

Problem Solving Approach:

During the second year of the ISP, each Innovation Scholar continued to address a challenge in their community by using a design thinking and collaborative approach to problem solving. Scholars were supported with tailored training, coaching, and reflective assessment.



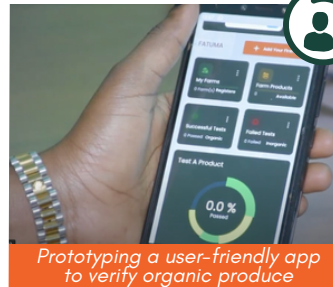
ISP Theory of Change:

Community Participation, Local Innovations, Institutional Learning, Systems Change

Scholar Perspectives:

“The ISP has taught me how to innovate with my end users. The solutions I make are not for them, but from them. Moving through the phases of design thinking makes sure that my innovation rhymes with what the community needs.”

“When you innovate in your office, you’ll just be innovating for yourself. If you innovate with an end-user, you will create something meaningful that they will use.”



SCOPE OF IMPACT

Innovation Networks:

360+
INDIVIDUALS, ORGANIZATIONS, AND CENTERS across the country

Diverse Design Teams:

45+
TEAM MEMBERS faculty and students across disciplines, professionals across sectors

SCHOLAR DEMOGRAPHICS:

12 SCHOLARS
4 TOP MANAGEMENT
8 FACULTY

6 DEPARTMENTS
56% WOMEN SCHOLARS

EDUCATIONAL APPROACH:

10 SCHOLAR COACHES
6 ACTIVE WORKSHOPS
40+ PARTICIPANTS per workshop

2 COUNTRY EXCURSIONS
1 VIRTUAL PLATFORM for design process tracking

INNOVATIONS DEVELOPED IN TESTING PHASE:

- ICT for Organic Food Chains
- Food Processing for Local Markets
- Distance-Learning Platform
- Industry-Informed Curriculum
- Seed Quality Protocol
- Problem-Centered Teaching Pedagogy
- Institutional Innovation System
- Student Engagement Strategy
- Industry Network for Student Internships

INNOVATION BEYOND THE ISP

2 NEW GRANTS AWARDED post-project to ISP scholars

2 MOUs CREATED between Makerere and other African universities

4 INNOVATIONS ADOPTED by the university and currently being tested within the College

Innovation in Higher Education: Creating the Enabling Environment

Research Question: How might we equip students and faculty in the **College of Agricultural and Environmental Sciences (CAES)** to drive innovation...

Research Innovator:
Gorette **Nabanoga**,
Principal of the College of
Agricultural and
Environmental Sciences

Research Innovation Team:
Achileo **Kaaya**,
Denis **Mpairwe**,
Justine **Namaalwa**,
Grace **Nakabonge**



...in teaching?



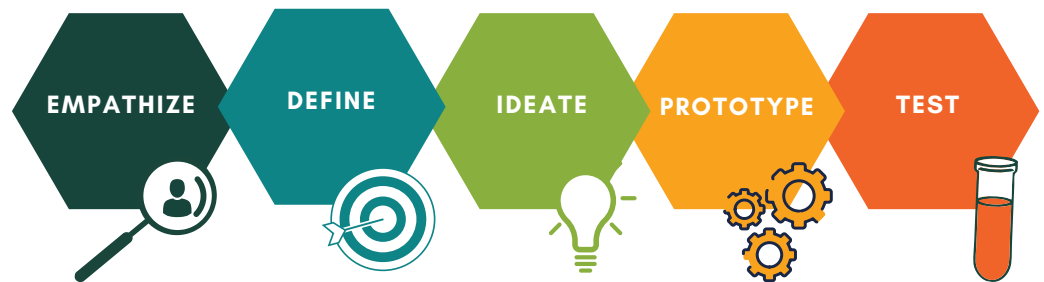

...in research?



...beyond the classroom?

