



AIMS

African Institute for
Mathematical Sciences

NEXT EINSTEIN INITIATIVE

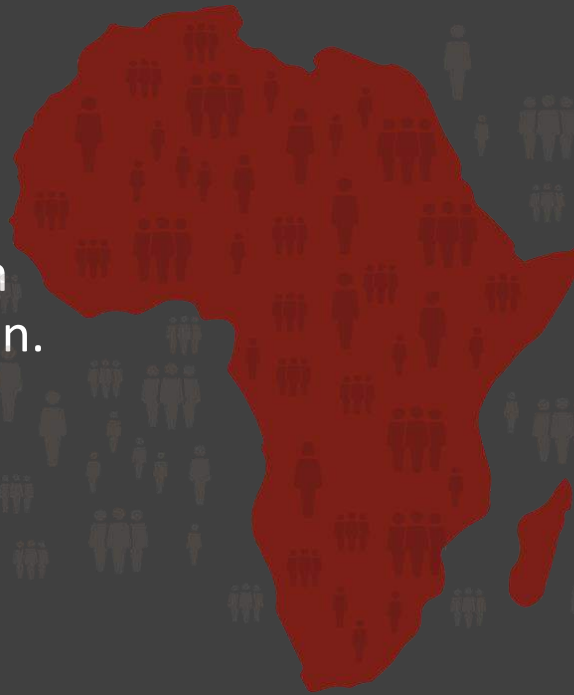
Global Best Practices Creating a pipeline for STEM @ AIMS

Prof. Aissa Wade
Penn State University & AIMS-Senegal

MS4SSA Conference: May 15-16, 2017,
Worcester Polytechnic Institute, USA

The Opportunity: Africa's untapped talent

By 2050
40% of youth
will be African.



11 million



The Challenge

Mathematical & Scientific skills - backbone of modern societies

- ① Less than 25% of African students go into STEM fields at tertiary level.**
- ② No African government spends more than 1% of GDP on research and development.**
- ③ Africa produces less than 1% of global research output.**
- ④ African governments are obliged to outsource STEM related services to expatriates.**

The AIMS Ecosystem

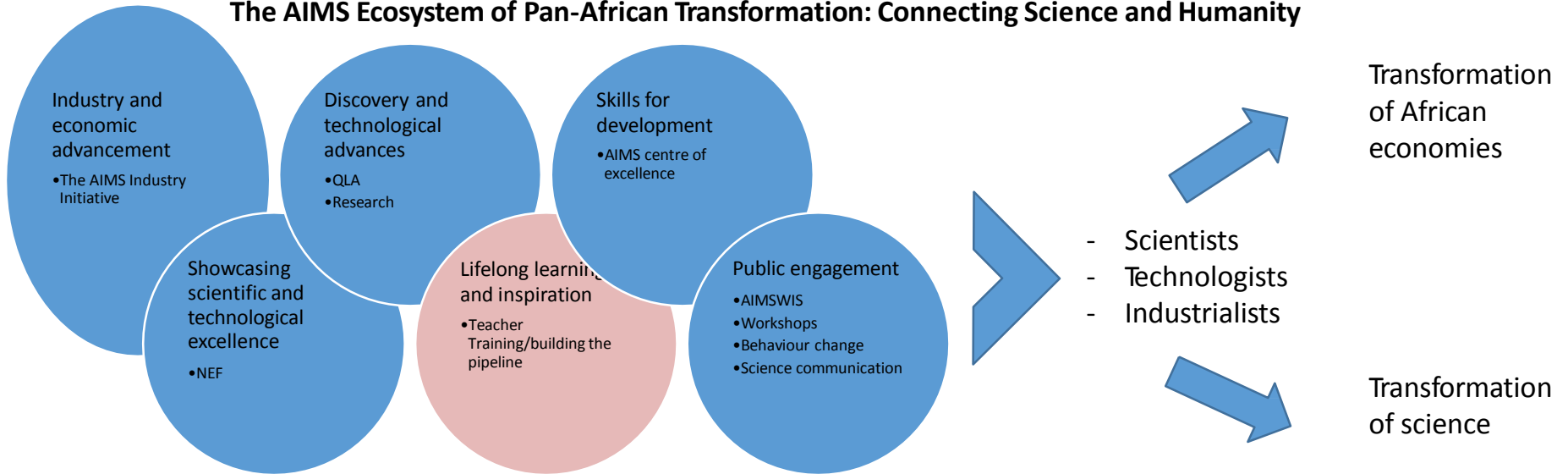


=
Continental and global asset!

