

STEM Africa
October 18, 2019
Provost Philbert

Good afternoon everyone and thank you, Andries, for that kind introduction. I am pleased to be with you all and want to extend a warm welcome, especially to our colleagues who have traveled from Africa. While digital technology makes international collaborations easier than they once were, meeting face-to-face establishes a new bond. It helps us to develop the personal connections from which lasting partnerships and personal friendships grow. I hope your time together strengthens both.

This weekend is the fifth STEM-Africa conference. I congratulate the organizers on bringing it to fruition. Congratulations are also due to those who thought, back in 2010, that these biennial conferences could play an important role in strengthening STEM in Africa. The original organizers were prescient in giving STEM a prominent role in our African Studies Center. It has proved to be a very good idea. For the record, I want to note the “super power” of this group. In this instance, STEM is actually, STEEMM. Engineering and environment are included, as are mathematics and medicine.

The University of Michigan is pleased to be part of the ongoing activities to strengthen STEM fields in Africa. The commitment to nurturing early career scientists on the continent is deep and sure to yield many benefits. At Michigan, we are honored to play a role in this important work.

The theme of your time together this year is appropriate technology. It was chosen, in part, to honor the memory of Dr. Moses Kizza Masaazi, a leader who brought purpose and creativity to his work. His innovative projects provide a model for the power of appropriate technology to change people’s lives for the better. His recognition of the challenges faced by women and girls has contributed a great deal to our recognition of the critical role women play in moving society forward. Here at Michigan, Dr. Masaazi’s partnerships with faculty members in several of our schools and colleges contributed to research projects and to the education of our students.

In panels and discussions over the next two days, you’ll be considering the role of appropriate technology today and in the future. I see this as a critical set of conversations. In 1973, when E.F. Schumacher published *Small is Beautiful*, he made the case for the use of appropriate technology, noting that technology had to be in line with human needs and to be sustainable. We’ve seen rapid development of new technologies since 1973. They’ve permeated much of the world and we are working to figure out the how they are shaping society.

One lesson which likely guides your work is that new technologies come with advantages and disadvantages. One of the challenges we face is determining appropriate uses for new technologies. Education has a key role to play here. Finding the appropriate way to use anything requires understanding what it can and cannot do and how it can contribute to the solution of a problem. This is well understood.

What is less appreciated, less understood, is that there are additional questions that must be asked: what is the context in which people will use this technology? How will this help society to

advance? Will that progress be sustainable? Social, cultural, and economic considerations must be part of our decisions about when and how various technologies should be used. Considering these factors will also help us to reimagine how older technologies can be put to new and appropriate uses.

Dr. Musaazi's work was successful because he placed technology in this larger context, always considering human impact, benefits, costs, and sustainability. He sought "multiple wins" from the work he undertook. The development of the Makapad sanitary napkin exemplifies this. It is made from locally available material (papyrus and paper waste), can be produced locally at low cost, provides employment for women workers, and enables girls to stay in school.

As educators, we have a responsibility to help our students understand and then practice this approach as they seek ways to contribute to the world. In the past decade, we've seen a significant increase in engaged learning, for graduate and undergraduate students. This is an important opening, one that can help to orient students toward appropriate local solutions to societal challenges.

As faculty and student teams work in communities around the world, they are focusing on community engagement at every step, from problem definition through concept generation, trials, and validation. They are also giving attention to the development of sustainable relationships with communities. There is movement away from what's been called the "drop-in and drop-out" approach to working with communities that characterized many student projects in the past.

Faculty and graduate students have strong incentives for developing long-term partnerships with communities. The situation for undergraduates is less clear. They move through college fairly quickly and even with deep interest in the work, they may not see a way to continue these relationships once a project is completed. I'm pleased that there are student presenters at this conference and hope that they, and others, will have ideas for how to sustain relationships with the communities in which appropriate technology work is being done. And, of course, faculty do continue these relationships and bring new students into them, so there is a continuing connection even as the players change a bit.

We should recognize that even when we are not able to meet with high standard of "sustainable partnerships" between undergraduates and communities, the experience of working closely with local stakeholders is a valuable part of our students' education. In many fields – business, social work, and public health for example – understanding stakeholders concerns and working with them to address those concerns requires developing long-term partnerships.

Let me conclude by noting that these experiences are a key part of education for global citizenship. The partnerships between communities and students help all participants to hone their abilities working across cultures, valuing the perspective of others, and finding commonalities that contribute to progress.

Your work together, this weekend and going forward, makes crucial contributions to society today. It also orients a rising generation to the opportunities and responsibilities of the future. I wish you great success.