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Distance learning for agricultural development in Southern Africa

Rainer Zachmann¹, Mungule Chikoye², Richard Siaciwena³, Krishna Alluri⁴

¹Kapellenstrasse 28, 89079 Ulm, Germany; zachmann@extension-line.de

²In-Service Training Trust (ISTT), P.O. Box 310201, NRDC Campus, Lusaka, Zambia; chikoyem@istt.ac.zm

³Directorate of Distance Education (DDE), University of Zambia, Lusaka, Zambia; rsiaciwena2002@yahoo.co.uk

⁴Commonwealth of Learning (COL), 1055 West Hastings Street, Vancouver, Canada; kalluri@col.org

Abstract. In 2001, COL and ISTT initiated a program for agricultural extension workers in Southern Africa (and Eastern) to develop and deliver (print-based) distance-learning materials. Participants from Namibia, Tanzania, Uganda, and Zambia pre-tested selected materials with prospective learners, improved their materials in a workshop in 2002, and conducted pilot distance-learning programs in their countries in 2003 and 2004.

Background. Agricultural knowledge and technologies to reduce poverty, improve food security, and protect natural resources do exist, however often do not reach the ultimate users: the farmers. Frontline extension workers may not afford to get acquainted with latest technical and scientific developments through resident studies at colleges or universities. Distance learning (DL) offers these persons a chance to keep updated and to transmit relevant information to farmers, thus contributing to food security, poverty alleviation, and environmental protection.

In collaboration with ISTT and under the advice of DDE, COL designed a program with the goal "to contribute to sustainable improvement of food security and alleviation of poverty, while protecting resources and environment, through access to knowledge by distance learning". The content was "Agronomic management of cowpea and soybean in Southern and Eastern Africa". Specific objectives of the DL program were to:

- train agricultural researchers, educators, and extension workers from governmental and non-governmental organizations in the production and use of DL materials aimed at frontline extension officers
- produce a set of DL materials on cowpea and soybean as examples
- introduce the materials in selected countries and support their delivery
- verify the relevance of DL for agricultural development

Initiation. Taking advantage of earlier international experience with training on cowpea and soybean, late in 2001 COL sponsored a first workshop at ISTT on "Materials development for distance learning programs for agricultural education in Southern Africa". Participants - "national collaborators" - identified opportunities and constraints for the production and utilization of cowpea and soybean. Based on this information, participants developed drafts of DL units. After the workshop, at their home stations, the national collaborators continued with their drafts under virtual guidance of resource persons from the workshop.

E-mailing between the collaborating institutions (COL, ISTT, DDE) worked reasonably well. However, e-mailing with national collaborators was a challenge. One reason was poor connectivity. Another reason was the unfamiliarity of participants with e-mailing. Nevertheless, selected distance learning units became ready for the anticipated pre-test.

Pre-testing. Experience from the first workshop showed that a distance learning program appeared well located in the socioeconomic development plans in the region. Thus, the purpose of the pre-test was to ensure that the distance learning programs addressed our target audience appropriately: the frontline extension officers. The pre-test covered the importance of cowpea and soybean in the area; availability and cost of communication by internet; information regarding the languages used at the location; appropriateness of the distance learning materials; interest to undergo distance education; and preparedness of employers to enable employees attend a learning program.

ISTT sent five pre-test DL units, questionnaires for collecting information, and suggestions on how to conduct the pre-test to the national collaborators. Collaborators recruited four learners per region (within countries). Learners were representative for the intended audience: frontline extension officers from governmental and nongovernmental organizations. Learners included women and men, older and younger people. We encouraged the national collaborators to use their individual style in collecting the information.

Collaborators interviewed the learners personally, using a questionnaire for general information about the learner: personal information, educational background, languages, communication facilities. Then learners received the pre-test units with questionnaires for collecting specific information on content, relevance, level, format, usefulness, etc.

Ample data from the pre-test confirmed the relevance, importance, acceptability, and user friendliness of the units. Learners took the pre-test serious. Many learners replied to self-assessment questions, activities, and assignments in detail. The pre-test also showed communications and delivery challenges, in addition to a series of deficiencies in the pre-test units.

Follow-up. As a follow up to the first workshop and the pre-test, the same partner institutions as in 2001 organized a second workshop on "Development of distance learning programs for agricultural education in Southern Africa" in September 2002. Authors of the pre-test units analyzed and presented the test results. With the lessons learned, participants worked not only on the five pre-test units, but on all their DL materials. ISTT called resource persons from the University of Zambia and local private business. Lectures and exercises on distance learning, writing, editing, information and communication technologies, specifically e-mailing and Internet access, and advanced text processing helped participants to accomplish their assignment. Participants collaborated with great dedication for many extra hours before and after the official workshop time. Like the first workshop, also the second workshop included formative and summative evaluations.

