OPENNESS AND QUALITY IN ASIAN DISTANCE EDUCATION

Supported by the International Development Research Centre of Canada

Sub-Project 1

The Effectiveness of Different Distance Learning Approaches to a Non-formal Course for Farmers in Kamchai Mear District, Prey Veng Province, Cambodia

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1. Abstract

The sub-project involved a non-formal distance learning course for farmers in the Kamchai Mear District, Prey Veng Province, Cambodia. Instructors from the Chea Sim University of Kamchaymar (CSUK) designed and developed five multimedia learning modules with the assistance of Informatics for Rural Empowerment and Community Health (iREACH) staff. During the course delivery, the farmers studied the multimedia courseware twice a week at an iREACH hub in Kamchai Mear with the help of learning facilitators. For one group of farmers, learner support and formative assessment were conducted using mobile phones: Instructors sent formative assessment questions by SMS which the farmers answered by SMS (short message service). Farmers were also asked to send by MMS (multimedia message service) and SMS the results of practical exercises and instructors provided feedback by SMS and/or through voice calls. Based on examination scores as well as self-reported adoption of new practices learned during the course, there were no significant differences between the face-to-face and distance learning approaches used.

2. Introduction

Approximately 36 percent of the people of Cambodia live below the poverty line. Of the total number of poor people, 90.5 percent live in the rural areas where the average annual per capita income is only USD 197. The official unemployment rate is 7.1 percent but excluded from this figure are farmers, who comprise 80 percent of the workforce and who are normally productive only six months of the year. Moreover, it has been noted that "because of an increase in the agricultural labour force with no corresponding increase in the efficiency of farming", Cambodia's agricultural productivity is lower than that of neighbouring countries (MOEYS, 2005).

For these reasons, the development of income generation skills — where income generation is understood as increased productivity leading to economic self-sufficiency and social stability — is considered one of seven priorities of non-formal education in Cambodia. In Kamchai Mear, Prey Veng Province where this sub-project was undertaken, farmers themselves identified, a survey conducted by the CSUK Faculty of Agriculture and Informatics for Rural Empowerment and Community Health (iREACH) network, the need for non-formal training in animal husbandry and farming techniques to increase crop productivity.

Thus a non-formal course in integrated farming systems using distance education (DE) methodology was developed by CSUK faculty. On the assumption that farmers have little or no recent experience with formal learning and they would prefer aural and visual (as opposed to textual) and concrete and practical (as opposed to highly abstract and theoretical) approaches to learning, the course was delivered using multimedia modules that the farmer participants studied at iREACH hubs located in their communes, with the assistance of learning facilitators. In addition, mobile phones were used to provide for interaction between the CSUK lecturers and the farmer participants throughout the course.

The sub-project was underpinned by the assumption that with the right kind of training, the farmers would be able to use mobile phones and the multimedia course packages as learning tools. At the same time, one of the aims of this experiment in ICT-supported non-formal distance learning for farmers was to identify the factors, including use of technology, that

impact on the effectiveness of program design and delivery methods in order to yield lessons for the formulation and/or fine tuning of similar ICT-enhanced distance education interventions in the non-formal education sector in Cambodia.

The sub-project is congruent with the thrusts of Cambodia's National Policy on Non-Formal Education in terms of the target audience and curricular coverage (i.e., the enhancement of agricultural productivity through continuing education for the rural sector), as well as in its strategic use of "community-based learning centres", in particular the iREACH network of hubs. The sub-project sought to provide a model of educational uses of the network that respond to local needs, promote community development, and empower individuals and the community. The sub-project also attempted to build on and contribute to research on innovative uses of mobile phone technologies for education in developing country contexts.

3. Objectives

The aims of this sub-project were to:

1) Test the effectiveness of different distance learning approaches to non-formal education for farmers, in particular combinations of interactive multimedia and mobile phone technology; and
2) Identify the factors affecting the effectiveness of non-formal DE course development and delivery in a specific context.

4. Methodology

The sub-project employed a formative evaluation or design-based research design consisting of four phases.

Phase 1: Analysis of the target learners and learning environment
Phase 2: Program design and development
Phase 3: Program delivery
Phase 4: Program monitoring and evaluation

4.1 Analysis of the target learners and learning environment

The sub-project team undertook a learner needs survey in order to better understand the target learners, namely, farmers in three communes in Kamchaymear District, Prey Veng Province. The survey sought to establish the farmers' prior knowledge of farming techniques; their access to media, ICT skills, and learning styles; as well as differences in personal circumstances that might impact on learning behaviour such as time for learning and gender differences. The results of the learner needs survey were used in the formulation of guidelines for course design and development, and to establish a baseline for determining change in learner behaviour during and after the implementation of the course.

4.2 Program design and development

This phase of the study included the design and development of the courseware for farmers, recruitment of target learners, and planning for course delivery.

4.2.1 Courseware development

The non-formal course in integrated farming systems that was developed for this sub-project consisted of five modules:

Module 1: Introduction to Agriculture
Module 2: Rice Farming
Module 3: Animal Rising
Module 4: Vegetable Farming
Module 5: Forage Crop Farming

The modules combined theory and practical work, and assessment covered both the theoretical and practical knowledge and skills that the farmers learned from the course. The module content was presented through multimedia courseware that combined text, visuals (e.g., photos, charts), and short video productions. The courseware was designed and developed by instructors from the CSUK Faculty of Agriculture with the assistance of iREACH staff, following a training workshop on designing educational multimedia conducted by DE experts from the Philippines. eXeLearning, an open source authoring application, was used to render the lessons in multimedia format.

For each multimedia module two lessons were pilot-tested with a group of 50 farmers (i.e., 10 farmers per module) from the target communities. The pilot test helped to identify some weaknesses in the module design which were then addressed in the preparation of the version for implementation in the next phase of the sub-project.

4.2.2 Recruitment of target learners

A total of 86 farmers from nine villages in three communes — Kro Nhoung, Smong Tbong and Smong Cheung — were recruited to participate in the course. The criteria for recruitment were ability to read and write in Khmer, residence in the participating communes, dependence on farming for a living, willingness to participate, and availability for the duration of the training course. In addition, a gender balance was sought in the number of male and female farmers recruited.

4.2.3 Planning for course delivery

It was decided that the lecturers or instructors during the course implementation would be the CSUK faculty who had developed the multimedia courseware, and the learning facilitators would be the iREACH hub managers themselves. Both the instructors and learning facilitators participated in a workshop on DE course delivery conducted by DE experts from the Philippines. At this workshop, the assessment scheme, course delivery schedule, and monitoring and course evaluation plan were finalised, and course guides containing these information were prepared for each module.

The sub-project team also prepared the following forms: 1) registration form; 2) attendance record; 3) study session report; 4) assignment submission record; 5) assignment score sheet; and 6) examination score sheet.

4.3. Program delivery

The farmer participants in each of the three communes were divided into smaller groups of 10 to undergo different training modes, namely, (1) face-to-face training using text-based handouts; (2) DE mode training using the multimedia courseware at the iREACH hub; and (3) DE mode training using the multimedia courseware and mobile phones.

The course content was the same for the three training modes. The face-to-face training (Group 1) was conducted by the module instructor, while the training via distance learning mode (Groups 2 and 3) was conducted by the learning facilitators in the iREACH hubs. That is, participants in Groups 1 and 2 studied the multimedia courseware using the computer at the iREACH hub, with the assistance of a learning facilitator who supported the trainees in using the computers and learning material and in discussing how they could apply what they had learned. Additionally, each training participant in the third group was provided with a mobile phone with camera, SMS, and MMS capability, to enable them to send messages with pictures of plant or animal diseases to the lecturers to discuss what to do about these diseases. Although the devices were not smartphones, they had localised Khmer script for SMS.

The training duration was eight weeks per module (see Table 1).

