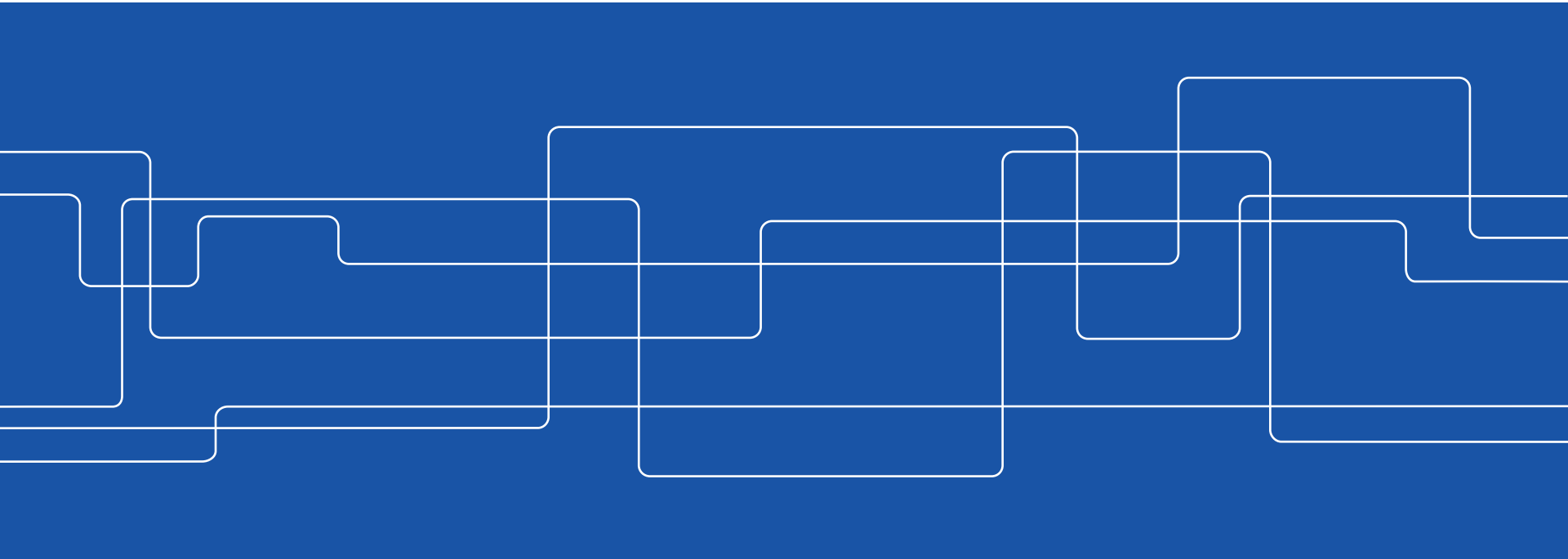




Challenge-driven education as a means to build mutual innovation capacity addressing sustainable development in Africa and Sweden.

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Background

The grand challenges of our time, as expressed by the Sustainable Development Goals in the UN 2030 Agenda, are shared by all countries.

In light of these goals we are all developing countries...And the universities have a key role in creating the capacities needed.



