Partnership for eHealth-based Rehabilitation for children with sensory-motor disabilities by Modular ICT tiles (Moto tiles) in East Africa Member states

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Introduction

This is a partnership for implementation science that intends to

I. Promote the systematic uptake of research findings and other evidence based practices into routine practice

II. Maximize application of emerging technologies by in improving uptake, implementation and translation of research findings to improve health care and well being (SDG 3) of a vulnerable but significant group of individuals in developing countries
The targeted group: The Rural pre-schooler with sensory-motor disabilities

The surviving pre-school child born with low birth weight living within rural or semi-urban residence compounded with compromised access to:

I. early developmental interventions and specialised paediatric care for neurological/mental health and psychiatric care or rehabilitation programs

II. targeted educational interventions for the potential risks and disabilities she/he suffer from as a consequence of birth history

• Children whose special needs are identified and addressed during these crucial early years have a greater chance of reaching their full potential & increase diversity of skills as.....
Justification

• Developmental Challenges in educational systems in most developing countries and in particular EAC states, reports on the trends of dismal academic performance in primary schools within the last decade or less

• Characteristics of schools, explained as determinants of academic performance, while contributions to failure by learners' characteristics have not been widely explored (Tanzania)

• about 8 percent of the students in school are experiencing learning difficulties in the classroom BUT no concrete survey data is available

• Poor academic performance maybe associated with developmental disorders, learning disabilities including reading disabilities, that are easily diagnosed and intervened if, such services are available.
Application of ICT based modular interactive tiles (MOTO tiles)

• Gaming mode for physical rehabilitation is one of the innovative ways of ensuring those in need are motivated to engage and gaming mode can be selected and controlled by a tablet.

• The improved and renamed MOTO tiles have been applied as an alternative form of physical rehabilitation exercise for recovering stroke patients in Denmark, allowing the elderly to regain both cognitive and physical skills.

The tiles act like interactive LEGO bricks for physical interaction, and can be clicked together to form a path or surface on the floor. Each tile light up in blue, red, green, yellow or purple, encouraging interaction and physical play.
• Still suffering from sustained high socio-economic indices

1. **The MNCH Morbidity and Mortality Indices**

- Unattained MDGs after rigorous and focused strategic interventions and evaluation (National Evaluation Platform—a Collaborative Technical working group by National Bureau of Statistics, Ministry of Health Community Development, Gender, Elderly and Children

2. Poverty index

3. **Non-transformative education system** that has to change & prepare the future generation to have critical thinking skills and innovative minds to curb evolving developmental challenges.
Opportunities: Various Low Hanging fruits to Catch!!

• Emerging technologies from developed countries – seek mutual beneficial collaborations as we both need each other especially no with disappearing borders and evolving developmental challenges across the globe

• Save our meagre resources by applying the proven technologies, evidence based methods in interventions and programs for curbing some of our health challenges – no need to re-invent the wheel

• Mentoring and Coaching the upcoming professionals to the highest level they can go

• Application of implementation science in programs that we do not need to research on
The Partnership

Founded on the merit of mutual benefit and alignment of strategic objectives of affiliated institutions

1) Tanzania Commission for Science and Technology: Focal person-Dr Khadija Yahya-Malima (Epidemiologist & CRO-health) advocating the Principal role of COSTECH as the principal advisory organ of the Tanzanian Government on STI for sustainable development: Focus on application of emerging technologies to advance health & education and wellbeing (SDG3)

2) The Technical University of Denmark (DTU): Focal person Prof Henrik Hautop-the Inventor in DTU, a Computer Systems Engineer: Advocating for the DTU’s priori in fostering International collaboration is an integrated part of DTUs activities and a prerequisite for DTUs status as an international elite university.

Breaking news: DTU and Prof Lund have WON "Oscars of the eldercare industry", The gala is taking place in Singapore TODAY 16th May 2018
The implementing partners

1. Muhimbili University of Health and Allied Sciences (MUHAS): Dr Edward Kija: A junior Paediatric neurologist: Provides special consultation on the diagnoses of conditions associated with sensory-motor disorders
   1. Department of Psychiatry: Related treatment and rehabilitation interventions as appropriate

2. Dar es Salaam University College of Education (DUCE): Dr Jovit Katabaro: An Education specialist to provide oversight on specific developmental educational programs

3. Dar es Salaam Institute of Technology (DIT): A leading Technical Educational institution promoting ICT based technologies in addressing societal needs
Methodology

• Implementation research: applies the best available evidence by rigorous research methodologies (what is known to work) to improve cognitive and functional capabilities of preschool children with sensory-motor disabilities to enable them to reach their full potential in learning and social functioning

• Application of interventions that work at high level of population coverage and optimize education practice & health practice through the research
Mixed methodology design

1. **Formative qualitative study** to explore community perspectives of sensory-motor disabilities and associated learning disabilities, explore risk determinants and local explanations to the causes and coping abilities and available services to promote health and wellbeing.

2. **Population based pre-schoolers survey** to identify and characterize children with history of low birth weight; estimate prevalence of characterize and diagnose related disabilities due to sensory-motor disorders.

3. **Program development**: Developing and testing practical solutions to these problems that are specific to particular community, Health and education systems and environments or that address a problem common to a region.

4. **Identifying usability of evidence-based interventions**, tools (other proven technologies/programs including Moto tiles co-adaptation, co-design to suit cognitive/motor stimulation of pre-schoolers;

5. **Develop Community based support and rehabilitative programs** of the co-designed MOTO tiles by using RCT for effectiveness and efficiency of interventions to achieve functional and supportive education program for the various identified disabilities.

6. Determining the best way to introduce practical solutions into health and education systems and facilitating their full-scale implementation, evaluation and modification.
Pilot study at Muhimbili National Hospital: Note The change of colour on the tile when the appropriate pressure is applied due to motor improvement
Thank you for your attention!

Partnerships.....karibuni
- Mutual benefits
- Systematic
- Multidisciplinary
- Principles of digital development
- Contextual
- Complex

Applause for the courage shown by the children who were initially petrified of the tiles: