CULTIVATING INNOVATION DURING COVID-19

MALAWIAN HIGHER EDUCATION AND LOCAL SOLUTIONS IN CRISIS RESPONSE

INTRODUCTION

The COVID-19 pandemic will have lasting global impacts, but it presents greater obstacles for low- and middle-income countries. In Malawi, the virus compounds a host of complex, interrelated challenges: under-resourced government institutions, low economic capacity, high dependency on subsistence farming, under-invested infrastructure, and ballooning population growth.[1]

USAID supports progress toward "A More Self-Reliant Malawi that is Gender-Equitable and Democratically Accountable."[2] This approach strengthens capacity and commitment for self-reliance. USAID's higher education programming in Malawi builds human and institutional capacity across sectors, such as distance education, agricultural research, environmental protection, public health, and democratic institutions.[3]

Higher education institutions closed their physical campuses in late March in response to the COVID-19 virus. Many institutions were not equipped to deliver classes virtually.[4] Students no longer residing on campus faced challenges accessing learning materials due to inaccessible or unreliable Internet connections. Higher education institutions faced financial difficulties stemming from unpaid student fees and a loss of revenue from teaching, learning, research, community outreach, and publication activities.[5]

Despite these challenges, several higher education institutions in Malawi demonstrated their critical role in addressing the pandemic by advancing research and innovation. Notably, USAID partner Malawi University of Science and Technology (MUST) embraced this role, developing innovative solutions. This case study

KEY FEATURES

Location: Malawi

Project/Program Name:
Innovation Scholars Program

Funder(s): USAID

Implementing Partners: Michigan State University, Lilongwe University of Agriculture and Natural Resources (LUANAR), and Malawi University of Science and Technology (MUST)

Case Themes: Research & Innovation, Partnerships, COVID-19

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[1] USAID/Malawi, "Country Development Cooperation Strategy," April 2020, https://www.usaid.gov/sites/default/files/documents/1860/EXTERNAL_CDCS_Malawi_2020-2025_-_Exp_April_2025_508_1.50.43_PM.pdf.
[2] Ibid
[3] Jennifer L. Lebrón, Dr. Anne Griffin, and Dr. Robin DePietro-Jurand, "USAID Higher Education Landscape Analysis 2014-2018," USAID, 2020, https://www.edu-links.org/sites/default/files/media/file/HELA Final Report_Sept19.pdf.
[4] Joel Chirwa, "Students relieved at planned reopening of universities," University World News, June 18, 2020, https://www.universityworldnews.com/post.php?story=20200616184759894.
[5] Ibid

underscores the importance of partnerships during crises in expanding capacity for research and innovation within higher education institutions and outlines the broad societal benefits of this increased capacity.

APPROACH

THE INNOVATION SCHOLARS PROGRAM

The Innovation Scholars Program (ISP), implemented by Michigan State University's Global Center for Food Systems Innovation,[6] builds capacity, innovative skills, and ideas to address local development challenges. The beneficiaries of the program, called "scholars," include faculty and administrators of higher education institutions and key strategic stakeholders.[7]

To promote local ownership, Michigan State University and Lilongwe University of Agriculture and Natural Resources (LUANAR) co-designed aspects of the program, including the application/selection process, curricular design, scholar tracks, and desired outcomes. The first iteration of the program convened scholars from Lilongwe University from June 2016 to August 2017. The second iteration of the program was housed at MUST and began in the Fall of 2018. Scholars will graduate in the spring of 2021.

Both iterations of the ISP consisted of workshops[8] and over a year of applied learning, reflection, and feedback. While LUANAR-ISP focused on strengthening capacity to mitigate agricultural and natural resource challenges, MUST-ISP taught design and systems thinking[9] to develop solutions to local challenges.

MUST ISP benefited from the program's experiences at Lilongwe University. For example, the facilitation team for MUST-ISP included not only staff and faculty from Michigan State University but also past Lilongwe scholars.[10] MUST also added an additional track to strengthen the institution's network. The three scholar tracks were:

1. **Faculty scholars** who focused on design thinking to improve their own and their students' research and innovation skills.

2. **Leadership scholars** (i.e. administrators) who applied design thinking to higher education management reforms that reduced institutional constraints to research and innovation.

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[6] The Global Center for Food Systems Innovation works on improving food systems in a world facing shrinking natural resources, changing climate, urbanization, and rapidly increasing demand. The center focuses on capacity building activities that increase the strengths of agricultural innovation systems and tailor multi-dimensional solutions that consider environmental, economic, and social trends, and workforce needs.

[7] "Innovation Scholars Program," Michigan State University, accessed August 2020, https://gcfsi.isp.msu.edu/programs/innovation-scholars/.