Exploring the Innovation Process

The ISP Innovation Process applies a systems approach to innovation, designing with and for the people most closely impacted by the problem.

Understanding the System Context

Universities are key to building the next generation of innovators and leaders yet outdated curriculums and training tools are limiting the mindset and skillset shifts needed to tackle today's complex challenges. Principal Nabanoga was new to her position and knew that before asking others to "think differently," she had to model it herself. She brought forth a team of Departmental Heads and younger faculty to undergo the process of curriculum redesign collaboratively.

EMPATHIZING: Engage the End User

Principal Nabanoga engaged students, faculty and industry when discussing how CAES might change the innovation culture and prepare students for a changing job market.

DEFINING + IDEATION: Understand the System

She and her team held brainstorming sessions where participants were able to identify root causes challenging innovation growth and learning at CAES.

PROTOTYPING + TESTING Collaborate with Partners

Principal Nabanoga and her team invited stakeholders to contribute to learner-centered training approach that informs industry and supports market-ready graduates.



What's Next?

CAES developed an "Innovation Intentional" pact that details action steps needed to continue progress towards a more innovative and market-relevant curricula.

Developing Affordable Technology for Medium, Small, and Micro Food (MSMEs) Processors in Uganda

Research Question: How might we better meet the needs of **food processors** working at medium, small and micro enterprises across Uganda?

Research Innovator:

Julia **Kigozi**, Senior Lecturer in the Department of Agricultural and Biosystems Engineering

Research Innovation Team:

Emmanuel **Baidhe**
Moses **Kalyango**
Isaac **Oluk**



Dr. Julia Kigozi worked with engineers and engineering students to investigate the context and needs of the Food processing MSMEs, taking time in and outside of the processing facilities to observe the operations of the food processors. One processor in particular, Charles Isaac, showed Dr. Kigozi that while he could operate new equipment despite being blind, the equipment's power source was not well-adapted to the fluctuating energy grid across rural Uganda and cost of day to day operation, creating inconsistency in the quality of the final product.



1 EMPATHIZING + DEFINING
Understand the Problem

With end-users, Dr. Kigozi identified the need for equipment that can be accessed, are safe, easy to use & maintain, are affordable and meet the capacity and quality of product for the consumer.



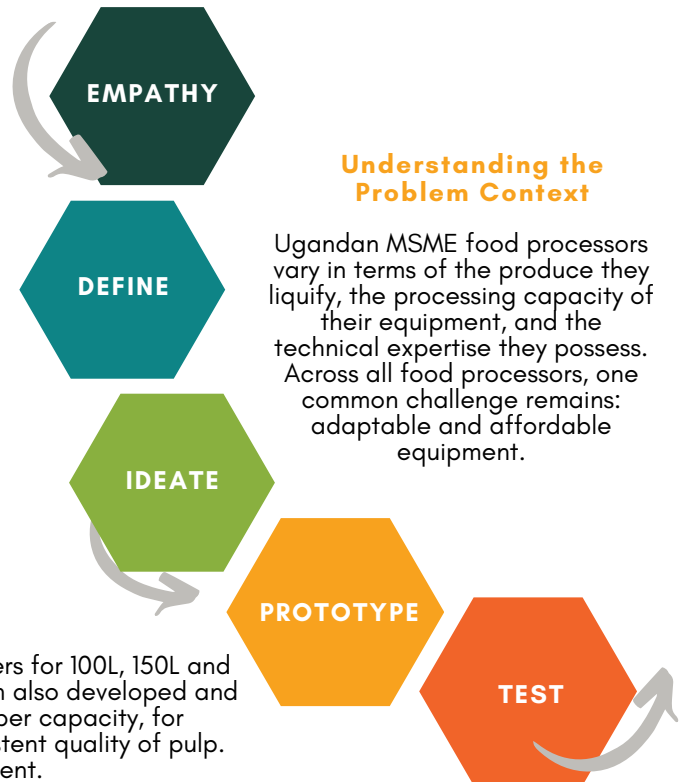
2 IDEATION + PROTOTYPING
Collaborate with Partners

In the process of designing a more usable product, Dr. Kigozi identified the need for a manual with more imagery than text so operators with limited literacy skills could follow and learn the equipment.



