Realizing the Potential of Online Laboratories in Developing Countries

J.A. del Alamo
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We are about to launch an educational outreach program to realize the potential of online laboratories (iLabs) in Sub-Sahara Africa. iLabs constitute a new educational resource that allows students to carry out real experiments through the Internet. iLabs offer the potential of enriching science and engineering education around the world by bringing educationally meaningful laboratory experiences to students wherever an Internet connection is available. This “ universality” of iLabs is seriously challenged in locations where access to the global Internet is limited by narrow bandwidths and high connection costs, or where students have restricted access to computers. Such conditions are pervasive in the developing world and are particularly dire in sub-Sahara Africa.

Through our new program, we will create an educational partnership among Makerere University (Kampala, Uganda), University of Dar Es Salaam (Dar es Salaam, Tanzania), Obafemi Awolowo University (Ile-Ife, Nigeria), and MIT to identify a scalable model to exploit the potential of iLabs in Sub-Sahara Africa. Our program will contain three main components: teaching, lab dissemination, and student/staff exchanges.

Our teaching module aims to insert and utilize MIT’s existing iLabs in the curriculum of partner institutions through the direct collaboration of the educators involved. We will share educational content, adapt manuals and tutorial materials, and develop new content and materials in a collaborative manner. Through our lab dissemination module, MIT will assist the partner institutions in the development of new iLabs in Africa that are uniquely designed to address local curricular needs and constraints. These iLabs will be constructed using MIT’s iLab Shared Architecture (Figure 1) and will be shared among all partners. The student/staff exchange component will bring African graduate students and staff to MIT to be part of the group designing and implementing iLab technology and new educational content. It will also send MIT undergraduate students to the three partner universities in Africa to strengthen iLab-related efforts.

For more information, go to:

Figure 1: The MIT iLab Shared Architecture for implementing online laboratories helps alleviate the dearth of bandwidth in developing countries by placing a Service Broker in the intranet of the client campus.