HOW?

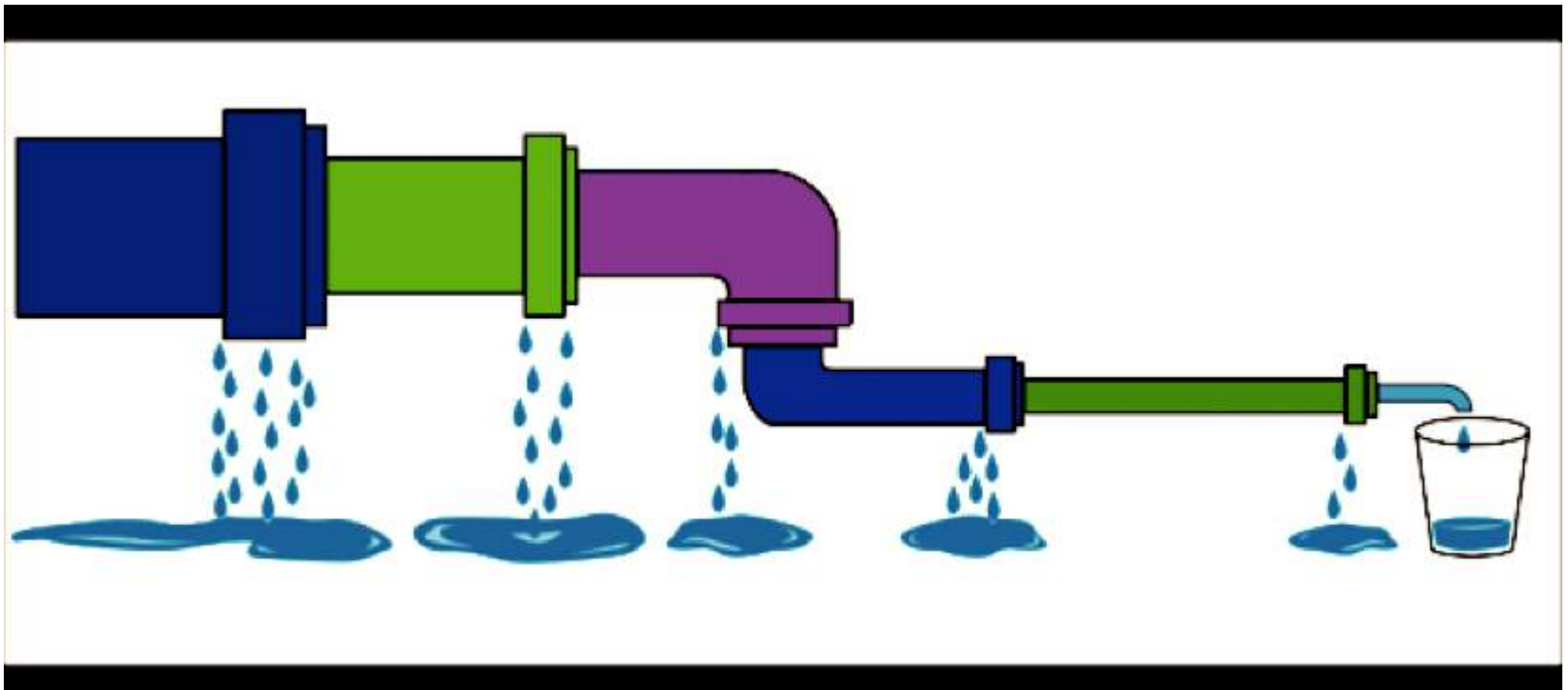


The AIMS Ecosystem of Pan-African Transformation: Connecting Science and Humanity

