

Development Of Distance Learning Programmes For Agricultural Education In Southern Africa

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ABSTRACT

In 2001, COL and ISTT initiated a programme for agricultural extension workers in Southern Africa to develop and deliver distance-learning materials. Participants from Namibia, Tanzania, Uganda, and Zambia pre-tested selected materials with prospective learners, improved their materials in a 2002 workshop and are presently piloting distance-learning programmes in their countries.

BACKGROUND

This paper is about a distance-learning model that provides opportunities for agricultural extension workers in Southern Africa to develop and deliver contextually relevant and user-friendly distance learning materials for agricultural education.

Between now and the year 2020, the world population is expected to increase from 6.0 to 7.5 billion. Even today, 1.2 billion people live in absolute poverty on less than 1 US\$ per day. Rural poverty presents a high percentage (62 %) of total poverty (TAC 2000). According to latest estimates (FAO 2003), 842 million people were undernourished in 1999 – 2001; a great proportion of them in sub-Saharan Africa. Numbers even continue to rise there, whereas in other regions the numbers of undernourished were reduced. At the same time, natural resources, such as soil, forest, water, and biodiversity, are increasingly at risk. At least in some countries, agriculture receives high priority as means of reducing poverty. For example in Zambia, a strategy paper on poverty reduction shows the importance of agriculture.

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 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.

Motivated by this situation, Commonwealth of Learning (COL), Vancouver, Canada, in collaboration with the In-Service Training Trust (ISTT), Lusaka, Zambia, designed a programme 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". Considering the role of agriculture described above, the distance learning programme appears well located in the socioeconomic development plans in the region.

In 2001, COL sponsored a first international workshop on "Materials development for distance learning programmes for agricultural education in Southern Africa". ISTT organised the workshop in collaboration with the Directorate of Distance Education (DDE) of the University of Zambia, also located at Lusaka, Zambia. Taking advantage of earlier training experiences, cowpea and soybean served as content for the distance learning materials. In 2002, the same partners organized a second, follow-up, workshop.

PROGRESS BETWEEN 2001 AND 2002

During the first workshop in 2001, participants identified opportunities and constraints for the production and utilisation of cowpea and soybean ("soyabean" in Southern Africa). Based on this information, participants - "national collaborators" - developed drafts of distance learning units.

After the first workshop, the national collaborators continued to work on their drafts. To facilitate the continued involvement of collaborators, ISTT and COL requested the commitment of their home institutions for logistical support, including time. Using an e-mail listserv and teleconferencing, resource persons from the workshop provided guidance to the collaborators.

Under "virtual" guidance, national collaborators improved content, structure, text, and educational components of their distance learning materials. Since English is not their first language - as in many regions of the world - editing of the materials was one challenge.

E-mailing between the collaborating institutions (COL, ISTT, DDE) worked reasonably well. However, e-mailing with national collaborators was another 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. The pre-test was the basis for the second workshop.

PRE-TEST

The purpose of the pre-test was to ensure that the distance learning programmes address 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 programme.

Several weeks before the second workshop, national collaborators received the following pre-test materials:

- Unit 1 - Importance of cowpeas and soyabeans
- Unit 4 - Land preparation for cowpea and soyabean production
- Unit 7 - Weed management in cowpeas and soyabeans
- Unit 8 - Disease and insect pest management in cowpeas and soyabeans
- Unit 9 - Pre- and post-harvest handling of cowpeas and soyabeans

- Suggestions on how to conduct the pre-test
- Questionnaire for general information about the learner
- Questionnaire for specific information on the particular distance learning units

According to suggestions from the first workshop held in 2001, national collaborators recruited at least four learners per region (within countries). Learners were representative for the intended audience: frontline extension officers from governmental and nongovernmental organisations. Learners included women and men, older and younger people. National collaborators were encouraged to use their individual style in collecting the information.

