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Technology-Mediated Open and Distance Education (Tech-MODE) for Agricultural Education and Improved Livelihoods in Sub-Saharan Africa

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Background. Globalisation, market liberalisation and worldwide food situation are threatening food security of the developing countries, which depend on millions of small farmers. Such farmers require access to information, learning and new skills to take advantage of the emerging income-generating opportunities (e.g. meat, milk, vegetables, fruits, flowers). They need relevant, useful, accurate and reliable information in a timely manner for their self-directed learning. This requires new ways of developing and delivering information. Technology-mediated open and distance education (Tech-MODE) - a combination of open and distance learning (ODL) with information and communication technologies (ICT) - has potential to satisfy such demands.

The Commonwealth of Learning (COL; www.col.org) wishes to expand Tech-MODE in agricultural education and improved livelihoods in sub-Saharan Africa (SSA). COL has its presence in SSA, though primarily in the schooling and higher education sectors. COL's initiatives on agricultural education for improved livelihood are gaining ground and prove to be promising. To foster collaboration and facilitate synergy, through country studies, COL wishes to identify opportunities for a complementary and catalytic role - preferably in coordination with the Forum for Agricultural Research in Africa (FARA) - on the following levels:

- formal agricultural degree and postgraduate education,
- continuing professional education,
- lifelong learning for farming communities,
- agricultural education at primary and secondary schools.

For the Tech-MODE exercise, COL commissioned eight country studies and called on a consultant with experience in agricultural research, education, training and communication in developing countries. See also www.wikieducator.org/Tech-MODE_in_SSA.

Procedure. For the identification of its role in SSA, COL undertook the studies with the objective of documenting an inventory of local institutions, facilities and capabilities for Tech-MODE. Information collected included:

- overall country situation of livelihood and status of agriculture / horticulture;
- national ICT policies and strategies for agricultural production, research, extension and education;

- individual institutions, facilities, capabilities, government support and potential available to implement Tech-MODE in collaboration with COL for
  - formal agricultural degree and postgraduate education,
  - continuing professional education,
  - lifelong learning for farming communities,
  - agricultural education at primary and secondary schools;
- recommendations, suggestions, wishes, etc. for COL.

The countries involved were Kenya and Uganda; Nigeria, Ghana and Sierra Leone; Cameroon; Tanzania and Zambia, representing East, West, Central and Southern Africa respectively. In each country, renowned national collaborators from universities, research and training institutions collected and summarized the information.

The study was initiated in March 2007 by contacting the national collaborators. The consultant received the first draft of a country report at the beginning of April 2007. Most draft reports have been presented at a side event during FARA's General Assembly, Johannesburg, South Africa, in June 2007. Revision and improvement of country reports continued all through 2007.

The country reports. In their country reports, national collaborators included mostly all of the information requested, although they did not necessarily follow the sequence and structure as suggested under 'Procedure' above. The writing styles were pleasantly diverse. Some collaborators described their country situation with plain facts, others combined facts with philosophy on, for example, African development perspectives, educational analyses, gender situation and extension methods. All collaborators undertook extraordinary and admirable effort in collecting and compiling relevant and valuable information.

According to the Cameroonian contribution, Africa offers many opportunities: natural resources, economic potential and geographical size. Even colonialism, an erstwhile obstacle, is seen as an opportunity in today's globalizing world. The country studies show the most relevant opportunity: the human potential. The Zambian authors assume that "… the capabilities of Zambia institutions to provide distance agricultural education and training with strong vocational components have not been formally assessed." This assumption is possibly true for many countries. Therefore we expect that these studies will be of general interest, relevance and value.

The status of agriculture in SSA is well known. Figures on the agricultural and rural situation vary according to source. However, we can generalize that countries are highly dependent on agriculture. Agriculture is considered the engine of development and growth. Agriculture contributes from 17 (Nigeria) to 49% (Sierra Leone) to GDP. Labour force in agriculture extends from 60 (Ghana) to 85% (Zambia).

In their economic policies, countries recognize the importance of agricultural education and training. However, the implementation varies among the countries studied, reaching from school gardens at primary level to higher agricultural education through colleges, polytechnics and universities. In all countries, agricultural education and training shows the usual technical, logistical and political limitations and challenges. Generally, agricultural education and training cannot satisfy the demand, and as a consequence, educational institutions are looking at ICT to implement ODL and hence the Tech-MODE initiative.