[8] The first cohort received six workshops: 1) Design Thinking; 2) Community Engagement; 3) Teaching & Learning; 4) Leadership Development; 5) Communicating for Impact; and 6) Celebrate Innovation Symposium. The second cohort received six workshops and two supplementary activities: 1) Design Thinking; 2) Systems Thinking; 3) Research for Innovation; 4) Teaching for Innovation; 5) Community Engagement to Drive Innovation; 6) Communicating for Impact; 7) Regional Innovation Excursion and; 8) Innovation System Symposium.

[9] Design thinking may also be referred to as human-centered design (HCD). HCD is a way of thinking that places direct beneficiaries and other important stakeholders at the center of the design and implementation process. https://www.usaid.gov/cii/human-centered-design.

[10] "MUST ISP," Michigan State University, accessed August 2020, https://gcfsi.isp.msu.edu/programs/innovation-scholars/must/.

3. **Network scholars** who were members of the public and private sectors, including other universities, and built connections among program scholars, the public and private sectors, and non-governmental organizations. This track was newly established.

INNOVATIVE LEADERSHIP DURING COVID-19

In 2019, MUST's Center for Innovation and Industrial Research launched its *Innovation Garage*, a space for developing creative solutions to local issues.[11] The capacity and culture for fostering local innovation that was strengthened through the program at MUST greatly enabled the creation of the *Innovation Garage*. To turn faculty and student ideas into successful businesses, the *Innovation Garage* provided selected innovators with coaches and capacity-building workshops.

As COVID-19 spread, the *Innovation Garage* turned its focus to supporting the rapid development of crisis response innovations. Following a call for proposals focused on the pandemic, MUST selected two innovations to support: a mobile solar-powered sanitation station and a COVID-19 tracking platform.

SOLAR-POWERED SANITATION

To prevent contact transmission of the virus within communities, the World Health Organization emphasized the importance of frequent handwashing.[12] While access to clean water has improved over the years in Malawi,[13] access to basic sanitation services and hygienic services within households remains at a staggeringly low 42 percent and 10 percent respectively.[14] While access in rural areas is lower than in urban ones, the risk of viral transmission is greater in denser areas. The urban-rural divide is also evident in access to electricity. Compared to 55 percent of urban dwellers, only 10 percent of rural Malawians have access to electricity. To curtail the spread of COVID-19 early through healthy hygiene and sanitation practices, solutions had to be produced rapidly and tailored to local contexts.

The *Innovation Garage* saw promise in Charles Makamo's idea for the development of a solar-powered mobile handwashing station. To ensure the stations adapted to urban and rural uses, the *Innovation Garage* supported Makamo by providing training on human-centered design, testing, and updates. To adapt the innovation to distinct settings, Makamo engaged users from hospitals, banks, and shopping centers to understand functionality and adjust the design accordingly.

As of July 2020, 30 solar-powered mobile handwashing stations have been purchased: 19 by the Malawi Revenue Authority, two by the Roads Fund Administration, seven by MUST, and two by the United Nations Development Program (UNDP). In addition, UNDP has agreed to purchase 30 more units for use across the country.

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[11] "MUST Launches Innovation Garage," MUST, October 7, 2019, https://www.must.ac.mw/must-launches-innovation-garage/.

[12] "WHO Saves Lives: Clean Your Hands in the Context of COVID-19," World Health Organization, December 18, 2020, https://www.who.int/infection-prevention/campaigns/clean-hands/WHO_HH-Community-Campaign_finalv3.pdf?ua=1.

[13] "Water, Sanitation, and Hygiene," USAID/Malawi, December 11, 2020, https://www.usaid.gov/malawi/global-health/wash#:~:text=Clean%20water%20is%20vital%20for,lack%20access%20to%20safe%20water.

[14] "Water, Sanitation, and Hygiene Statistics in Malawi," UNICEF, 2018, https://www.unicef.org/malawi/sites/unicef.org.malawi/files/2018-09/UNICEF_WASH_Factsheet_2018.pdf.

COVID-19 TRACKING PLATFORM

To combat COVID-19, health systems must have the ability to accurately monitor cases, locate hot spots, and conduct risk assessments.[15] To support decision-makers, a group of MUST students advised by an ISP scholar proposed the design of an integrated COVID-19 platform to track disease hot spots, trace cases, and generate data to inform decision-making.[16] The team developed a user-friendly mobile app that shares critical public health information with citizens and crowdsources data. The mobile app is used to:

- **Disseminate reliable information on COVID-19.** The app contains a repository of information from reputable organizations such as the World Health Organization and Malawi's Ministry of Health. The COVID-19 pandemic has been exacerbated by what the United Nations has referred to as an "infodemic" of misinformation shared overwhelmingly via social media and communications technologies.[17] The information shared in the mobile app helps to prevent citizens from dismissing public health guidance in favor of false, potentially harmful misinformation.