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

Only few pre-test results were returned to ISTT before the second workshop. Thus only limited analysis was possible in advance. Most pre-test results arrived together

with the participants. At the beginning of the second workshop, authors of the corresponding units analysed the pre-test results of their units and presented them to workshop participants. With the lessons learned, during the workshop, participants worked on all units. For additional documentation, during and after the workshop, the programme facilitator summarised all pre-test results into:

- lessons learned from the pre-test
- information about the learners
- information on the pre-test units

Lessons learned from the pre-test

Overall, the pre-test confirmed 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. The learning content must fit into the farming systems context and the agricultural calendar. A distance learning programme requires partnership with other agricultural functions, such as input supply and marketing.

Information about the learners

In total, 19 learners from governmental and non-governmental research and training institutions and extension services in different regions of Uganda (6 learners), Tanzania (9) and Zambia (4) participated in the pre-test. The proportion between females and males was almost equal. Learners had diploma (11), degree (3), and certificate (5) level. The first language of learners was commonly a local language. English followed as second or third language. Nevertheless, the English language ability of learners was generally good.

Learners listed many sources for additional information: farmers, extension offices, private organisations, NGOs, agricultural departments, libraries, newsletters, textbooks, workshops, and seminars. Most learners had attended a wide variety of training activities, including crop, fruit, vegetable, and fish production, seed multiplication, integrated crop and pest management, information management, extension methods, farming systems, (financial) resource identification, peace building, hygiene and sanitation, HIV/AIDS awareness, etc. However nobody mentioned training on or through distance learning. Sponsoring agents of the training activities included ministries of agriculture, national agricultural research organisations, NGOs, GTZ, SIDA, IFAD, and World Bank.

Electronic telecommunications are still deficient, with up to 60 km distance to the closest e-mail service. Ordinary mail seems to be acceptable and reliable. Mail takes

about one week to reach the furthest point in certain regions.

Expected payment for distance learning courses remains questionable. Only half of the learners or their employers are willing to pay certain amounts.

Information on the pre-test units

Before the pre-test, the units listed above were preliminarily edited and revised for accuracy of content and appropriateness of educational learning components. National collaborators delivered the test units and questionnaires for each unit to the learners. Learners studied the units, completed the questionnaires, and inserted comments into the units.

According to the questionnaires, learners found all five units "very important", "very good", and "interesting". Content and language were mostly "just right". Only few (or no) learners marked the categories "partially important", "not relevant", "difficult", "too easy", "too academic", "too superficial", etc. For most units, learners would need only little - in some cases no - additional help to understand the units fully. Learners find such help from several sources of information, as mentioned above. Learners knew already parts of the units from their agronomic studies and textbooks. Several learners asked for additional "pre-test units".

Objectives of the units were mostly clear enough and well covered. No part of the units was difficult. All topics were necessary. Practical assignments, activities, and test questions were generally "just right". Nevertheless, learners requested additional information and clarification. Some of the requested subjects were covered in other units, that learners had not received.

Learners replied that they would pass the information on to all types of audiences: farmers, colleagues, supervisors, youth groups, schools, etc. Under "additional comments", learners asked for textbooks, dictionaries, and colour illustrations. The question on time required to study and practice the units was not conclusive. Answers ranged from 1 to 48 hours.

Based on these encouraging pre-test results, and on specific comments and suggestions, during the workshop participants had to work hard to improve not only the five pre-test units, but all their distance learning materials.

SECOND WORKSHOP 2002

As a follow up of the first workshop, COL and the same partner institutions as in 2001 organised a second international workshop on "Development of distance

learning programmes for agricultural education in Southern Africa", 8 to 21 September 2002, again at ISTT.

As formulated earlier, the specific objectives of the distance learning programme are to:

- train a core group of national trainers - agricultural researchers, educators, and extension workers from governmental and non-governmental organisations - in the production and use of distance learning materials aimed at frontline extension officers
- produce a set of training materials on food grain legumes as examples
- introduce the training materials in selected countries and support their delivery

At the end of the second workshop, participants were expected to be able to:

- identify possibilities and constraints in the production and use of learning materials
- design, test, and revise distance learning materials and programmes
- apply materials and programmes

Instead of 13 participants in the first workshop, in the second workshop, 9 participants arrived from Namibia (1 participant), Tanzania (3), Uganda (2), and Zambia (3). Two participants were women. With some exceptions, the participants of the first workshop also attended the second workshop. From the first workshop, three participants of Namibia were replaced by one new person; one Ugandan participant was out of his country; and a Zimbabwean participant could no longer attend.