Table 1. Training schedule

Module	Start Date	End Date
Module 1 - Introduction to Agriculture	19 March 2011	15 May 2011
Module 2 -Rice Farming	21 May 2011	10 July 2011
Module 3 - Vegetable Farming	16 July 2011	4 September 2011
Module 4 - Forage Crop Farming	10 September 2011	6 November 2011
Module 5 - Animal Raising	12 September 2011	1 January 2012

At the beginning of each module, a course orientation workshop was conducted to orient participants to the course design and delivery mode. The participants in the distance learning groups were trained in the use of the multimedia courseware and mobile phones. During the course, the module instructor conducted a tutorial session with the groups studying via distance mode during which they responded to participants' questions about the module. At the end of each module, target participants were asked to evaluate the conduct of the training.

A pre-training survey was undertaken to establish a baseline of the level of knowledge the farmer participants had in the topics covered by the modules. At the end of the training, an evaluation of change in knowledge and farming practices was done. Different options were considered for what to focus on in this evaluation: knowledge, adoption of new practices taught, and/or yields. As the purpose of the course was to teach practical skills, adoption of new practices taught was considered the most appropriate way of comparing learning outcomes from the different training approaches. This was done in the form of self-reported adoption of new farming methods learned in the course, as there were insufficient resources to inspect the actual use of these methods.

5. Results

This sub-project resulted in the development of multimedia courseware consisting of five modules on topics in integrated farming that were identified based on a survey of the target participants. It also resulted in the design of a distance learning training program for farmers in Cambodia that utilized a network of community centres (the iREACH hubs) as learning centres, as well as mobile phones for instructor-learner interaction, formative assessment of learning, and learner support. Another output of the sub-project was the evaluation of the courseware and the distance learning training program in terms of their effectiveness for developing knowledge and skills in sustainable agriculture among farmers.

5.1 Courseware

Five modules in integrated farming were developed by course teams consisting of university-based content experts, instructional designers and editors, and multimedia designers. Each module was divided into several lessons (see Table 2) written in a self-instructional style. That is, each lesson spelled out the lesson objectives; provided a discussion of concepts and relevant examples; included graphic illustrations (images and photographs) and videos; and included self-assessment activities and questions to help learners test their understanding of the lesson.

Table 2. List of lessons per module

Module	Lessons
1. Introduction to Agriculture	1.1 How plants grow 1.2 Home composting 1.3 Green manure 1.4 Land levelling 1.5 Home gardening 1.6 Small scale fruit orchards 1.7 Natural and chemical pesticides 1.8 Earth worm raising 1.9 Family fish raising 1.10 Rice fish culture
2. Rice Farming	2.1 Rice life cycle 2.2 Potential rice varieties in Cambodia 2.3 Seed quality and selection 2.4 Nursery management 2.5 Crop establishment 2.6 Water management 2.7 Nutrient management 2.8 Disease management 2.9 Insect management 2.10 Rodent management 2.11 Harvesting methods 2.12 Drying methods 2.13 Storage methods

3. Animal Raising	3.1 Pig breed selection 3.2 Pig settle construction method 3.3 Feeding pigs 3.4 Feeding a pig, you can make yourself 3.5 Cleaning, disease protection 3.6 Main disease in pig raising 3.7 Chicken raising techniques 3.8 Chicken breed selection 3.9 Materials to use in chicken raising 3.10 Feeding and water for chickens 3.11 Disease in chickens 3.12 Bird Flu 3.13 Cattle raising methods 3.14 Feed production in family 3.15 Cattle reproduction
4. Vegetable Farming	4.1 Planting method for eggplant 4.2 Planting method for tomato 4.3 Planting method for bell pepper 4.4 Planting method for Chinese mustard 4.5 Planting method for Chinese cabbage
5. Forage Crop Farming	5.1 Introduction on forage crops 5.2 Morphology of forage crop variety 5.3 Agro ecosystem of forage crops 5.4 Classification of varieties and seed selection 5.5 Site selection and land preparation 5.6 Forage crop management

The courseware was packaged in DVDs which were distributed to the three iREACH hubs used as learning centres. In addition, copies of the DVD were given to the Ministry of Education, Youth and Sport (MOEYS), the CSUK library, the Royal University of Agriculture, and Battambang University. The courseware can be used in similar training programs in other communities.

5.2 Course delivery

The actual number of course participants was 86, four less than the targeted total of 90 participants. There were 7-14 participants from each of the nine villages included in the sub-project, and a more or less equal number of male and female participants in all villages except for one. The participants ranged in age from 17 to 60. There were slightly more women (44) than men (42), and a majority of the participants (70%) were married.

With a few exceptions, all participants from a village used the same learning method. While different age groups were distributed across the three groups, there was a bias toward younger farmers in the group using mobile phones, with 75% of them below 30 years of age (see Table 3). About a quarter (26%) of the farmers had gone to primary school, about a third (36%) had reached up to lower secondary school, a quarter (25%) reached upper secondary school, and 13% (11 farmers) had some university level education. The average and mean years of schooling were about eight, with a range from 2 to 16 years. The university-educated participants resided in three villages only and the least educated participants (none beyond secondary school) were concentrated in two villages.

Table 3. Age profile of participants

Age group	Male	Female	Total	%
18-20	4	10	14	16%
21-30	8	16	24	28%
31-40	17	9	26	30%
41-50	3	6	9	10%
51-60	4	2	6	7%
61-68	6	1	7	8%
Total	42	44	86	100%

The modules were designed to help farmers develop both theoretical and practical knowledge in sustainable farming. They were assessed using a combination of practical assignments and examinations. No significant differences were found in the examination scores of the participants in the three groups.

Furthermore, in the post-training survey conducted to determine whether the participants adopted new farming practices at the end of the training and whether there were differences in the extent to which new farming practices were adopted among the three groups of participants, two main types of change in practice were found: 1) farmers who started something new, such as composting; and 2) farmers who had done this before but changed the way they did it as a result of what they learned in the course. The number of practices changed for any one activity usually ranged between one and four. For example, one farmer may have adopted three new methods for chicken raising. In order to take into account the number of new practices in the comparisons, the concept of "aggregate change" was adopted to refer to the sum of the number of farmers multiplied by the number of new practices. Table 3 shows the aggregate number of changes in practice for the three learning groups.

Table 4. Aggregate of changes in farming practices among training participants

Changes related to:	Group 1 (with face-to-face training)	Group 2 (training using multimedia courseware)	Group 3 (training using multimedia course-ware + mobile phones)
Water management of rice fields	33	46	44
Rice field leveling by moving earth from high to low lying areas	12	13	13
Rice planting	67	70	63
Applying fertilizers to rice	63	54	52
Rice harvesting	57	71	70
Starting a home garden	3	5	9
New crops (based on number of new crops)	92	82	77
Starting to use fertilisers for crops other than rice	2	3	3
New practices in applying fertilisers for crops other than rice	30	33	32
Starting composting	15	13	11
Starting to use chemical inputs	2	4	1
Practices in using chemical inputs	26	53	47
Practices in raising chicken	72	75	76
Practices in raising pigs	36	40	35
Acquiring cattle after the course	4	9	7
Practices in raising cattle for those with cattle before the course	36	26	22

Practices in raising fish	11	10	8
Total number of changes	561	607	570

The results indicate that DE training can be as effective as face-to-face training in helping farmers to adopt new practices and begin new activities they learned about during the training.