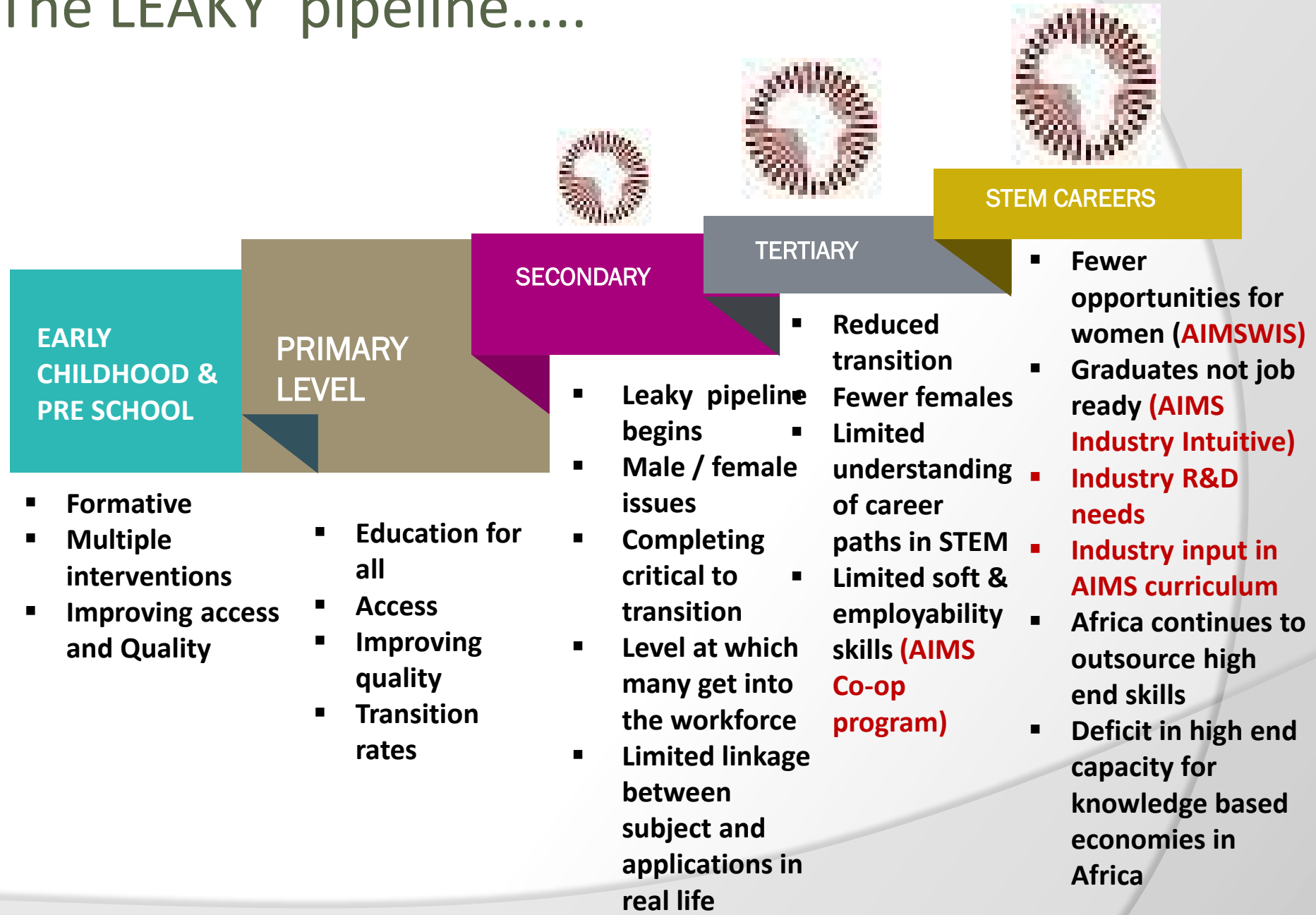


Africa's Youth: the world's greatest untapped pool of scientific and technical talent.

Why Teacher Training for AIMS?