ISTT called resource persons from the University of Zambia and private business, in addition to ISTT. Workshop coordinator was the director of ISTT. A consultant acted as both resource person and programme/workshop facilitator.

ISTT communicated with the participants and arranged their travel. ISTT owns all facilities necessary for accommodation, food, and workshop execution. Smooth running of the workshop gave evidence of many years of experience of ISTT. ISTT provided computers for efficient work on the distance learning materials. A beamer facilitated plenary presentations and revision of progress. E-mail access allowed participants to communicate with their home institutions.

Every day, the programme proceeded on time. Voluntary and informal "ppm" time after dinner allowed participants to make best use of the workshop. Participants collaborated with great dedication for many extra hours before and after the official workshop time.

METHODOLOGY

At the beginning of the workshop, participants described their experiences and challenges with the COL-ISTT-DDE project. Then participants discussed the results of the pre-test. Conclusions of the pre-test led to individualised and group work on all distance learning units (Figure 1). A few days were dedicated entirely to this work. Generally, at the beginning of such days, participants - under guidance of resource persons - analysed and discussed portions of selected units.

Over the past months, deficiencies in writing and editing became evident. Thus, specific sessions on writing and editing helped participants to accomplish their assignments. The workshop offered opportunities to practice and improve writing and editing skills.

Participants concluded that redundancy between some units should be reduced. This implied that some units had to be reorganized.

Participants also appreciated lectures and practicals on information and communications technologies - specifically e-mailing and Internet access - and advanced text processing. During a half-day discussion with local extension officers, participants learned about the implementation of distance learning programmes (see "Field visit" below).

Towards the end of the workshop, participants discussed the further evolution and implementation of the COL-ISTT-DDE programme, and updated the existing follow-up workplan.

FIELD VISIT

A principle in distance learning is to engage prospective learners in the development of distance learning programmes. Consequently, one of the objectives of the workshop was to enable participants to "identify possibilities and constraints in the production and use of distance learning materials".

Already at the first workshop in 2001, during a field visit, participants learned about sources of information for farmers (Figure 2). Participants experienced that farmers hardly had access to information from outside their community. Participants concluded that distance learning materials would greatly help extension personnel in providing information to farmers.

During the second workshop, participants took advantage of an ongoing meeting of agricultural extension personnel at Chongwe District in the Lusaka province of

Zambia to interview some of the immediate target audience: frontline extension officers. In preparing the visit, participants produced a checklist with tentative questions.

Generally, participants found the field visit "very, very useful". The interaction was excellent. A distance learning programme must consider the context. Distance learning is welcome if it responds to needs. The extension officers of Chongwe District see in distance learning a possibility to upgrade their positions - while the objectives of our distance learning programme are directed towards food security. Thus, we found a conflict of interests between job security versus food security. We may have to consider both interests. Chongwe District may serve as a case study, and may not be entirely representative for all sub-Saharan Africa. Nevertheless, the visit was a good learning exercise.

WAY FORWARD

In connection with a presentation on "Lessons learned from ISTT's grain management programme", participants discussed the way forward:

- We should implement the distance learning programmes initially with the countries represented at the workshop: Namibia, Tanzania, Uganda, and Zambia. With these countries, conditions and momentum do already exist.
- COL and ISTT should take the lead in marketing the programme with directors of participating institutions and other stakeholders. (This means that COL and ISTT should contact the institutions personally).
- Participating institutions should integrate the distance learning programme into their curriculum to ensure sustainability.
- Workshop participants should contact other potential partners for implementation and support: governments, NGOs, World Vision, Oxfam, etc.
- COL may contribute some seed money for take-off: administrative support, communication, field work, advertisement, multiplication of materials.
- Learners should contribute to the expenses for reasons of appreciation, motivation, accountability of services, and self-reliance. Learners may establish self-help groups for funding.
- Target audiences are frontline extension workers, lead farmers, nutritionists, etc. who are in daily contact with farmers. Contact with farmers is more

important than formal qualification.