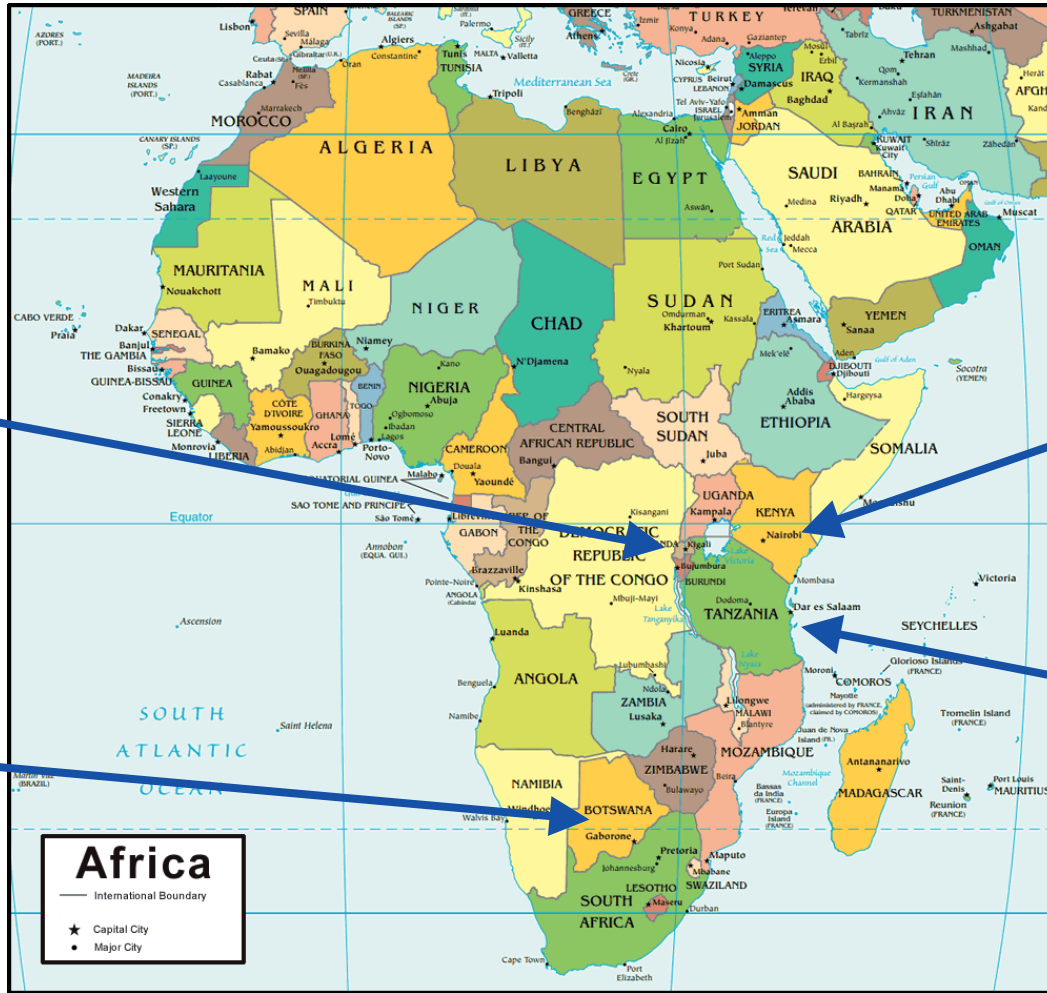


KTH Global Development Hub (GDH)

- ❑ A *scalable platform* for students, faculty and external stakeholders to engage in global development engineering through cross-culturally and cross-disciplinary collaboration.
- ❑ Challenge Driven Education that *integrates challenges* related to the Sustainable Development Goals (SDG's) into the regular curricula at KTH and at African partner universities.
- ❑ Facilitates and sponsors student exchange between KTH and African partner universities for *mutual learning*
- ❑ Provides *teacher training* at KTH and at African partner universities.



Current GDH partner universities



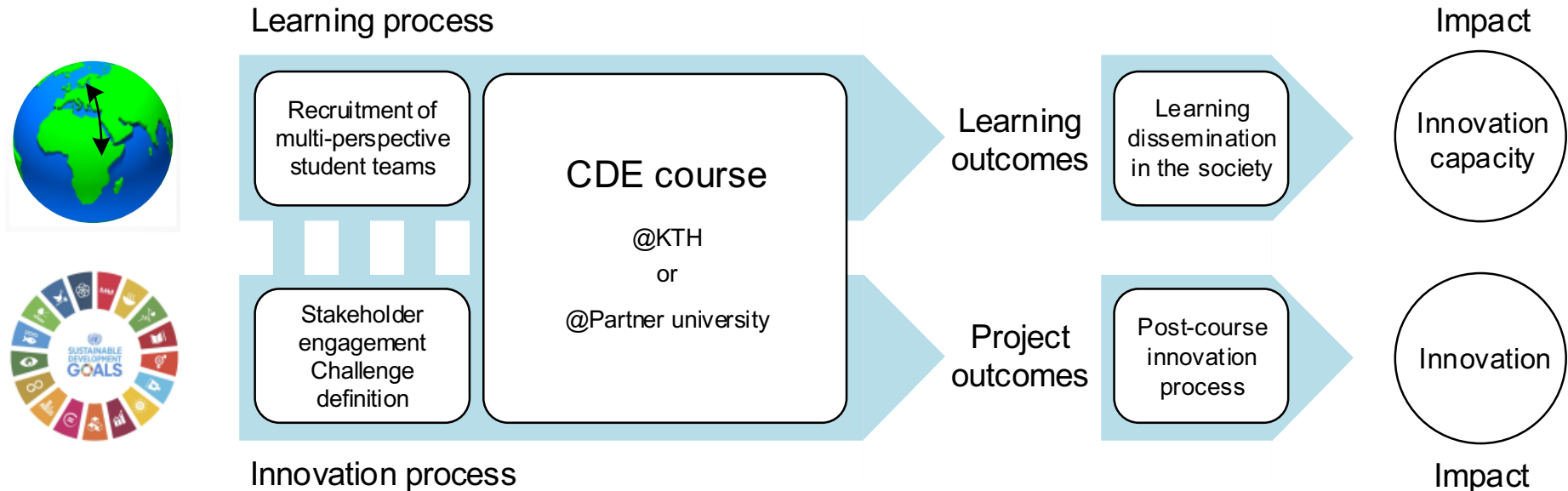
Strathmore
UNIVERSITY



UNIVERSITY
OF
DAR ES SALAAM



CDE^{GDH} : Challenge-Driven Education as promoted by KTH Global Development Hub



- The learning outcomes are key for the universities
- Design methods and tools
- Developing ways of working that explicitly links the SDG's to local challenges and projects goals



GDH student collaborations

At KTH in Sweden

2017: 5 students from Botho, Strathmore and USDM

OpenLab master course

2018: 9 students from Botho, Strathmore and USDM

OpenLab master course

AG2129 Sustainable Urban Planning

2019: 9 + 9 students from Botho, Strathmore and USDM

OpenLab master course

AG2129 Sustainable Urban Planning

MF2088 Innovation and Product Development

At African universities

2018: 7 KTH students doing their BSc thesis at Strathmore university in different projects on IT & transport, IT & energy, IT & agriculture.