The LEAKY pipeline.....



HOW AIMS is doing it...

AIMS Teacher Training Initiatives

Inspiring lifelong learning to tackle real world problems

AIMS-Schools Enrichment Centre (AIMS-SEC)- SOUTH AFRICA

- Teacher professional development program, in partnership with the SA government for teachers in rural and township communities
- More than 1500 teachers have completed the 3-month Mathematical Thinking course
- Over 200 teachers, subject advisers and field trainers graduated from the 2-year Advanced Certificate in Education (ACE)



Awarded UNESCO-Hamdan Bin Rashid Al-Maktoum Prize for Outstanding Practice and Performance in Enhancing the Effectiveness

Reaching Students Through Their Teachers

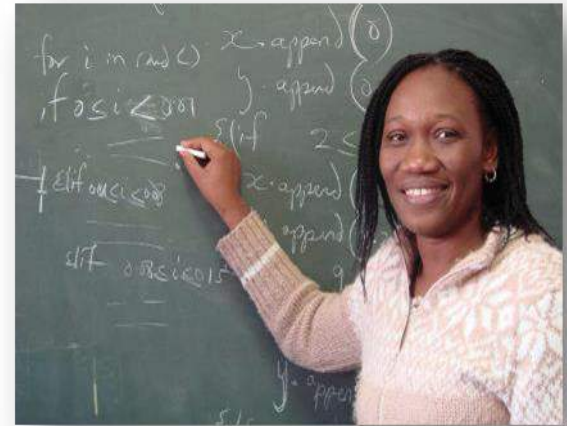


THE MASTERCARD FOUNDATION
Scholars Program

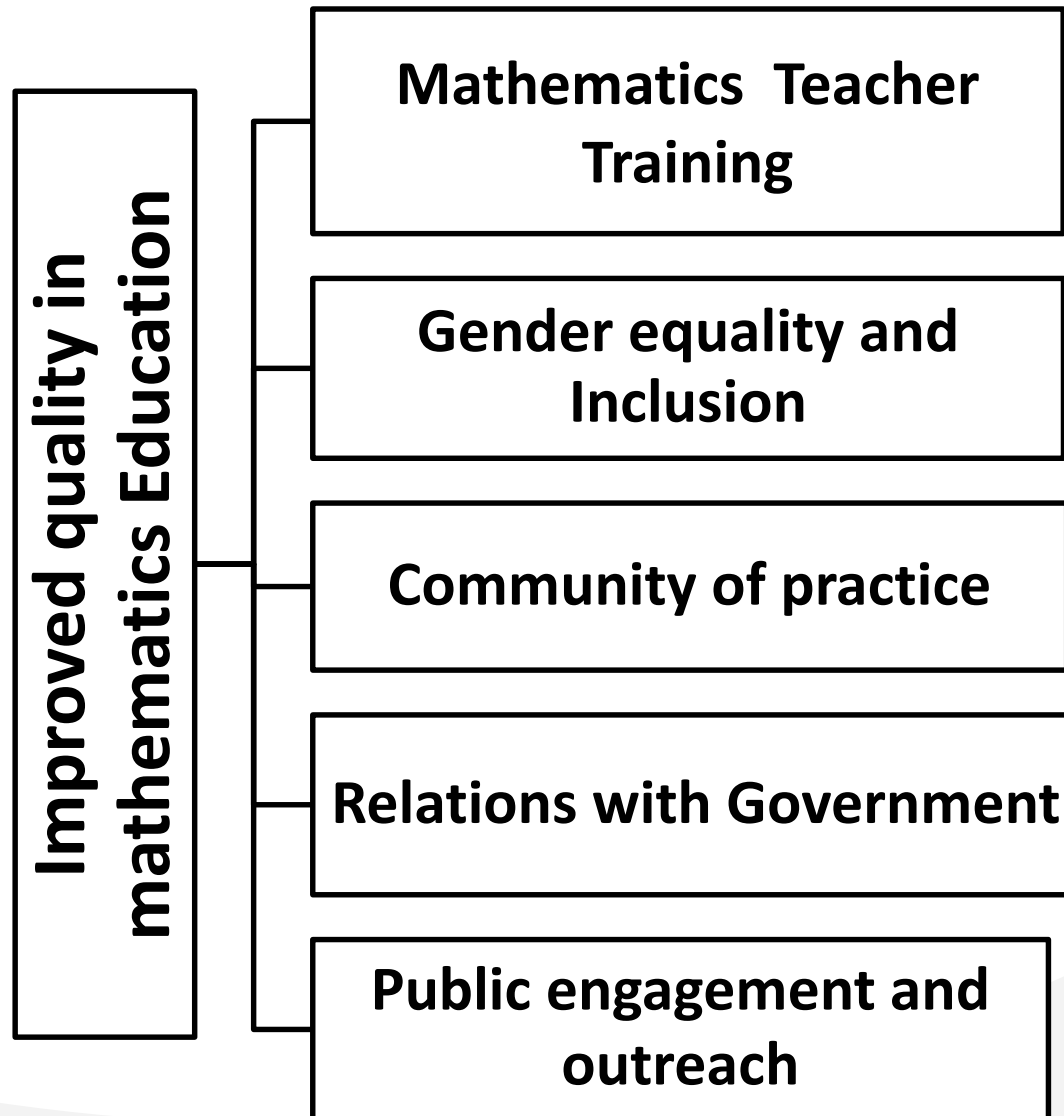


Additional Teacher Training Initiatives

1. The Teacher Training Program, AIMS Cameroon
2. The Teacher Training Learning Initiative, AIMS Rwanda
3. The Teacher Training Program, Ghana
4. The Teacher Training Program, Tanzania

