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ICT4D: Supporting Integration of Refugees through design thinking, technology and the bottom-up elaboration of academic programmes

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Higher education through innovation and co-creation

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Background

Digital divide, COVID-19 and ICT4D in Kakuma refugee camp

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Digital divide, COVID-19 and ICT4D in Kakuma refugee camp

- ▶ InZone: Higher education in refugee contexts
- ▶ Blended learning approaches: Challenges
 - Digital marginalization/exclusion
 - Lack of technology skills
 - Few contextualized remote learning opportunities
- ▶ Covid-19: Reinforcement of inequal access to basic services
- ▶ Learning crisis imminent
- ▶ Crucial
 - Acquisition of technology skills
 - Access to remote learning opportunities
 - Encouragement of refugees to elaborate sustainable solutions to pressing challenges





Motivation

Technology, experiential learning and human-centered problem solving

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Technology, experiential learning and human-centered problem solving

► Investigate and evaluate...



Open-learning spaces and the access to digital and human-centered problem-solving skills



Success of educational activities based on socio-constructivism and experiential learning theories



Practical educational activities for the bottom-up creation of new academic programmes



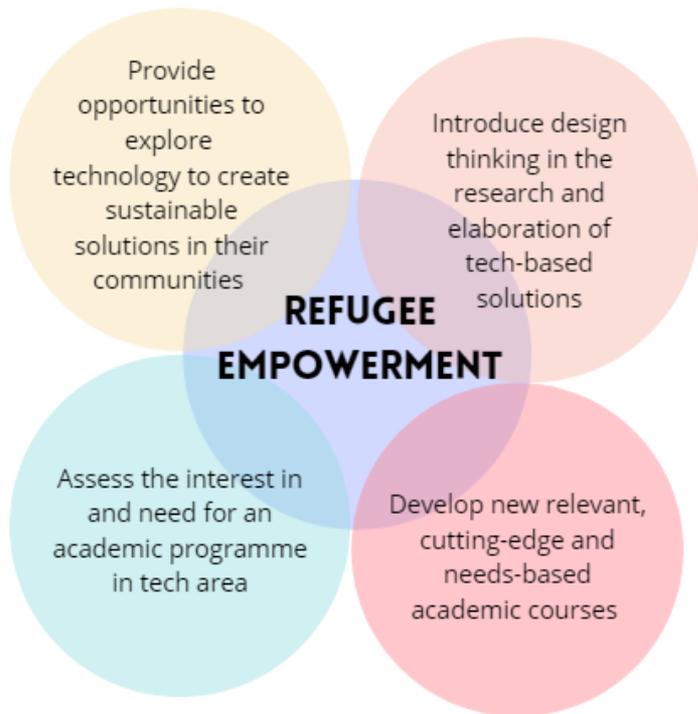


Objectives

Empowerment, tech-based solutions, academic course design

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Empowerment, tech-based solutions, academic course design



Target:
100 aspiring students in
Kakuma refugee
camp and
Kalobeyei
settlement



Theoretical approach and methodology

Socio-constructivism, experiential learning and the Uvumbuzi Tech Challenge

Theoretical approach and methodology

Socio-constructivism, experiential learning and the Uvumbuzi Tech Challenge

- ▶ Applied research: Experience informing theory
- ▶ Learning through examinations, feedback loops, evaluations, needs assessments
- ▶ Socio-constructivist theoretical base:
 - David Kolb, experiential learning theory
 - Lev Vygotsky's sociocultural theory
- ▶ The Uvumbuzi Tech Challenge (February – August 2021)

Theoretical approach and methodology

Socio-constructivism, experiential learning and the Uvumbuzi Tech Challenge

THE UVUMBUZI TECH CHALLENGE



Defined project areas:

Water, Waste, Agrotech, Cooking, Power, Teenage pregnancies, menstrual health



7 teams à ca. 7 people

- Kakuma and Kalobeyei students
- Students from KU and IEEE, Nairobi



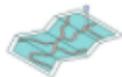
Mentors, design

thinkers and technical experts from renowned academic institutions and NGOs



Remote collaboration and coordination

- Google Drive
- Zoom
- WhatsApp



- **Coordinators** in Kakuma, Kalobeyei and Geneva

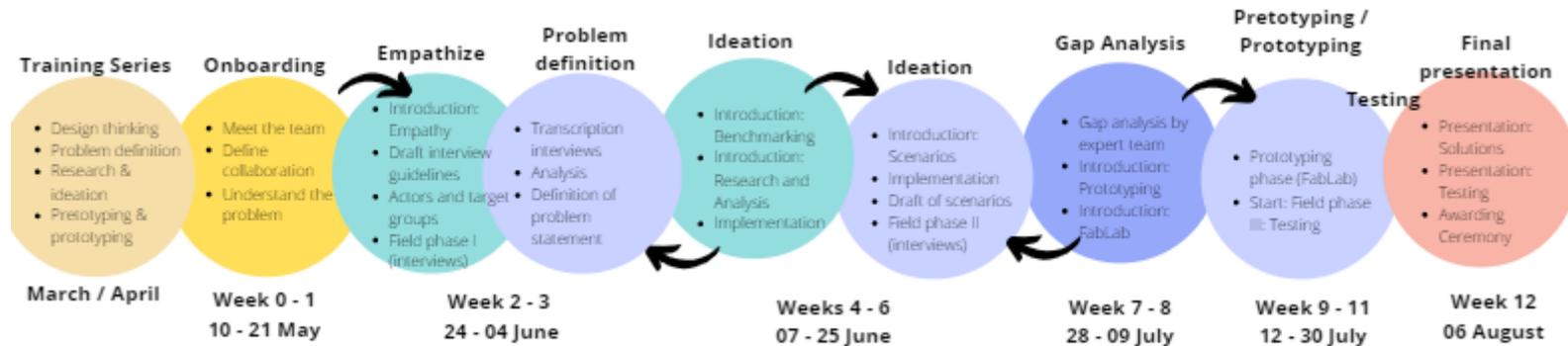


- **A FabLab**, newly installed in Kakuma refugee camp

Theoretical approach and methodology

Socio-constructivism, experiential learning and the Uvumbuzi Tech Challenge

12 weeks of instruction, exercises, weekly feedback sessions, iterations, research projects, field interviews, assessments



Theoretical approach and methodology

Socio-constructivism, experiential learning and the Uvumbuzi Tech Challenge

- ▶ 7 teams (Water, waste, teenage pregnancies, menstrual health, cooking, agrotechnology, power/electricity)
- ▶ Participants from engineering students of KU/IEEE and refugees living in Kakuma/Kalobeyei
- ▶ Prototypes elaborated



Solar-powered stove/oven



System for monitoring batteries' performance



Parts of a drip irrigation system (agrotechnology)



Water filter system



Mobile app: Education about teenage pregnancies



Mobile app: Education about menstrual health



Mobile app: Education about waste management



Major results and significance

7 tech-supported solutions and needs assessment

Major results and significance

7 tech-supported solutions and needs assessment

- ▶ 132 people living in Kakuma refugee camp and Kalobeyei settlement trained on the design thinking methodology
- ▶ 107 applications to participate in the tech challenge
- ▶ Accepted applications / participants to the tech challenge:
 - 33 from Kakuma/Kalobeyei
 - 15 from KU/IEEE

Major results and significance

7 tech-supported solutions and needs assessment

- ▶ Added value from the participants' perspectives:
 - Skills in academic research and analysis
 - Exposure to the design thinking methodology
 - Project development skills
 - New collaboration tools (WhatsApp, Zoom, Google Suite)
 - Specialized knowledge in technical areas
 - Intercultural communication
 - Teamwork
 - Interest and motivation for further education in technology-related areas

Major results and significance

7 tech-supported solutions and needs assessment

- ▶ Some challenges encountered and lessons learnt...
 - Lack of previous knowledge – need to catch up
 - Cultural specificities: need for contextualized learning
 - Electricity, internet, mobile data: Need underestimated
 - Previous technological skills and training
 - Remote collaboration
 - Ensuring ownership of the prototypes
 - Learning in a refugee context



Conclusion and next steps

Empowerment and academic course creation

Conclusion and next steps

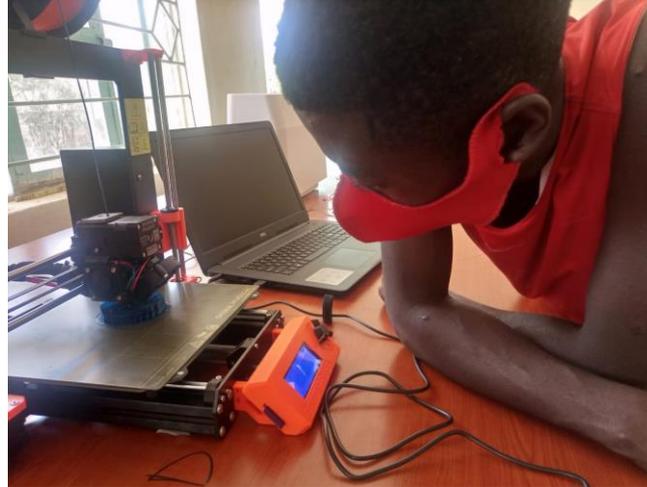
Empowerment and academic course creation

- Blended training delivery - best practices?
- Is the didactical approach suitable to the context(s)?
- Legitimization: Conducting an academic project in non-traditional ways
- Pedagogical theories backing up the above combination
- Impact measurement and educational value of practice-theory approaches?
- Giving more space to experiential learning may take time...and acceptance

Conclusion and next steps

Empowerment and academic course creation

- Continuous empowerment of participants from Kakuma and Kalobeyei → encouragement to continue developing solutions
- Leverage of new partnerships and networks
- Visits from interested institutions
- Elaboration of an academic course in ICT4D in collaboration with Kenyatta University and EPFL



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IEEE Kenya
Kenyatta University
University of Geneva, GTI*