While the focus of the evaluation was learning outcomes from the different training methods, the sub-project team also collected findings regarding the conduct of the training from direct observation and informal interaction with some of the participants and learning facilitators during the monitoring of course implementation. These findings are as follows:

- Participants from different age groups did not communicate very well. Younger participants seemed to be shy about speaking up in the presence of older participants.
- Among the two groups that used the multimedia courseware to learn the content, some of the participants also acquired basic computer skills although this was not a course objective.
- The participants' lack of experience in handling computers made it necessary to have learning facilitators to help them use the multimedia courseware. Some participants expressed dissatisfaction with having only one computer in the iREACH hub.
- Although the participants in the third group were taught how to use the mobile phones to interact with the lecturers during the practical work where they were to apply what they had learned from the modules, the participants tended to use the phones more to understand the learning content. For example, instead of taking photos of plant or animal diseases and sending these via MMS to the lecturers, the participants placed a voice call to the lecturer to ask for the definition of a term which was already in the courseware. Instead of using the mobile phones to ask specific questions, they used these to ask general questions.

5.3 Capacity building

In addition to the research outputs and findings presented in sections 5.1 and 5.2, this sub-project yielded outcomes in the form of improved capacity for DE course development and delivery on the part of the sub-project team and their associates. Aside from the practical experience afforded by sub-project activities, this outcome is the result of a number of workshops attended by sub-project team members, as follows:

Externally-organized workshops:

- PANdora training workshop on digitisation held in Hanoi, Vietnam on 12-20 June 2010
- Training workshop on Distance Education Course Development held at the iREACH Centre at Kep, Cambodia on 21-25 June 2010
- O&QA workshop on Outcome Mapping, Gender, and Communication for Policy Influence held in Universitas Terbuka, Jakarta, Indonesia on 26-31 July 2010
- Training workshop on Distance Education Program Delivery held at the CSUK campus on 14-15 February 2011

Workshops organized by the sub-project managers for other sub-project team members:

- Training workshop on Distance Education Course Delivery for the learning facilitators, held at CSUK on 19 November 2010

- Training course on Communication and Facilitation Skills for the instructors and learning facilitators, held at CSUK on 16 January 2011
- Refreshment training on the eXeLearning program held at CSUK on 20 February 2011
- Refreshment training on Distance Education Program Delivery held at CSUK on 09 March 2011
- English grammar training for sub-project team members held at CSUK
- Refreshment training on Communication and Facilitation Skills held at CSUK on 03 May 2011
- Training course on Comprehensive Methods for Data Collection and Data Analysis through Statistical Package for the Social and Science (SPSS) held at CSUK on 18-22 July 2011

6. Concluding Discussion and Recommendations

6.1 Achieved outputs and outcomes

The expected outputs of the sub-project were: (a) a set of multimedia courseware designed for self-study by training participants at a community telecentre with the assistance of learning facilitators and, in the case of one group, with interaction with the instructors using mobile phones; and (b) a group of farmers from three communes who have completed the training course. Both of these outputs were achieved.

In addition, the sub-project was expected to achieve the following outcomes:

1) Enhance farmers' awareness, knowledge, and skills in sustainable agriculture;
2) Increase the capacity of CUSK faculty and staff, as well as staff of partner organizations, to design, develop, deliver and evaluate distance learning programs of a similar nature; and
3) Sensitize policymakers to the potential of DE approaches for non-formal education.

The first two outcomes were achieved. Eighty-six farmers from nine villages in three communes successfully completed all five modules of the training course. The examinations of farmer participants on the course content that took place during the course showed that the differences among the three groups in terms of knowledge gained were insignificant. The post-course survey of self-reported adoption of new farming methods revealed marginal differences in terms of adoption of new practices. These suggest that distance learning can be as effective as face-to-face teaching in this particular context.

As for the sub-project team, they developed knowledge and skills in multimedia courseware design and DE course design; new pedagogical approaches and strategies that can be used to enhance teaching and learning in the classroom; community-based training and communication and networking with local communities; and research and evaluation. Thus, they can help to increase awareness and understanding of open and distance learning (ODL) as an effective mode of training and education among policymakers and organizations and institutions that are engaged in training and education in Cambodia.

6.2 Problems encountered

However, a number of issues were observed during the sub-project implementation. These should be noted in order that they can be avoided in similar projects that may be implemented

in the future. In particular, it was observed that participants of different age groups did not communicate very well. No action was taken to resolve the issue as this would have required moving some participants to other learning centres further away from their villages. Second, there was only one computer per 10 farmers, which was insufficient. This problem was not resolved because there were no spare computers or space for additional computers at the iREACH hubs. Third, the farmers did not have adequate ICT skills and those who were in the group given mobile phones did not use the phones in the expected manner. This suggests that the course should have started with training in basic ICT skills, including the use of SMS and MMS.

An unintended outcome of the sub-project is potential environmental degradation from the use of more chemical fertilizers by some of the farmers who participated in the training course. While the course promoted the use of organic fertilizers, it also contained information on safe use of and appropriate application of chemical fertilizers. This could have encouraged some course participants to use more chemical fertilizers, particularly those who do not have access to organic fertilizers, such as farmers who do not have cattle from which they can obtain manure. Another unintended development was the inability of farmers to access the courseware after the course because of the reduction in the number of iREACH in the villages.

6.3 Recommendations

Based on the findings, the sub-project management team concludes that any future iteration of this ODL type of non-formal training for farmers should:

1) Begin with basic ICT training for all participants.
2) Provide for lower learner-to-computer ratios by providing more computers for the participants to use.
3) Encourage the participants to visit the learning centres any time and study the courseware or find specific information on their own, instead of limiting the learning period to the "official" study time.
4) Provide sufficient guidance on the proper use of the mobile phones.
5) Avoid mixing age groups to facilitate communication between learners.
6) Include more videos in the courseware, as was done in some of the modules.
7) Place more emphasis on baseline surveys in order to be better able to compare results before and after the training.
8) In developing courses and course materials, network and collaborate with others who are interested and responsible for non-formal training of farmers. This could result in the wider dissemination of the course as well as encourage government policy formulation in this field.

In the absence of a government policy on non-formal ODL for the training of farmers in agriculture, the sub-project team has taken the initiative of distributing the courseware to other organizations, including the Children and Life Association (CLA), a Cambodian NGO and a telecentre initiative forming part of the Tonle Sap Poverty Reduction and Small Holder Development Project, funded by ADB Project and IFAD. The sub-project team has likewise submitted a research proposal for funding under the Higher Education Quality and Capacity Enhancement Project (HEQCEP), an MOEYS initiative, to undertake research comparing ODL and face-to-face instruction for the second year curriculum at Human Resources University.

It is important to note that the sub-project implemented a particular type of ODL course, namely, facilitated learning taking place in a group environment. This type of ODL is not inferior to ODL where students learn at home without such interaction. Because the learners in this case lacked electricity and computers at home and had low literacy levels, the way the course was delivered is optimal for the environment. The implication of this is that scaling up ODL for farmer education in such environments requires similar infrastructure, i.e., a network of learning centres, which points to the importance of government investment in this area.

Although the sub-project did not compare the cost-effectiveness of the different learning methods, it is likely that ODL will be more cost-effective compared to traditional face-to-face learning when scaled to a sufficient level, as the investment made in developing the course material can be shared among many learners.

Planning and policy formulation by the Cambodian MOEYS in collaboration with the Ministry of Agriculture, Forestry and Fisheries will be decisive in scaling up and building on the outcomes of this sub-project. They should jointly develop a curriculum for non-formal farmer training to build the capacity of Cambodian small-holder farmers in an effective way. With the increasing vulnerability of farmers to the effects of climate change, knowledge in improved climate resilient practices will become critical and ODL delivered within a learning centre environment is an effective approach to helping farmers expand their knowledge. ODL delivered in such centres could become an important driver for the overall development process in Cambodia.

Annex 1-A. Courseware Pilot Test Results

Pre- and Post-Test Results

Module 1: Introduction to Agriculture
With this module, before provide DE lesson, 0, 33 and 67% of the participants, understand the topics very well, well, and little respectively. At the end of the reading DE lesson, the positive result showing that, there are 33, 56 and 11% of they understand the topics very well, well and little respectively.