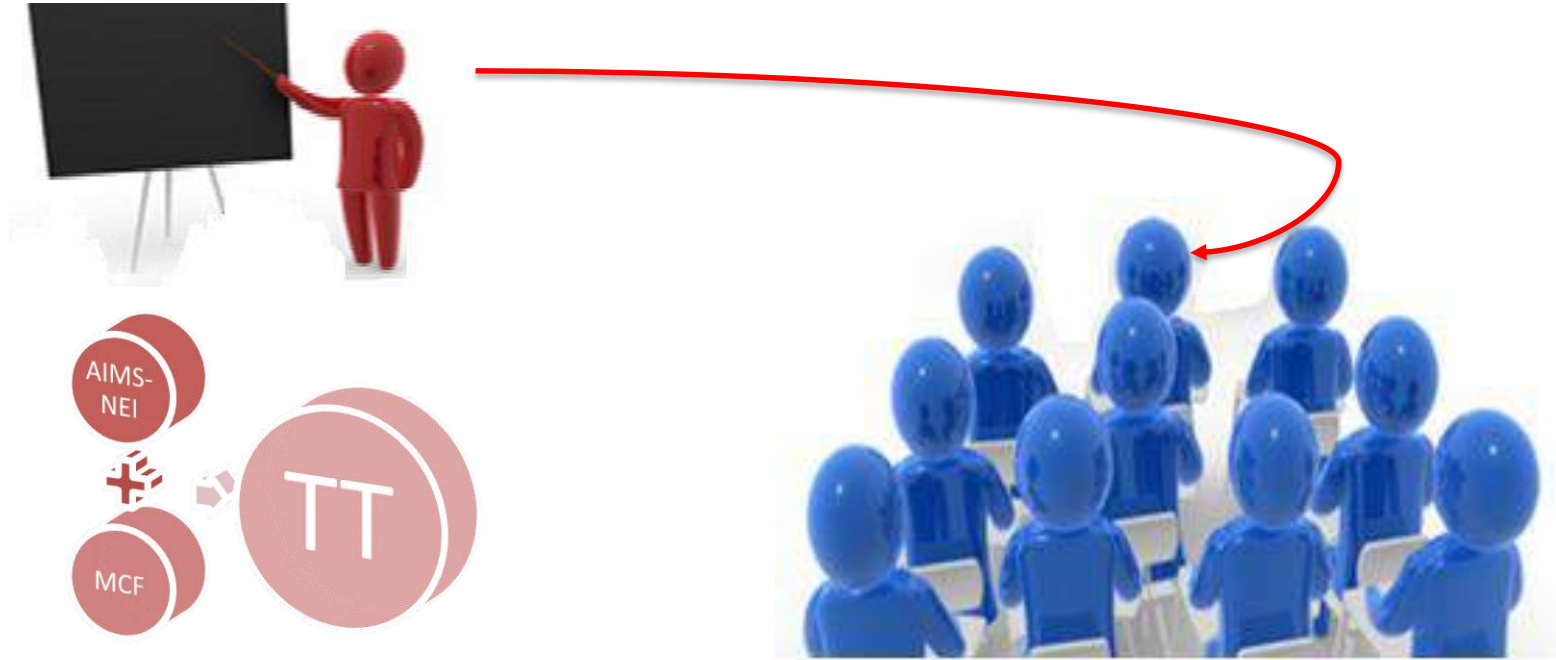


Overview of the AIMS Teacher Training Framework



A Results Based Teacher Training Framework

Touch the children through their teachers



To enrich the pipeline

AIMS Teacher Training Program – Features

- 1. Results Based**
- 2. Gender responsive pedagogy**
- 3. Institutionalized – Schools, Ministry of Education and affiliated agencies, local structures.**
- 4. Decentralized**
- 5. Blended learning**
- 6. Continuous Professional Development.**

AIMS Teacher Training Program – Lessons learned

- ① Capacity development should be matched with Behavior Change Communication for optimal results.
- ② Access to learning must be continuous (CPD, tools, peer learning, updated resources).
- ① Adaptation and adoption of non conventional solutions to meet context challenges (like of computers in some areas, non monetary incentives, mentorship).

Recommendations

- 1. Pilot MS4SSA in Rwanda based on AIMS experience and the GoR enabling environment.**
- 2. The initiative should be adaptable to both highly and low resource schools.**
- 3. Use of home grown, locally available, contextual related solutions where ICT infrastructure.**
- 4. Behavior Change Communication is crucial for successful teacher training.**
- 5. MS4SSA should augment the curriculum, not be a stand alone initiative.**

Q & A

Thank you!



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AIMS approach to Curriculum Design

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AIMS Methodology

1. TTIs augment and overlay the national curriculum.
2. Stakeholder consultation to have evidence based information on the gaps in the design, implementation and assessment of the curriculum.
