



International Institute for
Capacity Building in Africa (IICBA)

ICT and ODL for STEM teacher development in Africa

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Part 1: Theme and issue addressed by the presentation

- ❖ The world in which we live today is steeped in science and technology and governed by ever increasing discoveries, inventions and innovations. It is a world characterized by tremendous scientific and technological explorations.
- ❖ Africa's response to the development of scientific and technological capacities has traditionally been through the introduction of science curriculum and technical and vocational education curriculum in the national education system.



- ❖ Currently in Africa, most STEM jobs are performed by or outsourced to multinationals from developed countries. Africa will need a new generation of creators, makers, designers, math and science teachers, engineers and so on — all these jobs required a minimum of skills in STEM. Who is thinking of this now in Africa? Who is taking this seriously? (Jamme, 2015).
- ❖ UNESCO-IICBA believes that teachers of all levels (pre-school to university) play important roles since the teaching profession is the mother of all professions. Poorly prepared students will perform poorly in the world of work.
- ❖ This presentation, therefore, highlights UNESCO-IICBA contribution in assisting African countries in the development of relevant STEM programs and courses using ICTs through capacity building initiatives.



- ❖ The major issues addressed included, but are not limited to, teacher educators knowledge, attitude and skills in:
 - systematically developing technology enhanced interactive STEM lessons,
 - incorporating context-based (authentic) activities through the interaction of technology, pedagogy and content (TPACK),
 - developing online learning management systems using such tools as MOODLE for ODL programs, and
 - empowering women in STEM areas.



Part 2: How ICT brings added value to the issue/theme

- ❖ ICTs have brought tremendous potentials/opportunities to make STEM contents more visualize-able and understandable (SIMULATIONS) hence increasing the interest of many students, specially women towards the subjects.
- ❖ ICTs have the capacity to reach as many participants as possible at the same time, hence increasing access to quality teacher education programs for many unqualified and semi-qualified teachers.
- ❖ ICTs have the capacity to make a paradigm shift in our teaching methodology as it empowers learners to control their learning through the facilitation of the teachers. Such a shift increases the innovative capacity of learners.



Part 3: Main lessons learned

- ❖ Participants from Member States in Africa stressed the importance and timely nature of the capacity building exercise as it gives very clear guidelines in how the ICT can be beneficial for STEM programs
- ❖ It was learnt that STEM teacher educators in various countries and within a country are at various stages in their capacity to integrate ICTs in STEM lessons. It was therefore necessary to initially administer TPACK-based pre-tests to categorize the teacher educators into the four stages of UNESCO-IICBA's ICT-enhanced Teacher Development (ICTeTD) model. Such categorization helps to customize the capacity building program as per the stage (Emerging, Applying, Infusing and Transforming) of the participants.
- ❖ It was also learnt that the success of such capacity building interventions is highly based on the availability of power and Internet access in the target colleges.