- **Collect self-reported symptoms and diagnoses.** The data on citizens' symptoms and diagnoses gathered through the app allow the platform to identify locations of ongoing and emergent outbreaks, which inform mitigation strategies. Crowdsourcing this information provides a cost-efficient solution with the potential to reach remote areas. This design feature is particularly useful in the context of a pandemic that has severely affected government revenues, considering the risk of transmission and costs associated with deploying rapid-response teams to survey and/or treat citizens.

- **Connect patients to health workers.** The app quickly connects users who report symptoms and diagnoses of COVID-19 with health workers. This functionality facilitates timely health care and minimizes community spread of the virus transmitted by untreated citizens.

To ensure app usability, the *Innovation Garage* supported the student team with the integration of a human-centered design process. The student group tested and revised the app's design based on feedback. Malawi's Ministry of Health wants to use the innovative platform to inform their COVID-19 response.

LESSONS LEARNED

The Innovation Scholars program, and in particular the rapid development of the two innovations described above, has proven an exemplary case of how partnerships can strengthen the functioning of higher education systems and empower higher education systems to serve as development actors. The COVID-19 pandemic has highlighted the significance of this role and offers several lessons:

- **Investing in higher education partnerships that promote capacity strengthening and institutional reform often produce positive spillover effects.** The case demonstrates a virtuous cycle ignited by the Innovation Scholars Program. It strategically focused actions on key people like faculty and administrators who are positioned to influence a broader swath of the

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[15] "COVID-19 Strategy Update", World Health Organization, April 14, 2020, https://www.who.int/docs/default-source/coronaviruse/covid-strategy-update-14april2020.pdf?sfvrsn=29da3ba0_19.

[16] Rachel Warner, "Embracing innovation to address COVID-19 in Malawi," Michigan State University, July 13, 2020, https://globalyouth.isp.msu.edu/news_article/22803.

[17] "5 ways the UN is fighting 'infodemic' of misinformation," United Nations, April 30, 2020, https://www.un.org/en/un-coronavirus-communications-team/five-ways-united-nations-fighting-%E2%80%98infodemic%E2%80%99-misinformation.

higher education system. By doing so, the program served various indirect beneficiaries. Capacity strengthening at these critical points transfers benefits to other faculty, staff, and learners served by program scholars and/or affected by institutional reforms.

The broader community also benefits from the knowledge and innovation produced by higher education institutions. Human and institutional capacity strengthening efforts that were part of the program before the pandemic equipped the institutions with the necessary human capital to lead an effective response. A culture of innovation and adaptation that was part of the *Innovation Garage* cultivated creativity and resilience among participants when faced with a shock such as COVID-19.

- **Inclusion of key beneficiaries in the activity design stage can build local ownership of activity outcomes and ensure relevance to local issues.** From the beginning, the program focused on encouraging innovation to serve local development needs. The first iteration of the activity was co-created by LUANAR and MSU, and LUANAR faculty were then able to serve in a teaching and mentoring capacity in the second iteration of ISP at MUST. Innovations from MUST-ISP deliberately concentrated on accessible innovations for Malawi and not on trying to produce innovations that were scalable outside of Malawi.

  This precedent created space for local innovators to acquire the expertise and resources to quickly turn ideas into prototypes and then into things that could help their communities combat the virus.

- **Building institutions that establish structures, processes, and resources with minimal friction is key to advancing knowledge and innovation.** Strong higher education institutions may provide key ways to effectively adapt and change. In times of crisis, the leadership capacity of higher education institutions can help determine how responsive and how effective an institution's response can be. Does an institution have crisis protocols? Do administrative policies allow for adaptation and efficient decision-making? Do staff and faculty feel supported and engaged as the situation and the response evolves? Without effective institutional leadership, crisis response can be delayed, ineffective, and inequitable. This program created a culture of innovation and creativity and a structure that encouraged adaptation when it was needed most.

This case study was developed by Jasmine Pineda (Princeton University), a master's student participating in the Summer 2020 [Virtual Student Federal Service](#) internship program. Recommended citation:

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USAID is actively assisting countries that are affected by or at risk of the novel coronavirus disease, COVID-19. USAID is working directly with host country governments and through organizations responding on the ground to contain and combat the outbreak. For additional resources, please visit [*https://www.edu-links.org/COVID-19*](https://www.edu-links.org/COVID-19)*.*