3 TESTING + ADAPTING
Re-engage the End-User

Dr. Kigozi's team developed and tested batch pasteurizers for 100L, 150L and 200L powered by electrical or biomass energy. The team also developed and tested a fruit pulper for 25L, 75L and 100L pulping chamber capacity, for application to various fruits ensuring required and consistent quality of pulp. This provided the MSME's with a wider choice of equipment.



**Understanding the
Problem Context**

Ugandan MSME food processors vary in terms of the produce they liquify, the processing capacity of their equipment, and the technical expertise they possess. Across all food processors, one common challenge remains: adaptable and affordable equipment.

What's Next?

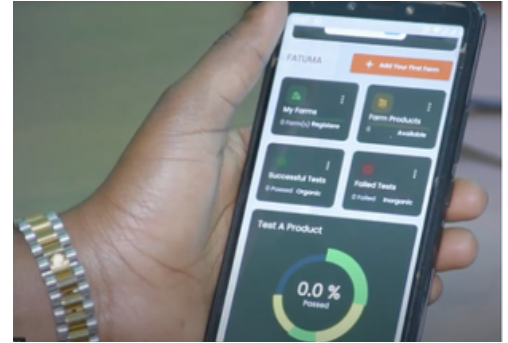
While the prototypes Dr. Kigozi and her team developed are quite affordable, the purchasing power of the processors is still low and she is calling for financial support from financial institutions or investment partners in terms of affordable financial packages that can be afforded by the processors.

KeBERA; A Handheld Application to Verify Produce On-Farm

Research Question: How might we help **Ugandan smallholder farmers** gain access to international Certified Organic markets (worth >\$100 billion USD)?

Research Innovator:
Fred **Kabi**, Associate
Professor from the
Department of Agricultural
Production, Uganda

Research Innovation Team:
Ambrose **Kamya**, Ramadhan
Nkuutu, Dr. Daniel **Basalirwa**,
Fatuma **Nabatanzi**, Ronald
Walusimbi, and Brian
Ogenrwoth Zion



About the Innovation

KeBERA is an inexpensive mobile phone application that provides an alternative for farmers and their cooperatives to collectively certify their produce and meet global market standards. KeBERA verifies if synthetic chemicals were applied to produce and after testing, farmers upload results to an organic farming cooperative database. This reduces the need for field agents to visit rural farms and test for synthetic chemicals increasing opportunities for smallholder farmers to stay profitable.

Exploring the Innovation Process

The ISP Innovation Process applies a systems approach to innovation, designing *with* and *for* the people most closely impacted by the problem.



1 EMPATHIZING Engage the End User

Small Ugandan farmers (cultivating <2 hectares) lack access to the global markets. How might these farmers identify an economical alternative to certify produce and access markets?



Understanding the Problem Context

Uganda was the first African country to develop a National Organic Agriculture Policy, with the 2nd largest number of organic farms per country worldwide. Despite an annual global market worth >\$100 billion USD, annual organic exports from Uganda only account for \$50 million USD.



3 PROTOTYPING + TESTING Collaborate with Partners

Kabi and his team prototype an easy-to-use, on-farm device for farmers to detect synthetic chemical residues in crops.



2 DEFINING + IDEATION Understand the Problem

Farmers face difficulties in locating organic testing centers to certify their produce for the global market. When they do, they are either too expensive or time-intensive.

What's Next?

KeBERA LLC is validating the accuracy of its readings against ones received in laboratories. The National Organic Agricultural Movement of Uganda is organizing farmer groups to share the KeBERA application and offer feedback regarding "ease of use." To learn more, visit <https://keberaorganics.com>