- Because of nutritional value and commercial importance, cowpea and soybean may form a beginning. Other grain legumes and other crops may follow. Participants should continue collaborating, applying their skills acquired, taking advantage of the col-istt@hub.col.org listserv, and encouraging COL for further funding.
- Continuous improvement of quality should involve other experts from agriculture, distance learning, and editing. Revision should be a continuous process.
- Workshop participants should assume the roles of national collaborators for supporting the programme: coordination, supporting learners, tutoring, marking the assignments, keeping records, streamlining communication, keeping bureaucracy under control. For these roles, training-of-trainer courses may be appropriate.
- Materials should be developed centrally.
- Materials may be translated into major and local languages.
- Workshop participants should develop a general workplan that can be adjusted to individual country situations.

Based on the last suggestion above, participants developed workplans first by country, and then updated the existing workplan of 2001 to a joined follow-up workplan 2002 - 2003. National collaborators were encouraged to adjust this general plan to their own conditions.

EVALUATIONS

The workshop included two types of evaluations, a formative and a summative evaluation.

The formative evaluation, through a continued activity evaluation, helped to monitor and direct the workshop while in progress. At the end of each activity, participants evaluated knowledge acquired, usefulness, depth, presentation, training materials, and time. The evaluation form also allowed for additional comments on the individual activities and on the whole day. A participant volunteered to manage the evaluations during the day. The workshop facilitator summarised the evaluations in the evening, and presented relevant conclusions to participants and workshop

organisers next day.

The continued activity evaluation did not show major problems. On the contrary, after an initial comment, "a good start", the workshop continued satisfactorily. Participants appreciated all activities. As expected, the reports on the pre-test were a "tiring exercise but very important for improving the distance learning materials".

The summative evaluation in form of a final questionnaire covered all educational and logistical aspects of the workshop. This evaluation also demonstrated the satisfaction of participants with the workshop. Participants appreciated especially the computer facilities: "Provision of computers and e-mail facility was excellent". Some comments were related to lack of communication and information before the workshop.

NEXT STEPS

After the end of the second workshop, three participants stayed on for an extended weekend to clean up manuscripts and computers. Over some additional weeks, the programme facilitator, in e-mail communication with the authors, thoroughly revised all units. By November 2002, final copies of the following documents were in the hands of all collaborators (MS-Word 6.0/95):

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

* Including illustrations

In March 2003, COL authorized ISTT to initiate the pilot implementation of distance learning programmes with the home institutions of the national collaborators

applying the materials produced:

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

To maintain uniformity, ISST multiplied the distance learning materials centrally for all collaborators. To enhance the practical aspects, the collaborating institutions scheduled their distance learning programmes to coincide with the beginning of growing season of cowpea and soybean: May 2003 for Uganda and Tanzania, October 2003 for Zambia, January 2004 for Namibia. In reality however, delayed rains caused slight shifting of schedules.

In anticipation of the pilot implementation, ISTT staff visited programme coordinators, prospective learners, and farmers in Uganda, Tanzania and Zambia. ISTT is in continuous contact with the collaborators in Namibia.

The collaborating institutions advertised their distance learning programmes widely. According to specific criteria, the institutions recruited 20 learners each.

In spite of logistical challenges with the distribution of materials and initial difficulties with learner support, learners reacted enthusiastically to the programmes. Completion of the programmes and final examinations are expected for May 2004 (except Namibia).

A follow-up workshop is suggested to present and discuss experiences, deepen knowledge, refine materials and procedures, suggest amplification of programmes, analyse possibilities of collaboration with other distance learning initiatives, and specify further steps.

REFERENCES

Food and Agriculture Organization (FAO) (2003). The state of food insecurity in the world 2003. 40 pages.

Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research (CGIAR) (2000). A food-secure world for all: Toward a new vision and strategy for the CGIAR. 59 pages.



Figure 1. Workshop participants design DL materials.



Figure 2. Workshop participants learn from small-scale farmers in the shade of a tree.