Module 2: Rice Farming
With this module, before provide DE lesson, 0, 60 and 40% of the participants, understand the topics very well, well and little respectively. At the end of the reading DE lesson, the positive result showing that, there are 50, 40 and 10% of they understand the topics very well, well and little respectively.

Module 3: Animal Raising
With this module, before provide DE lesson, 30, 40 and 30% of the participants, understand the topics very well, well and little respectively. At the end of the reading DE lesson, the positive result showing that, there are 60, 30 and 10% of they understand the topics very well, well and little respectively.

Module 4: Vegetable Farming
With this module, before provide DE lesson, 0, 50 and 50% of the participants, understand the topics very well, well and little respectively. At the end of the reading DE lesson, the positive result showing that, there are 80, 20 and 0% of they understand the topics very well, well and little respectively.

Module 5: Forage Crop Farming
With this module, before provide DE lesson, 0, 60 and 40% of the participants, understand the topics very well, well and little respectively. At the end of the reading DE lesson, the positive result showing that, there are 50, 40 and 10% of they understand the topics very well, well and little respectively.

Results of Evaluation of Multimedia Lessons by Pilot Test Participants

Module 1: Introduction to Agriculture

No	Questions	Strong Agree	Agree	Neutral	Disagree	Strong Disagree	Total
1	Enough information in this lesson?	50.0%	38.9%	11.1%	0%	0%	**100.0%**
2	Is it important for you?	44.4%	44.4%	11.2%	0%	0%	**100.0%**
3	Level of understanding?	44.4%	38.9%	16.7%	0%	0%	**100.0%**
4	The words and sentences easy to understand?	55.6%	38.9%	5.5%	0%	0%	**100.0%**
5	The format of the lesson is simple?	44.4%	44.4%	11.2%	0%	0%	**100.0%**
6	The questions easy to understand?	55.6%	38.9%	5.5%	0%	0%	**100.0%**
7	Put image to make easy to understand?	44.4%	38.9%	16.7%	0%	0%	**100.0%**

8	Is it not so long for you?	33.3%	55.6%	11.1%	0%	0%	**100.0%**

Module 2: Rice Farming

No	Questions	Strong Agree	Agree	Neutral	Disagree	Strong Disagree	Total
1	Enough information in this lesson?	65.0%	35.0%	0%	0%	0%	**100.0%**
2	Is it important for you?	45.0%	45.0%	10.0%	0%	0%	**100.0%**
3	Level of understanding?	45.0%	45.0%	10.0%	0%	0%	**100.0%**
4	The words and sentences easy to understand?	30.0%	60.0%	10.0%	0%	0%	**100.0%**
5	The format of the lesson is simple?	85.0%	10.0%	5.0%	0%	0%	**100.0%**
6	The questions easy to understand?	95.0%	5.0%	0%	0%	0%	**100.0%**
7	Put image to make easy to understand?	85.0%	15.0%	0%	0%	0%	**100.0%**
8	Is it not so long for you?	35.0%	65.0%	0%	0%	0%	**100.0%**

Module 3: Animal Raising

No	Questions	Strong Agree	Agree	Neutral	Disagree	Strong Disagree	Total
1	Enough information in this lesson?	65.0%	30.0%	5.0%	0%	0%	**100.0%**
2	Is it important for you?	50.0%	25.0%	25.0%	0%	0%	**100.0%**
3	Level of understanding?	10.0%	30.0%	50.0%	10.0%	0%	**100.0%**
4	The words and sentences easy to understand?	35.0%	40.0%	25.0%	0%	0%	**100.0%**
5	The format of the lesson is simple?	10.0%	60.0%	25.0%	5.0%	0%	**100.0%**
6	The questions easy to understand?	40.0%	55.0%	5.0%	0%	0%	**100.0%**
7	Put image to make easy to understand?	55.0%	30.0%	10.0%	5.0%	0%	**100.0%**
8	Is it not so long for you?	45.0%	45.0%	10.0%	0%	0%	**100.0%**

Module 4: Vegetable Farming

No	Questions	Strong Agree	Agree	Neutral	Disagree	Strong Disagree	Total
1	Enough information in this lesson?	85.0%	15.0%	0%	0%	0%	**100.0%**
2	Is it important for you?	75.0%	25.0%	0%	0%	0%	**100.0%**
3	Level of understanding?	65.0%	35.0%	0%	0%	0%	**100.0%**
4	The words and sentences easy to understand?	40.0%	60.0%	0%	0%	0%	**100.0%**
5	The format of the lesson is simple?	85.0%	15.0%	0%	0%	0%	**100.0%**
6	The questions easy to understand?	50.0%	50.5%	0%	0%	0%	**100.0%**
7	Put image to make easy to understand?	90.0%	10.0%	0%	0%	0%	**100.0%**
8	Is it not so long for you?	30.0%	40.0%	25.0%	5.0%	0%	**100.0%**

Module 5: Forage Crop Farming

No	Questions	Strong Agree	Agree	Neutral	Disagree	Strong Disagree	Total
1	Enough information in this lesson?	20.0%	45.0%	25.0%	10.0%	0%	**100.0%**
2	Is it important for you?	40.0%	50.0%	10.0%	0%	0%	**100.0%**
3	Level of understanding?	60.0%	35.0%	5.0%	0%	0%	**100.0%**
4	The words and sentences easy to understand?	25.0%	45.0%	25.0%	5.0%	0%	**100.0%**
5	The format of the lesson is simple?	45.0%	50.0%	5.0%	0%	0%	**100.0%**
6	The questions easy to understand?	40.0%	60.0%	0%	0%	0%	**100.0%**
7	Put image to make easy to understand?	30.0%	55.0%	15.0%	0%	0%	**100.0%**
8	Is it not so long for you?	30.0%	55.0%	15.0%	0%	0%	**100.0%**

Summary of comments and suggestions:

- Some words in some lessons used in English language so need to change to Khmer version and simple to understand.
- Lessons in the module of forage crop didn't add movie in eXeLerning so need to find movie to put to make easy to understand by the learner.
- A little bit word not corrected grammar and need to change following with Khmer dictionary, especially in module of forage crop.
- Some pictures in the module of animal raising low resolution and need to change for better by using high resolution.
- In the topic on pig breed selection have not picture on some of pig variety like Cochon Souris and Cochon Tetrodon so need to add in this lesson.

Annex 1-B. Course Evaluation Results

I. Introduction to Agriculture						
1. Evaluation of the learning facilitator						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
1.1 Mastery of course topics	Frequency (N=60)	1	5	33	19	2
	Percentages (%)	***1.67***	***8.33***	***55.00***	***31.67***	***3.33***
1.2 Ability to generate interest/motivate students	Frequency (N=60)	1	23	30	5	1
	Percentages (%)	***1.70***	***38.30***	***50.00***	***8.30***	***1.70***
1.3 Ability to lead a discussion	Frequency (N=60)	0	17	29	14	0
	Percentages (%)	***0.00***	***28.30***	***48.30***	***23.30***	***0.00***
1.4 Giving feedback on assignments	Frequency (N=60)	0	3	38	19	0
	Percentages (%)	***0.00***	***5.00***	***63.30***	***31.70***	***0.00***
1.5 Responses to student's questions	Frequency (N=60)	0	3	13	31	13
	Percentages (%)	***0.00***	***5.00***	***21.70***	***51.70***	***21.70***
2. Evaluation of study/tutorial sessions (Mr. Pin Vannaro)						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
2.1 The venue or location	Frequency (N=30)	0	5	15	10	0
	Percentages (%)	***0.00***	***16.70***	***50.00***	***33.30***	***0.00***
2.2 The length of time or duration of each session	Frequency (N=30)	0	3	22	5	0
	Percentages (%)	***0.00***	***10.00***	***73.30***	***16.70***	***0.00***
2.3 The effectiveness of the session in facilitating understanding of the lesson	Frequency (N=30)	0	2	17	11	0
	Percentages (%)	***0.00***	***6.70***	***56.70***	***36.70***	***0.00***
2.4 Motivating students to study	Frequency (N=30)	0	3	12	15	0
	Percentages (%)	***0.00***	***10.00***	***40.00***	***50.00***	***0.00***
3. Evaluation of the course materials						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
3.1 Meeting course objectives	Frequency (N=90)	0	18	41	29	2
	Percentages (%)	***0.00***	***20.00***	***45.60***	***32.20***	***2.20***
3.2 Relevance	Frequency (N=90)	1	11	59	18	1
	Percentages (%)	***1.10***	***12.20***	***65.60***	***20.00***	***1.10***
3.3 Adequacy (having	Frequency (N=90)	0	3	65	22	0