3. Design, implementation and measurement is based on the relevance of learning outcomes.

1. Interactive subject pedagogy



AIMS Methodology

- 5. School based, peer facilitated: Plan - Teach - Reflect.**
- 6. Is based on school structures.**
- 7. Is broken down into an arsenal of practical resources that teachers can easily refer to in the delivery of lessons (teachers guide, teacher's resource guide etc).**
- 8. Community of practice resources to promote peer learning.**
- 9. Includes the creation of an enabling environment.**
- 10. A gender lens.**

Teaching teachers to engage the learners with practical resources



Engaging with a learner-centred activity



Video

Q & A

Thank you!

TEACHING & LEARNING

WHAT IS CHANGING?



	What it used to be	What AIMS is working on
How education is delivered	Uniform Learning (Mass Production)	Customized Learning – Personalization
Sources of Knowledge	Teacher as the Expert	Diverse Knowledge Sources
How learners are assessed	Standardized Assessment	Specialized Assessment
What empowers learners	Knowledge in the head	Reliance of outside sources
Curriculum objectives	Coverage	Knowledge explosion – learning how to LEARN.
How learners access knowledge	Learning by acquisition	Learning by doing
Education ideology	Just-in-case learning	Just-in-time learning



TECHNOLOGY IN MATHEMATICS Aspirations...



e-Learning

Learner-driven access to education content



Mobile Learning

Lean education content without the need for classrooms

AIMS seeks to partner with GESCI (<http://gesci.org/>)



Interactive Distance Learning

Tutor driven delivery of education content over long distances



e-Collaboration

Learning together by working together across distances

- Rwanda SMART Classrooms
- Cameroon Simulation labs
- South Africa