovation Fellowship 2019

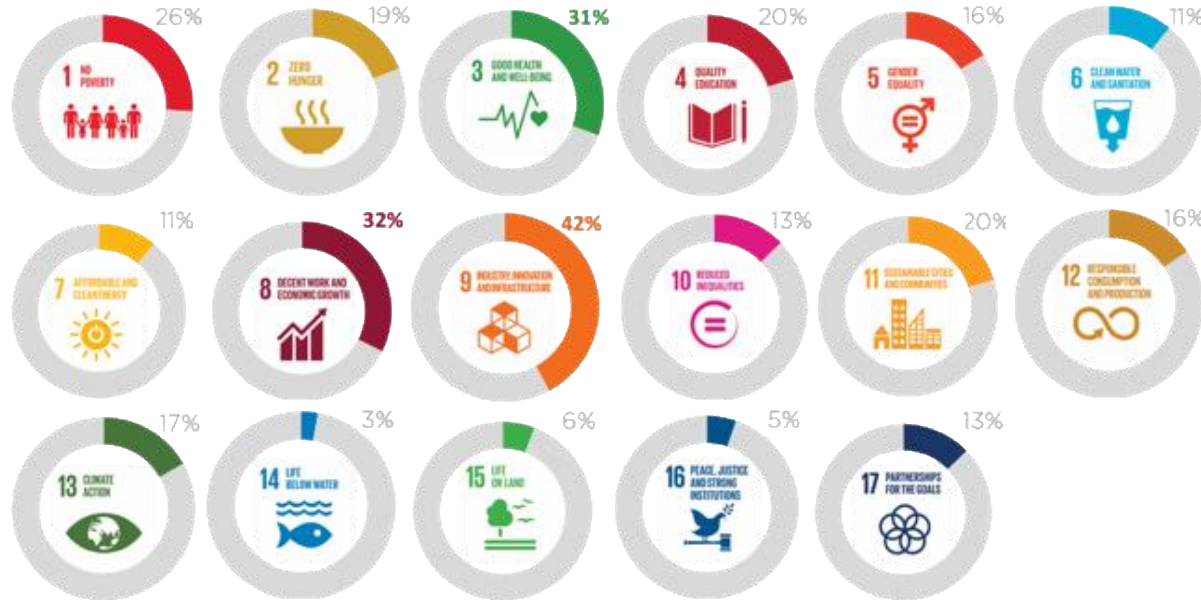


Demographic spread and business stage of the female founders selected for the Africa Innovation Fellowship.

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Tackling the SDGs



Demographic spread of female founders that applied to the Africa Innovation Fellowship.

The Sustainable Development Goals (SDGs) that SSA female founders are working towards.

Africa Innovation Fellowship 2019

Top 3 Business Challenges



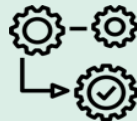
Funding

Access to funding, loans, knowledge on how to raise funding



Human Resource

Skills development for team (business and technical) + recruitment and retention (a result of funding)



Streamlining Production Processes And Costs

Reducing raw material costs, high upfront costs, improving payment systems with customers

Equipping Women to Own the Industry



People

- Team for programme execution/admin
- Mentors/facilitators
- VC Fund managers

Tools

Startups:

- Entrance criteria
- Progress/monthly evaluation (KPIs)
- Exit evaluation (KPIs)

Courses:

- Course content
- Facilitators guide

Environment

Working space & meeting rooms

Tech Gym

Gadgets, schedule, trainers, access to emerging technologies to tinker with and use for work.

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“

**To meet the SDGs we are going to
need more women engineers, and
the only thing better are women
entrepreneurs in STEM**

”

Naadiya Moosajee, WomEng Co-Founder

“ In several studies, when **children** were asked to draw a mathematician or scientist, **girls** were twice as likely to draw **men** as they were to draw **women**, while boys almost universally drew men, often in a lab coat. ”

Children's Gender Stereotypes About Math: The Role of Stereotype Stratification

Jennifer Steele



Who we are

- Not-for-profit organisation (trust) or Social Enterprise
- Primary Focus: Engineering education – the 'E' on STEM
- Also work in underrepresented communities



The objective of the Trust is to work towards the promotion of the study of science, technology, engineering, mathematics and related subjects among young women, girls and children and the empowerment and capacity strengthening of various groups and communities of young women, girls and children in Zimbabwe to enable them to achieve this stated goal.



What we do

Goals:

- 1) To teach engineering at early stages
- 2) To change girls' perceptions of STEM by emphasising that practice, rather than (innate) ability, improves performance.

Intelligence is improved through learning.



How we do it

- Physical computing (or just coding) workshops
- Products that encourage practice (eg. PEEK)



The Purple Early Engineering Kit

Features:

- Low-cost
- Compact for mobility – fits into your school bag
- **Comes with a 'simple language' manual**
- Many (different) difficulty levels using same kit

What does it do?

- Learn foundation principles of robotics
- Learn how to interact with the environment
- Help girls and boys discover their passion (or lack thereof) for STEM-based careers



What we are looking for

- Share experiences – especially from working in disadvantaged communities
- Knowledge transfer – sustainability models for organizations that do the kind of work that we do
- Collaboration – fitting into 'the bigger picture'
- Opportunities
 - NEF Africa Science Week
 - POTRAZ Smart City Hackathons
 - Other Grants

<http://purpletrust.org>

Thank you



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