sufficient information)	***Percentages (%)***	***0.00***	***3.30***	***72.20***	***24.40***	***0.00***
3.4 Use of questions/exercises	Frequency (N=90)	0	4	39	40	7
	Percentages (%)	***0.00***	***4.40***	***43.30***	***44.40***	***7.80***
3.5 Use of multimedia	Frequency (N=90)	3	18	49	20	0
	Percentages (%)	***3.30***	***20.00***	***54.40***	***22.20***	***0.00***
3.6 Organization	Frequency (N=90)	0	3	32	51	4
	Percentages (%)	***0.00***	***3.30***	***35.60***	***56.70***	***4.40***
3.7 Writing style	Frequency (N=90)	0	2	46	37	5
	Percentages (%)	***0.00***	***2.20***	***51.10***	***41.10***	***5.60***
4. Evaluation of the course guide						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	Excellent
4.1 Completeness of information	Frequency (N=90)	0	24	52	14	0
	Percentages (%)	***0.00***	***26.70***	***57.80***	***15.60***	***0.00***
4.2 Organization	Frequency (N=90)	0	23	51	16	0
	Percentages (%)	***0.00***	***25.60***	***56.70***	***17.80***	***0.00***
4.3 Usefulness	Frequency (N=90)	0	11	43	30	6
	Percentages (%)	***0.00***	***12.20***	***47.80***	***33.30***	***6.70***
5. Evaluation of assignments						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
5.1 Meeting course objectives	Frequency (N=90)	1	10	45	34	0
	Percentages (%)	***1.10***	***11.10***	***50.00***	***37.80***	***0.00***
5.2 Relevance to the course materials/modules	Frequency (N=90)	0	15	52	23	0
	Percentages (%)	***0.00***	***16.70***	***57.80***	***25.60***	***0.00***
5.3 Clarity of questions and instructions	Frequency (N=90)	0	19	43	26	2
	Percentages (%)	***0.00***	***21.10***	***47.80***	***28.90***	***2.20***
5.4 Degree of difficulty	Frequency (N=90)	2	24	55	9	0
	Percentages (%)	***2.20***	***26.70***	***61.10***	***10.00***	***0.00***
5.5 Usefulness in measuring the learner's progress	Frequency (N=90)	0	25	36	29	0
	Percentages (%)	***0.00***	***27.80***	***40.00***	***32.20***	***0.00***
II. Rice Farming						
1. Evaluation of the learning facilitator						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**

1.1 Mastery of course topics	Frequency (N=60)	1.00	6.00	31.00	20.00	2.00
	Percentages (%)	***1.67***	***10.00***	***51.67***	***33.33***	***3.33***
1.2 Ability to generate interest/motivate students	Frequency (N=60)	1.00	21.00	30.00	6.00	2.00
	Percentages (%)	***1.67***	***35.00***	***50.00***	***10.00***	***3.33***
1.3 Ability to lead a discussion	Frequency (N=60)	0.00	17.00	27.00	15.00	1.00
	Percentages (%)	***0.00***	***28.33***	***45.00***	***25.00***	***1.67***
1.4 Giving feedback on assignments	Frequency (N=60)	0.00	3.00	37.00	20.00	0.00
	Percentages (%)	***0.00***	***5.00***	***61.67***	***33.33***	***0.00***
1.5 Responses to student's questions	Frequency (N=60)	0.00	3.00	12.00	33.00	12.00
	Percentages (%)	***0.00***	***5.00***	***20.00***	***55.00***	***20.00***
2. Evaluation of study/tutorial sessions (Mr. Pin Vannaro)						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
2.1 The venue or location	Frequency (N=30)	0.00	4.00	14.00	12.00	0.00
	Percentages (%)	***0.00***	***13.33***	***46.67***	***40.00***	***0.00***
2.2 The length of time or duration of each session	Frequency (N=30)	0.00	3.00	20.00	7.00	0.00
	Percentages (%)	***0.00***	***10.00***	***73.30***	***16.70***	***0.00***
2.3 The effectiveness of the session in facilitating understanding of the lesson	Frequency (N=30)	0.00	1.00	16.00	12.00	1.00
	Percentages (%)	***0.00***	***3.33***	***53.33***	***40.00***	***3.33***
2.4 Motivating students to study	Frequency (N=30)	0.00	2.00	12.00	16.00	0.00
	Percentages (%)	***0.00***	***6.67***	***40.00***	***53.33***	***0.00***
3. Evaluation of the course materials						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
3.1 Meeting course objectives	Frequency (N=90)	0.00	16.00	42.00	30.00	2.00
	Percentages (%)	***0.00***	***17.78***	***46.67***	***33.33***	***2.22***
3.2 Relevance	Frequency (N=90)	0.00	12.00	57.00	20.00	1.00
	Percentages (%)	***0.00***	***13.33***	***63.33***	***22.22***	***1.11***
3.3 Adequacy (having sufficient information)	Frequency (N=90)	0.00	4.00	62.00	23.00	1.00
	Percentages (%)	***0.00***	***4.44***	***68.89***	***25.56***	***1.11***
3.4 Use of questions/exercises	Frequency (N=90)	0.00	4.00	38.00	42.00	6.00
	Percentages (%)	***0.00***	***4.44***	***42.22***	***46.67***	***6.67***
3.5 Use of multimedia	Frequency (N=90)	2.00	20.00	47.00	21.00	0.00
	Percentages (%)	***2.22***	***22.22***	***52.22***	***23.33***	***0.00***

3.6 Organization	Frequency (N=90)	0.00	4.00	33.00	49.00	4.00
	Percentages (%)	***0.00***	***4.44***	***36.67***	***54.44***	***4.44***
3.7 Writing style	Frequency (N=90)	0.00	3.00	43.00	38.00	6.00
	Percentages (%)	***0.00***	***3.33***	***47.78***	***42.22***	***6.67***
4. Evaluation of the course guide						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	Excellent
4.1 Completeness of information	Frequency (N=90)	0.00	20.00	54.00	16.00	0.00
	Percentages (%)	***0.00***	***22.22***	***60.00***	***17.78***	***0.00***
4.2 Organization	Frequency (N=90)	0.00	21.00	49.00	18.00	2.00
	Percentages (%)	***0.00***	***23.33***	***54.44***	***20.00***	***2.22***
4.3 Usefulness	Frequency (N=90)	0.00	9.00	43.00	33.00	5.00
	Percentages (%)	***0.00***	***10.00***	***47.78***	***36.67***	***5.56***
5. Evaluation of assignments						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
5.1 Meeting course objectives	Frequency (N=90)	0.00	10.00	45.00	34.00	1.00
	Percentages (%)	***0.00***	***11.11***	***50.00***	***37.78***	***1.11***
5.2 Relevance to the course materials/modules	Frequency (N=90)	0.00	13.00	52.00	24.00	1.00
	Percentages (%)	***0.00***	***14.44***	***57.78***	***26.67***	***1.11***
5.3 Clarity of questions and instructions	Frequency (N=90)	0.00	18.00	42.00	28.00	2.00
	Percentages (%)	***0.00***	***20.00***	***46.67***	***31.11***	***2.22***
5.4 Degree of difficulty	Frequency (N=90)	1.00	22.00	55.00	11.00	1.00
	Percentages (%)	***1.11***	***24.44***	***61.11***	***12.22***	***1.11***
5.5 Usefulness in measuring the learner's progress	Frequency (N=90)	0.00	24.00	35.00	30.00	1.00
	Percentages (%)	***0.00***	***26.67***	***38.89***	***33.33***	***1.11***
III. Vegetable Farming						
1. Evaluation of the learning facilitator						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
1.1 Mastery of course topics	Frequency (N=60)	2.00	7.00	31.00	19.00	1.00
	Percentages (%)	***3.33***	***11.67***	***51.67***	***31.67***	***1.67***
1.2 Ability to generate interest/motivate students	Frequency (N=60)	1.00	22.00	30.00	6.00	1.00
	Percentages (%)	***1.67***	***36.67***	***50.00***	***10.00***	***1.67***
1.3 Ability to lead a	Frequency (N=60)	0.00	20.00	26.00	13.00	1.00