Countries are at different stages with ICT policies, especially in relation to agricultural education. In general, ICT is still inadequate and unevenly distributed. National ICT policies either exist or are in process. They may include education in general, but rarely reach agriculture specifically.

ODL is well recognised, but rarely with emphasis on agriculture. The tertiary sector seems to be most advanced with the implementation of ICT. Nevertheless, there is hope for the evolution of ICT, ODL and Tech-MODE in SSA, as the digital gap is closing rapidly.

According to the studies, traditional formal education cannot meet the human resource need. To satisfy the demand, the potential of distance education, ODL and Tech-MODE is evident, and most countries recognize their value. In general, existing ODL is mostly dual-mode, print based, and with little or no use of ICT. However, developments are encouraging, and a wide potential is available for the implementation of Tech-MODE. Collaborators for Tech-MODE are available mainly on formal educational levels. A few international partnerships are in progress.

Recommendations and conclusions. The recommendations resulting from the country studies encompass a wide area that cannot be covered by COL alone. Eventually, COL has to decide what recommendations fall within its purview and what recommendations must be shared with other partners. The **recommendations** presented here originate from two sources - a workshop on Tech-MODE related to the country studies, and the country reports.

At the **workshop**, participants identified a number of concerns and classified them into five subject categories: policy, infrastructure, socio-economy, capacity building and collaboration. For each of the categories, participants listed several recommendations:

Policy:

- Support awareness and advocacy initiatives, targeting policy makers at all levels.
- Facilitate the integration of Tech-MODE into the mainstream formal educational system at all levels.
- Facilitate policy formulation and implementation at national level in an integrated manner in the areas of information and communication technologies (ICT), open and distance learning (ODL) and intellectual property rights (IPR) that result in increased and improved access without gender and generation barriers.
- Engage in advocacy dialogue for promoting access to Internet connectivity to various stakeholders especially the marginalized.
- Facilitate policy formulation at institutional and national levels on quality standards for Tech-MODE.

Infrastructure:

- Strengthen the infrastructure to digitise information in knowledge and information institutions.
- Encourage African countries and institutions to develop infrastructures in an integrated manner in ICT and ODL that results in increased and improved access without gender and generation barriers.

Socio-economy:

- Assist in the use of Tech-MODE to promote access to education and training, competitiveness and quality in agriculture, with due consideration to improving gender equity and family welfare.

Capacity building:

- Support capacity building in Tech-MODE and its components, such as development and delivery of learning materials, providing learner support, implementation, monitoring and evaluation, and in governance and management of Tech-MODE-based educational programmes.

- Create an awareness about the importance of developing collaborative content that is of particular relevance to Africa, and to make it available to all users using flexible copyright licenses such as Creative Commons (http://creativecommons.org). Towards developing such open content, strengthen individual and institutional capacity to use free/libre open source software (FLOSS), develop open educational resources (OER) through appropriate Internet platforms such as WikiEducator (www.wikieducator.org)

Collaboration:

- Integrate and lead multi-community partnerships with an aim of promoting lifelong learning opportunities for farmers, using Tech-MODE, for improving their livelihoods. Assist in bridging the missing links among all the stakeholder communities: farmers, educators, technologists, researchers, policy makers, marketers, financers, governmental and non-governmental institutions, and national and international organizations.

The recommendations from the **country reports** support the outcomes of the workshop as given below:

- identify needs and action plans,
- assist in development of policies,
- facilitate mainstreaming of Tech-MODE,
- assist in identifying and managing funding,
- advise on infrastructure,
- assist in training and capacity building,
- support development of ODL materials,
- develop jointly courses through FARA, etc.,
- strengthen linkages and partnerships.

The **conclusions** for COL as given under 'Background' are pre-conceived in the study framework: "COL wishes to identify opportunities for a complementary and catalytic role …". The country studies identified plenty of opportunities for Tech-MODE in all countries examined. COL's complementary and catalytic role may include:

- identifying priorities among opportunities specified in the country reports,
- assisting in needs assessment,
- supporting policy issues,
- helping in establishing of linkages and partnerships,
- facilitating development of action plans, beginning with farmers' needs,
- assisting in the execution of action plans, including development of infrastructure, capacity building, training, development of materials, monitoring and following up.

COL initiated these country studies with the expectation that they will be taken up and expanded by regional and international institutions such as the Forum for Agricultural Research in Africa (FARA) and the Consultative Group on International Agricultural Research (CGIAR).