2019: 4 KTH students doing their BSc thesis at Strathmore and university in different projects on IT & transport, IT & energy, IT & agriculture.

6 KTH students doing their BSc thesis at UDSM in a large project about water and sanitation





Examples of external stakeholders in the collaboration projects

Stockholm City

Stockholm County Council

Municipalities

DAWASCO (Dar Es Salaam water and sanitation authority)

Kenya Green University Network, Kenya Climate Innovation Center.

University Cafeteria Staff

Farmers, Wholesalers and Suppliers

Scania, Nairobi



Examples of challenges addressed in the collaboration projects

- Smart and connected traffic management in the Traffic Department
- Find ways to improve food security in the Sachsska County
- Improve access to food through digitalization
- Developing a digital market solution in the rural Baringo County
- Developing a digital market solution in the rural Baringo County
- Safety Perception and its relation to the



DEGREE PROJECT IN TECHNOLOGY,
FIRST CYCLE, 15 CREDITS
STOCKHOLM, SWEDEN 2018

Increasing Market Reach Using Crowdsourcing Technology

Guidelines for a Collaborative IT Market Solution in Rural Africa

Hannes Rabo and David Jacobsson

KTH ROYAL INSTITUTE OF TECHNOLOGY
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

managed by the

experience at the

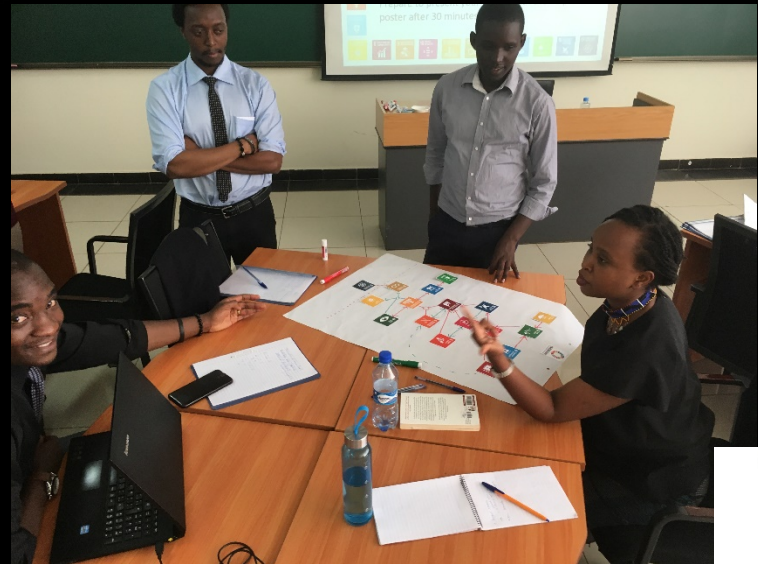
food security) to

access to villagers
Kenya.

Maninge Municipality

perceive safety in

Teacher training





LH233V Teaching and learning for challenge driven education

A new teacher training course developed at KTH

Themes:

- Challenge driven education for sustainable development
- Design methods and creativity
- Designing challenge-driven project courses
- Stakeholder engagement, challenge definition, innovation & impact planning
- Facilitation and collaboration for learning in project teams

Some themes prototyped together with around 40 teachers at Botho, Strathmore and University of Rwanda during 2018 and 2019.

Full course performed at KTH spring 2019 (13 teachers).



Examples of CDE courses developed by participants in the teacher training course

- ❑ Sustainable Urban Development
- ❑ Challenge Driven Innovation for Sustainable Development
- ❑ Ergonomics in Challenge Driven Product Development
- ❑ Challenge-Driven course in Computer Science and Industrial Management
- ❑ RE-Pair: Strategies for Care, Maintenance, Waste Management and Circular Economy in Architectural Design

The challenges addressed in the courses are more or less open-ended and complex



Challenges in open-ended and complex student projects

- Goal confusion in the team: "Where are we going?" "What are we going to solve?"
- To make students taking the responsibility/ownership over their project
- Personal conflicts in the team due to difference in values, mental models etc.
- To get students accepting that making mistakes and using iterations and experimentation are good approaches because learning is the goal
- Managing dissatisfied stakeholders
- Post-course dissemination – long term impact

Pedagogical research ongoing to build knowledge on the learning process and outcomes. Recently started to investigate relevant research questions related to the innovation process. We are open to collaboration!



More information...

...about GDH:

<https://www.kth.se/en/om/internationellt/projekt/globaldevelopmenthub/>

...about Challenge Driven Education:

<https://www.kth.se/social/course/LH233V/>

<https://www.kth.se/student/kurser/kurs/LH233V?l=en>

Follow us at LinkedIn and Twitter:

<https://www.linkedin.com/school/globaldevelopmenthub/>

#gdh



GDH challenge driven education concept