discussion	***Percentages (%)***	***0.00***	***33.33***	***43.33***	***21.67***	***1.67***
1.4 Giving feedback on assignments	Frequency (N=60)	1.00	6.00	36.00	17.00	0.00
	Percentages (%)	***1.67***	***10.00***	***60.00***	***28.33***	***0.00***
1.5 Responses to student's questions	Frequency (N=60)	1.00	5.00	15.00	30.00	9.00
	Percentages (%)	***1.67***	***8.33***	***25.00***	***50.00***	***15.00***
2. Evaluation of study/tutorial sessions (Mr. Veth Ravy)						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
2.1 The venue or location	Frequency (N=30)	1.00	6.00	13.00	10.00	0.00
	Percentages (%)	***3.33***	***20.00***	***43.33***	***33.33***	***0.00***
2.2 The length of time or duration of each session	Frequency (N=30)	1.00	6.00	18.00	5.00	0.00
	Percentages (%)	***3.33***	***20.00***	***60.00***	***16.67***	***0.00***
2.3 The effectiveness of the session in facilitating understanding of the lesson	Frequency (N=30)	1.00	4.00	13.00	11.00	1.00
	Percentages (%)	***3.33***	***13.33***	***43.33***	***36.67***	***3.33***
2.4 Motivating students to study	Frequency (N=30)	1.00	3.00	12.00	14.00	0.00
	Percentages (%)	***3.33***	***10.00***	***40.00***	***46.67***	***0.00***
3. Evaluation of the course materials						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
3.1 Meeting course objectives	Frequency (N=90)	1.00	24.00	36.00	28.00	1.00
	Percentages (%)	***1.11***	***26.67***	***40.00***	***31.11***	***1.11***
3.2 Relevance	Frequency (N=90)	0.00	16.00	55.00	18.00	1.00
	Percentages (%)	***0.00***	***17.78***	***61.11***	***20.00***	***1.11***
3.3 Adequacy (having sufficient information)	Frequency (N=90)	1.00	8.00	60.00	20.00	1.00
	Percentages (%)	***1.11***	***8.89***	***66.67***	***22.22***	***1.11***
3.4 Use of questions/exercises	Frequency (N=90)	0.00	8.00	37.00	40.00	5.00
	Percentages (%)	***0.00***	***8.89***	***41.11***	***44.44***	***5.56***
3.5 Use of multimedia	Frequency (N=90)	2.00	25.00	44.00	19.00	0.00
	Percentages (%)	***2.22***	***27.78***	***48.89***	***21.11***	***0.00***
3.6 Organization	Frequency (N=90)	0.00	8.00	34.00	45.00	3.00
	Percentages (%)	***0.00***	***8.89***	***37.78***	***50.00***	***3.33***
3.7 Writing style	Frequency (N=90)	1.00	6.00	40.00	37.00	6.00
	Percentages (%)	***1.11***	***6.67***	***44.44***	***41.11***	***6.67***
4. Evaluation of the course guide						

Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	Excellent
4.1 Completeness of information	Frequency (N=90)	0.00	24.00	51.00	15.00	0.00
	Percentages (%)	***0.00***	***26.67***	***56.67***	***16.67***	***0.00***
4.2 Organization	Frequency (N=90)	1.00	26.00	44.00	18.00	1.00
	Percentages (%)	***1.11***	***28.89***	***48.89***	***20.00***	***1.11***
4.3 Usefulness	Frequency (N=90)	2.00	13.00	42.00	30.00	3.00
	Percentages (%)	***2.22***	***14.44***	***46.67***	***33.33***	***3.33***
5. Evaluation of assignments						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
5.1 Meeting course objectives	Frequency (N=90)	2.00	15.00	43.00	29.00	1.00
	Percentages (%)	***2.22***	***16.67***	***47.78***	***32.22***	***1.11***
5.2 Relevance to the course materials/modules	Frequency (N=90)	1.00	19.00	49.00	20.00	1.00
	Percentages (%)	***1.11***	***21.11***	***54.44***	***22.22***	***1.11***
5.3 Clarity of questions and instructions	Frequency (N=90)	0.00	23.00	38.00	28.00	1.00
	Percentages (%)	***0.00***	***25.56***	***42.22***	***31.11***	***1.11***
5.4 Degree of difficulty	Frequency (N=90)	2.00	25.00	52.00	10.00	1.00
	Percentages (%)	***2.22***	***27.78***	***57.78***	***11.11***	***1.11***
5.5 Usefulness in measuring the learner's progress	Frequency (N=90)	1.00	27.00	33.00	28.00	1.00
	Percentages (%)	***1.11***	***30.00***	***36.67***	***31.11***	***1.11***
IV. Forage Crop Farming						
1. Evaluation of the learning facilitator						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
1.1 Mastery of course topics	Frequency (N=53)	1	4	28	18	2
	Percentages (%)	***1.89***	***7.55***	***52.83***	***33.96***	***3.77***
1.2 Ability to generate interest/motivate students	Frequency (N=53)	1	19	27	5	1
	Percentages (%)	***1.89***	***35.85***	***50.94***	***9.43***	***1.89***
1.3 Ability to lead a discussion	Frequency (N=53)	0	15	25	12	1
	Percentages (%)	***0.00***	***28.30***	***47.17***	***22.64***	***1.89***
1.4 Giving feedback on assignments	Frequency (N=53)	0	2	35	16	0
	Percentages (%)	***0.00***	***3.77***	***66.04***	***30.19***	***0.00***
1.5 Responses to student's questions	Frequency (N=53)	0	2	12	28	11
	Percentages (%)	***0.00***	***3.77***	***22.64***	***52.83***	***20.75***

