MAKERERE UNIVERSITY

COLLEGE OF ENGINEERING, DESIGN, ART AND TECHNOLOGY

PRESIDENTIAL INITIATIVE PROJECTS

Presidential Innovations Initiative Project (Photo taken December 2009)

CHALLENGES THAT WERE FACED BY THE COLLEGE

- Obsolete and dilapidated equipment
- Innovations that largely remained at the college
- Inadequate exposure of students to the real working world
- Teaching that was not integrated with practical experiences

STRATEGIC DIRECTION

- Vision 2040
  - Industrialization and modernisation
  - Skills development and capacity development
- Strategic Plan of Makerere University
  - Leader in teaching, research and innovations in Africa
  - Learner centered approach.
- National Development Plan
  - Science and Technology

COMPONENTS OF THE TECHNOLOGY INITIATIVE

- Support to Industrial Training
- Modernisation of Laboratory Infrastructure
- Innovative Projects

SUPPORT TO INDUSTRIAL TRAINING

- Support continuing students of the College during their Industrial training.
- Graduates have hands on experience ready for the job market. The majority of our graduates are employed as soon as they complete.
- Provides a platform for knowledge transfer to the community. Students are able to identify community problems and come up with solutions sometimes in form of machines such as maize shrewder, wind turbine etc

MODERNISATION OF LABORATORY INFRASTRUCTURE

- This component is used to equip the laboratories with state-of-the-art Equipment.
- Some of the laboratories equipped include the Mechanical Engineering Lab, Telecommunication Lab, Water Resources Lab, Environmental Engineering Lab, Solar Energy Lab, Architecture studios and various Art Studios at MTSIFA, Thermodynamics Lab, Surveying Lab
- E-learning and computer laboratories, design studios and teaching facilities modernized with overhead projectors

Equipment in the labs

Structures Lab

Public Health lab

Lab Equipment

Telecommunications Lab

Data Centre

More labs equiped

Computer lab

Mechanical Eng Lab

Surveying equipment

Surveying equipment

Surveying equipment

Materials and thermodynamics lab

Materials Lab.

Thermodynamics Lab.

Mechanical and solar labs

Mechanical training workshop

Solar laboratory

- CNC machine

INNOVATION PROJECTS

- Innovation Projects contribute to learning, research and knowledge Transfer partnerships
- Contribute to National Development

Innovation Projects

- Academic Records Management System (ARMS)
- I-Labs @Mak
- Development of Business Incubation Centre (Center for Technology Design and Development)
- MakaPads
- Center for Renewable Energy and Energy Conservation
- Innovation Systems and Clusters Programme
- Appropriate Irrigation Project
- Vehicle Design Project (- Kiira EV – evolved into the Centre for Research in Transportation Technologies)
- Community Wireless Resource Centre

ARMS Project

- Incubation of Home Grown Computer Systems that include ARMS, which is ready for commercialisation
  - Developed a Crime Management System for the Uganda Police. This is helping in this fight.
  - Online Student Evaluation of Teaching (OSET) deployed in colleges
  - Developed Interpol Certification Information System: The system is used for issuing and managing Certificates of Good Conduct. All citizens can now easily get this certificate and it can be verified by Interpol world over.

iLabs@Mak Project

- Deployment of iLabs (internet Laboratories) to support curricula of the Dept. of Electrical & computer Eng. More than 30 labs have been developed.
- About 500 students access online labs, reducing congestion in the physical labs
- Extension of ilabs to other universities eg Kyambogo, Busitema and Rwanda
- Development of the PEARL Smartphone, at industrial design and expect to have a prototype by end of year
- Knowledge transfer through training/ nurturing innovation in secondary schools by allowing them to solve society problems using robotics

Centre for Technology Design and Development (CTDD)

- The Centre supports innovation, prototyping and commercialisation of students ideas such as Maize mills, briquette machine, wind turbine, cleaning machine etc.
- These prototypes address needs of community people such as the cluster groups

Innovation Systems and Cluster Programme (ISCP)

- Coordinated by the college with the aim of making Uganda's businesses more competitive locally and globally through innovations and cluster initiatives which bring together geographically co-located firms.
- Clusters offer an avenue for academia to be more relevant as they offer solutions through appropriate research, innovation & value addition
- There are over 30 clusters, eg. Katwe Metal cluster, Salt, Milk, Coffee, Bee, pineapple clusters etc

Signage between CTDD and Clusters

- CTDD has been able to meet the needs of these Clusters/SMEs by fabricating the machines that they need.
- The Clusters work together to meet each others' needs. Eg the Katwe Metal cluster works with the university to fabricate equipment needed by the different clusters
- Clusters in the food sector have worked with the Food Technology Incubation Centre to improve their products

MakaPads Project

- For many girls in rural areas, menstruation means no school. MakaPads are used to meet this need. The pads are made out of papyrus and paper.
- MakaPads are distributed in rural schools across the country
- The pads are the only sanitary wear made in Africa from local and natural materials .
- The research has progressed into designing of the Maternity Bed Pads. These have been tested in selected hospitals and maternity clinics around Kampala

CREEC

- Carries out research, training and consultancy in four focal areas of bio-energy, solar PV, pico-hydro and energy management
- Deployed a solar kiosk on an Island called Kabanga to give residents access to lighting.
- It is important for us to use the available resources such as solar light and in so doing reduce on pollution from kerosene

Appropriate Irrigation project

- Aimed at improving agriculture and making irrigation affordable trough designing and manufacturing of low cost pumps
- Modification of existing pumps to suit the local environment
- The project has trained small scale entrepreneurs to produce pumps and local govt and NAADS officers on irrigation matters, thus creating income and increasing yields
- Research in solar powered pumps in going still on going

Conclusions and Recommendations

- Conclusion
  - Many laboratories have been equipped. However, more are yet still required.
  - We still need to support innovations in Technology in order to properly contribute to industrialisation of the country and be able to meet Vision 2040.
  - The college has made milestones in the area of incubation and prototyping machines that our communities need but for us to move beyond this we need the help of the govt and the private sector to industrialise these ideas. This is the engine to development of the country.

Thank You!