A principle in distance learning is to engage prospective learners in the development of DL programs. Already at the first workshop in 2001, during a field visit, participants learned about sources of information for farmers. Participants experienced that farmers hardly had access to information from outside their community. Participants concluded that distance learning would help extension personnel in updating their knowledge and providing information to farmers. During the second workshop, participants interviewed frontline extension officers. The extension

officers see in distance learning a possibility to upgrade their positions, while the objectives of our DL program are directed towards food security. Thus, we found a conflict of interests between job security versus food security. We will have to consider both interests.

Achievements. Over some additional weeks, the resource persons, in e-mail communication with the authors, revised all units. By November 2002, final copies of the following documents were in the hands of all collaborators (MS-Word):

	Pages	KB
Program introduction	7	206
Unit 1 Importance of cowpeas and soybeans	8	27
Unit 2 Morphology and physiology of cowpeas and soybeans	10	*961
Unit 3 Climate and soil factors for cowpea and soybean production	8	27
Unit 4 Land preparation for cowpea and soybean production	7	24
Unit 5 Planting of cowpeas and soybeans	6	*751
Unit 6 Soil and fertility management for cowpea and soybean production	11	40
Unit 7 Weed management in cowpeas and soybeans	8	28
Unit 8 Disease and insect pest management in cowpeas and soybeans	10	34
Unit 9 Pre- and postharvest handling of cowpeas and soybeans	10	34
Unit 10 Marketing of cowpeas and soybeans	11	38
Unit 11 Cowpeas and soybeans in human nutrition	12	36
Unit 12 Cowpea and soybean recipes	13	30
Unit 13 Financing in cowpea and soybean production	10	30

* Including illustrations

Pilot implementation. Depending on local situation and growing seasons, to enhance the practical aspects, the collaborating institutions conducted a pilot implementation between May 2003 and June 2004:

- University of Namibia, Ogongo Campus, Oshakati, Namibia
- Ministry of Agriculture Training Institute Ukiriguru, Mwanza, Tanzania
- Kulika Charitable Trust, Kampala, Uganda
- Zambia College of Agriculture, Monze, Zambia

The collaborating institutions advertised their distance learning programs widely. According to specific criteria, the institutions recruited 20 learners each. With a total ratio of 37 women and 43 men the gender proportion was almost balanced. Three of the collaborating institutions charged a nominal training fee of about 30 US\$ per person. At several stages, the DL program included residential training sessions, field exercises, and visits with farmers. In spite of logistical challenges with the distribution of materials and initial difficulties with learner support, in general, learners reacted enthusiastically.

ISTT monitored the DL program closely and arranged several personal visits to the collaborating institutions. To standardize the final assessment, ISTT moderated the examinations. A total of 8 learners dropped out for several reasons; 67 learners completed the DL program successfully.

The pilot implementation allowed several conclusions:

Distance learning is relevant and valuable for continued education of frontline extension officers, who otherwise would not have an opportunity to maintain scientifically and technically updated. On a short term, collaborating institutions in Namibia and Zambia intend to integrate - "domesticate" - DL into their mainstream education.

The process of development of material for open and distance learning involved electronic communication. While it was not easy to manage communication through e-mail, its use was critical for success. Electronic communication also had the advantages of flexibility of time (asynchronous communication) and space (distributed collaborators in Namibia, Tanzania, Uganda, Zambia, Canada, and Germany) that we were able to exploit. Such communication also allowed the collaborators to bring in their perspectives as well as those of their communities in contextualizing the content.

Modern information and communication technologies are still out of reach at many places, thus for the implementation of DL programs we still had to rely on postal services, which do not function satisfactorily yet in all places either. Access to additional reading is limited for most learners; Intranet availability is difficult and costly.

Certain DL units require specific adjustments. Field exercises and visits encouraged frequent interaction with farmers, which is often deficient.

Separation of financial accounting of the DL program from the institutional accounting was appropriate. Charging of nominal training fees is useful with respect to commitment of learners, sense of ownership, and sharing of costs. (Free access to the DL program at one institution even caused expectations on payment of training allowances to participants.) Privatization and commercialization of extension services - example Uganda - may cause additional challenges.

More detailed information see: Zachmann, R; Chikoye, M.; Siaciwena, R.; Alluri, K. 2004. Development of distance learning programs for agricultural education in Southern Africa. Paper submitted to the Third Pan-Commonwealth Forum on Open Learning, 4 - 8 July 2004, Dunedin, New Zealand. 11 pages.