2. Evaluation of study/tutorial sessions (Mr. Pin Vannaro)						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
2.1 The venue or location	Frequency (N=28)	0	4	13	11	0
	Percentages (%)	***0.00***	***14.29***	***46.43***	***39.29***	***0.00***
2.2 The length of time or duration of each session	Frequency (N=28)	0	3	18	7	0
	Percentages (%)	***0.00***	***10.71***	***64.29***	***25.00***	***0.00***
2.3 The effectiveness of the session in facilitating understanding of the lesson	Frequency (N=28)	0	1	15	11	1
	Percentages (%)	***0.00***	***3.57***	***53.57***	***39.29***	***3.57***
2.4 Motivating students to study	Frequency (N=28)	0	2	12	14	0
	Percentages (%)	***0.00***	***7.14***	***42.86***	***50.00***	***0.00***
3. Evaluation of the course materials						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
3.1 Meeting course objectives	Frequency (N=81)	0	14	40	25	2
	Percentages (%)	***0.00***	***17.28***	***49.38***	***30.86***	***2.47***
3.2 Relevance	Frequency (N=81)	0	12	48	20	1
	Percentages (%)	***0.00***	***14.81***	***59.26***	***24.69***	***1.23***
3.3 Adequacy (having sufficient information)	Frequency (N=81)	0	4	53	23	1
	Percentages (%)	***0.00***	***4.94***	***65.43***	***28.40***	***1.23***
3.4 Use of questions/exercises	Frequency (N=81)	0	4	38	33	6
	Percentages (%)	***0.00***	***4.94***	***46.91***	***40.74***	***7.41***
3.5 Use of multimedia	Frequency (N=81)	2	16	42	21	0
	Percentages (%)	***2.47***	***19.75***	***51.85***	***25.93***	***0.00***
3.6 Organization	Frequency (N=81)	0	4	30	43	4
	Percentages (%)	***0.00***	***4.94***	***37.04***	***53.09***	***4.94***
3.7 Writing style	Frequency (N=81)	0	3	40	32	6
	Percentages (%)	***0.00***	***3.70***	***49.38***	***39.51***	***7.41***
4. Evaluation of the course guide						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
4.1 Completeness of information	Frequency (N=81)	0	17	51	13	0
	Percentages (%)	***0.00***	***20.99***	***62.96***	***16.05***	***0.00***
4.2 Organization	Frequency (N=81)	0	18	46	15	2
	Percentages (%)	***0.00***	***22.22***	***56.79***	***18.52***	***2.47***

4.3 Usefulness	Frequency (N=81)	0	7	40	30	4
	Percentages (%)	***0.00***	***8.64***	***49.38***	***37.04***	***4.94***
5. Evaluation of assignments						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
5.1 Meeting course objectives	Frequency (N=81)	0	8	41	31	1
	Percentages (%)	***0.00***	***9.88***	***50.62***	***38.27***	***1.23***
5.2 Relevance to the course materials/modules	Frequency (N=81)	0	10	49	21	1
	Percentages (%)	***0.00***	***12.35***	***60.49***	***25.93***	***1.23***
5.3 Clarity of questions and instructions	Frequency (N=81)	0	15	39	25	2
	Percentages (%)	***0.00***	***18.52***	***48.15***	***30.86***	***2.47***
5.4 Degree of difficulty	Frequency (N=81)	1	19	49	11	1
	Percentages (%)	***1.23***	***23.46***	***60.49***	***13.58***	***1.23***
5.5 Usefulness in measuring the learner's progress	Frequency (N=81)	0	21	32	27	1
	Percentages (%)	***0.00***	***25.93***	***39.51***	***33.33***	***1.23***
V. Animal Raising						
1. Evaluation of the learning facilitator						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
1.1 Mastery of course topics	Frequency (N=60)	1	6	32	20	1
	Percentages (%)	***1.67***	***10.00***	***53.33***	***33.33***	***1.67***
1.2 Ability to generate interest/motivate students	Frequency (N=60)	1	21	29	6	3
	Percentages (%)	***1.67***	***35.00***	***48.33***	***10.00***	***5.00***
1.3 Ability to lead a discussion	Frequency (N=60)	1	15	25	17	2
	Percentages (%)	***1.67***	***25.00***	***41.67***	***28.33***	***3.33***
1.4 Giving feedback on assignments	Frequency (N=60)	0	5	38	16	1
	Percentages (%)	***0.00***	***8.33***	***63.33***	***26.67***	***1.67***
1.5 Responses to student's questions	Frequency (N=60)	0	3	15	35	7
	Percentages (%)	***0.00***	***5.00***	***25.00***	***58.33***	***11.67***
2. Evaluation of study/tutorial sessions (Mr. Va Viseth)						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
2.1 The venue or location	Frequency (N=30)	1	5	11	13	0
	Percentages (%)	***3.33***	***16.67***	***36.67***	***43.33***	***0.00***
2.2 The length of time or	Frequency (N=30)	0	4	20	5	1

duration of each session	***Percentages (%)***	***0.00***	***13.33***	***66.67***	***16.67***	***3.33***
2.3 The effectiveness of the session in facilitating understanding of the lesson	Frequency (N=30)	0	1	17	11	1
	Percentages (%)	***0.00***	***3.33***	***56.67***	***36.67***	***3.33***
2.4 Motivating students to study	Frequency (N=30)	0	1	17	12	0
	Percentages (%)	***0.00***	***3.33***	***56.67***	***40.00***	***0.00***
3. Evaluation of the course materials						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
3.1 Meeting course objectives	Frequency (N=90)	2	17	43	27	1
	Percentages (%)	***2.22***	***18.89***	***47.78***	***30.00***	***1.11***
3.2 Relevance	Frequency (N=90)	0	10	50	27	3
	Percentages (%)	***0.00***	***11.11***	***55.56***	***30.00***	***3.33***
3.3 Adequacy (having sufficient information)	Frequency (N=90)	0	7	56	26	1
	Percentages (%)	***0.00***	***7.78***	***62.22***	***28.89***	***1.11***
3.4 Use of questions/exercises	Frequency (N=90)	1	5	45	35	4
	Percentages (%)	***1.11***	***5.56***	***50.00***	***38.89***	***4.44***
3.5 Use of multimedia	Frequency (N=90)	2	18	45	24	1
	Percentages (%)	***2.22***	***20.00***	***50.00***	***26.67***	***1.11***
3.6 Organization	Frequency (N=90)	1	3	39	45	2
	Percentages (%)	***1.11***	***3.33***	***43.33***	***50.00***	***2.22***
3.7 Writing style	Frequency (N=90)	0	5	47	35	3
	Percentages (%)	***0.00***	***5.56***	***52.22***	***38.89***	***3.33***
4. Evaluation of the course guide						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
4.1 Completeness of information	Frequency (N=90)	0	18	55	15	2
	Percentages (%)	***0.00***	***20.00***	***61.11***	***16.67***	***2.22***
4.2 Organization	Frequency (N=90)	0	17	54	16	3
	Percentages (%)	***0.00***	***18.89***	***60.00***	***17.78***	***3.33***
4.3 Usefulness	Frequency (N=90)	0	8	42	34	6
	Percentages (%)	***0.00***	***8.89***	***46.67***	***37.78***	***6.67***
5. Evaluation of assignments						
Questions	**Classification**	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
5.1 Meeting course	Frequency (N=90)	1	9	48	30	2

objectives	***Percentages (%)***	***1.11***	***10.00***	***53.33***	***33.33***	***2.22***
5.2 Relevance to the course materials/modules	Frequency (N=90)	1	12	55	19	3
	Percentages (%)	***1.11***	***13.33***	***61.11***	***21.11***	***3.33***
5.3 Clarity of questions and instructions	Frequency (N=90)	0	17	46	23	4
	Percentages (%)	***-***	***18.89***	***51.11***	***25.56***	***4.44***
5.4 Degree of difficulty	Frequency (N=90)	1	15	56	17	1
	Percentages (%)	***1.11***	***16.67***	***62.22***	***18.89***	***1.11***
5.5 Usefulness in measuring the learner's progress	Frequency (N=90)	1	17	40	30	2
	Percentages (%)	***1.11***	***18.89***	***44.44***	***33.33***	***2.22***

Annex 1-C. Post-Training Survey of Change in Farming Behaviour[1]

Name of data collector:..... Name of team leader.....
Name of controller:..... Date of interview:.....
No. family:……..... No. data entry…….....

Group of training: ☐**F2F** ☐**Multimedia** ☐**Multimedia Plus Phone**

A. Personal details

A1. Village:…….. **A2. Commune**:……..…..…… ……
A3. Name:…….. **A4. Gender** ☐ Male ☐ Female
A5. Age:…….. **A6. Role of interviewee** ☐ Single ☐ Married
A7. Education and qualification ☐ Primary ☐ Secondary
☐ High School ☐ University ☐ No School
☐ Other…….
Number of years in education:……..