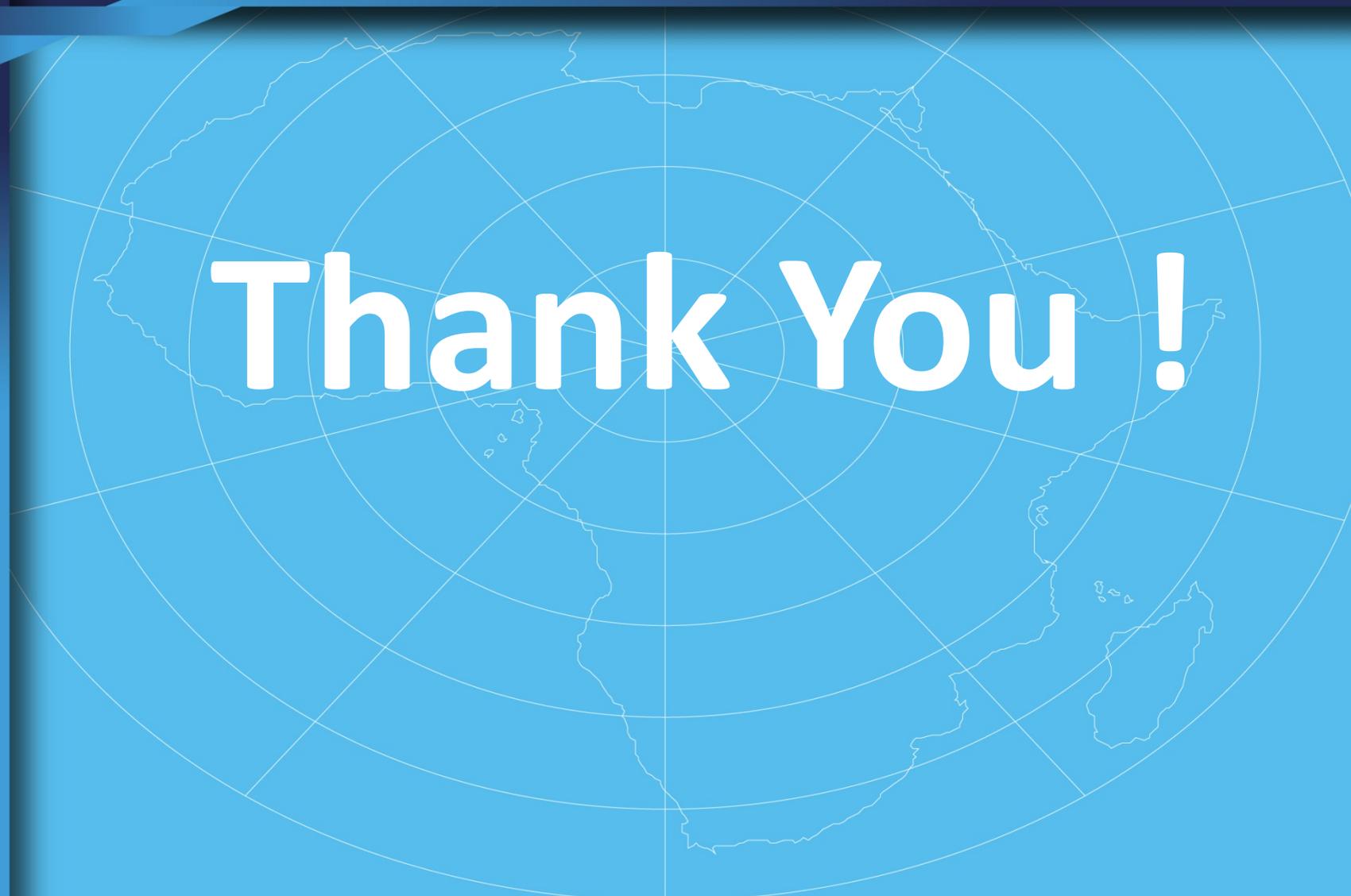
❖ Participants stressed that, if Member States are convinced, it would be more profitable to build the capacities of a critical mass of personnel at national level through some sort of self-benefiting funds-in-trust mechanism or through convincing bilateral development partners operating in each Member State to financially and technical support the capacity building exercises. Such approaches will ultimately bring the intended reform and innovation at ground level.



- ❖ As part of such initiative, IICBA tested its recent program in one teacher education college (for primary school teachers) and one faculty of education (for secondary school teachers) of Ethiopia through the use of the Chinese Fund in Trust (CFIT).
- ❖ This project was applied through the use of the Promethean Active Board (Smartboard) and the Video-Conferencing tools, both of which were installed for the institutions through the CFIT project.
- ❖ ODL for Master Teachers
- ❖ US Mission to UNESCO (Girls in STEAM)



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A large, light blue map of the African continent is centered on a globe. The globe's grid lines are visible, and the map is set against a darker blue background.

Thank You !