A8. Number of households members currently living in household …....male…….female…….

A9. Literacy and numeracy levels

	Comprehend	Speak	Read	Write	Numeracy
Khmer					
Basic					
Intermediate					
Advanced					
English					
Basic					
Intermediate					
Advanced					

A10. Which is your main occupation?
☐ Subsistence farmer ☐ Commercial farmer[2] (selling>2/3 of output)
☐ Government employee ☐ Day labourer
☐ Other (please specify)……

A11. What is your household's most important source of income (choose only one)
☐Selling rice ☐ Selling vegetables ☐ Selling pigs
☐ Selling palm ☐ Selling cattle-buffalo ☐ Selling fish
☐ Selling poultry ☐ Migratory work ☐ Rice Milling
☐ Threshing Machine ☐ Tractor ☐ Small business
(If Small business describe).....
☐ Other (Please specify) ……..

A12. How many hectares do you and your family farm? ……ha
Rent……..ha, Own……..ha

[1] This questionnaire was drafted and administered in Khmer.
[2] A commercial farm grows crops for the purpose of selling, while a subsistence farmer grows mainly to eat the produce, but may sometimes have to sell to pay back a loan or due to lack of storage facilities.

A13. On how many hectares do you farm do you grow rice?.....ha

A14. Average rice yield/hectare?.....T/ha

A15. On how many sq m of the land you farm do you grow other crops?.....sqm

A16. Have you changed any of these proportions as a result of the course? Yes No
If so, how?.....

A17. Which other crops do you grow?.....

A18. Do you have access to irrigation? ☐Yes☐No

A19. Who decides what to grow and what practices to use on the land you farm?
☐ Husband ☐Wife ☐Mother/Farther ☐Son/Daughter
☐ Other (please specify)……..

A20. What quantity of livestock do you have? ☐Yes ☐No
Cattle/buffalo:… Pigs:… Chicken/ducks:…Other please specify ……

A21. Do you have a fish pond? ☐Yes☐No

A22. Which, if any agricultural machinery do you have? Please circle
☐ Rice threshing machine ☐ Tractor ☐ Power-tillage
☐ Water pump machine ☐ Ox ☐ Other……

A.23. Do you have access to:
☐ Mobile phone ☐Computer ☐Radio ☐Television

A.24. If you participated in the multimedia or multimedia+phone training and if the material is available at a shared access facility such as iREACH:
- would you visit the centre to use this or other material: ☐Yes ☐No
- could you use the material on your own: ☐Yes ☐No
- would it be necessary for you to get assistance to use it? ☐Yes ☐No

B. Course Perception

B1. What method for land leveling for rice cultivation did you do before the course?
……
……
……

B2. What method for land leveling have you adapted as a result of the course?
……
……
……
……
……

B3. What method for planting for rice cultivation did you do before the course?
……
……
……

B4. What method for planting have you adapted as a result of the course?
……
……
……
……
……

B5. What water management method did you use before the course for rice cultivation?

……
……
……
……
……

B6. What water management method did you adopt as a result of the course?

……
……
……
……

B7. Did you apply fertilizers for rice before the course?

☐ Apply*(Skip to Q. B8)* ☐ Not apply*(to Q. B7a)*

If you APPLIED, which methods did you use?……
……
……
……
……
……

B7a. If NOT APPLY, Have you applied fertilizers for rice growing since the course:

☐ Yes ☐ No

If YES, which methods do you use as a result of the course? ……
……
……
……
……

Skip to B9

B8. Have you changed the way you apply fertilizers for rice as a result of the course?

☐ Changed ☐ Have not changed

If CHANGED, how ……
……
……
……
……

B9. Did you have a home garden before the course?

☐ Yes ☐ No

B10. Have you started a home garden as a result of the course?

☐ Yes ☐ No

B11. Did you plant any new crops did as a result of the course?

☐ Yes ☐ No

If YES, which crop did you plant as a result of the course?……
……
……
……
……
……

B12. Did you apply fertilizers for other crops before the course?

☐ Apply*(skip to Q. B13)* ☐ Not apply*(to Q. B12a)*

If APPLY, what method did you applied……
……
……
……

B12a. If NOT APPLIED, Have you applied fertilizers for other crop since the course:

☐ Yes ☐ No

If YES, which methods do you use as a result of the course? ……

……

……

……

……

Skip to B14

B13. How have you change the way you apply fertilizers for other crops as a result of the course?

☐ Changed ☐ Have not changed

If CHANGED, how……

……

……

……

B14. Did you do composting before the course?

☐ Do*(skip to Q. B15)* ☐ Did not do*(to Q. B14a)*

If DO, what method did you used……

……

……

……

……

B14a. If DID NOT DO, Have you do composting since the course:

☐Yes ☐ No

If YES, which methods do you do as a result of the course? ……

……

……

……

Skip to B16

B15. How have you changed the way you do composting as a result of the course?

☐ Do ☐ Don't do any composting

☐ Changed ☐ Have not changed anything

If DO and CHANGED, how……

……

……

……

B16. How did you apply chemical inputs (fertilizers, insecticides, pesticides, herbicides) before the course?

☐ Do ☐ Did not apply any chemical inputs

If DO, how……

……

……

……

……

B16a. If DID NOT DO, Have you do apply since the course:

☐ Yes ☐ No

If YES, which methods do you do as a result of the course? ……

……

……

……

……

Skip to B18

B17. How have you changed the way you apply chemical inputs as a result of the course?

☐ Changed ☐ Have not changed the way I apply chemical input

If CHANGED, how……
……
……
……

B18. How did you harvest rice before the course?

……
……
……
……
……

B19. How have you change the way you harvest rice as a result of the course?

☐ Changed ☐ Have not changed

If CHANGED, how……
……
……
……
……
……

B20. Did you raise chicken before? ☐ Yes (skip to QB21) ☐ No (to QB20a)

If YES, what method did you used……
……
……
……
……

B20a. If NO, Have you raise chicken since the course:

☐ Yes ☐ No

If YES, which methods do you do as a result of the course? ……
……
……
……
……

Skip to B22

B21. How have you changed the way you raise chicken as a result of the course?

☐ Changed ☐ Have not changed anything

If CHANGED, how……
……
……
……
……
……

B22. Did you raise pig before? ☐ Yes (skip to QB23) ☐ No (to QB22a)

If YES, what method did you used……
……
……
……

B22a. If NO, Have you raise pig since the course:

☐ Yes ☐ No

If YES, which methods do you do as a result of the course? ……
……
……
……

Skip to B24

B23. How have you changed the way you raise pigs as a result of the course?

☐ Changed ☐ Have not changed anything

If CHANGED, how……..……

……

……

……

B24. Did you raise cattle (cows/buffalos) before? ☐ Yes*(skip to QB25)* ☐ No*(QB24a)*

If YES, what method did you used……..……

……

……

……

B24a. If NO, Have you raise cattle since the course:

☐ Yes ☐ No

If YES, which methods do you do as a result of the course? ……..…….

……

……

……

……

Skip to B26

B25. How have you changed the way you raise cattle as a result of the course?

☐ Changed ☐ Have not changed anything

If CHANGED, how……..……

……

……

……

B26. Did you raise fish before? ☐ Yes*(skip to QB27)* ☐ No*(to QB26a)*

If YES, what method did you used……..……

……

……

……

B26a. If NO, Have you raise fish since the course:

☐ Yes ☐ No

If YES, which methods do you do as a result of the course? ……..…….

……

……

……

B27. How have you changed the way you raise fish?

☐ Changed ☐ Have not changed anything

If CHANGED, how……..……

……

……

……

B28. Suggestion and comments about the course.

……

……

……

……

……

……

Thanks for your information!!!!