

# *eLearning and Development: Lessons from Multi-Disciplinary Capacity Strengthening*

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*Journal of Learning for Development, VOL. 1, No. 3*

## **Abstract**

This paper documents the experience and lessons from implementing an e-learning program aimed at creating multidisciplinary research capacity. It presents a case study of bringing together a multidisciplinary group of professionals on-line to learn the skills needed to be a successful researcher in the context of HIV/AIDS and food security problems in Eastern and Southern Africa. Lessons from the experience for future development of similar courses indicate that some of the factors that can enhance the success of e-learning programs in developing countries are: assessing the needs of the participants, easy access to educational technology, addressing the differing learning styles of the participants, continuous interaction and commitment of course moderators, enabling access to open access learning materials and combining various pedagogical approaches.. The paper concludes that enhancing the skills of professionals in developing countries through e-learning programs is imperative to meet the human capacity needs for greater economic development and service delivery.

## **I. Introduction**

It is well recognized that countries that invest in developing the capacity of their citizens have been able to achieve faster growth (Barro, 1996)<sup>1</sup>. However, investments in human capacity development compete with other development priorities and take a long time to produce results (Fukuyama, 2004)<sup>2</sup>. Regular learning and higher education programs have limited enrollment opportunities and often do not supply adequate capacity, which is needed for implementing development interventions. E-learning programs have emerged as a major innovation in the last two decades to fill the supply gaps in the skills needed by mid-career professionals (Holmes and Gardner, 2006; Veletcianos & Kimmons, 2012). Governments and development partners in developing countries have invested considerable resources to build regional and national institutions that can organize and offer e-learning programs (Gulati, 2008). Yet, such approaches are not fully recognized by employers in hiring and promoting development professionals. In the development process, e-learning programs also continue to face implementation challenges (Okonkwo, 2012; Babu et al, 2013).

Recognizing the need for increasing local capacity for delivering services in social development, planners and policy makers have called for innovation in educational approaches (Leary and Berge, 2006). Developing countries have invested in distance education and e-learning programs both through the public and private sectors<sup>3</sup>(Gulati, 2008). In addition, international programs have also developed and offer development oriented e-learning courses. However, these emerging programs continue to face challenges for further development and funding. The quality of education offered through e-learning programs continues to be questioned (Smyth and Zanetis, 2007). Due to a lack of empirical studies in the context of development capacity building, the benefits and costs of promoting e-learning program for developing skills for program development and implementation remains unclear (Ogunsola, 2010). The donors funding e-learning programs increasingly ask for the evidence of success in terms of the effectiveness, efficiency, sustainability, and impact of distance learning programs (Rosenburg, 2001; Andrews and Haythornthwaite, 2007).

Distance education through e-learning and its application to development capacity strengthening is fairly new and still in its infancy (de la Peña-Bandalaria, 2007; Welsh et al, 2003; Robins and Webster, 2002; Taylor, 2001). Although the role of distance education in building the skills of farmers and rural communities has a long history, the ICT version of such courses only began to emerge during the mid- to late 1990s with the use of online learning delivery methods (Mandinach, 2005). This has led to development organizations exploring opportunities to increase cost-effectiveness and to reach a larger segment of the population (Potashnik & Capper, 1998; UNESCO, 2002). As the use of ICT-based distance education in strengthening capacity for delivery of development programs and projects continues to increase, so does the use of a higher level of interactivity among the participants of the e-learning programs and their organizers (Garrison and Anderson, 2003; Johnson and Aragon, 2003).

Yet, documentation of the issues, constraints, and challenges in implementing on-line courses for creating development capacity continues to be limited in developing countries. This paper uses a case study of multidisciplinary capacity strengthening for HIV/AIDS and food security research using web-based learning approaches to analyze the application of best practices of e-learning, and to document lessons for the future implementation of such courses for generating development capacity. This paper is organized as follows: the next section presents a case study that applies the best practices of on-line learning; this is followed by lessons learned from the experiment and concluding remarks in the last section.

## II. Multi-disciplinary Capacity Development using eLearning: Application of Best Practices

As described below, the basis of this case study was to strengthen capacity of the members of a Regional Network on HIV/AIDS, Rural Livelihoods, and Food Security (RENEWAL) program.

A major interest in web-based learning for this program was using online technologies to offer distance education programs to present an opportunity to build and strengthen networks of learners around a central theme (such as the RENEWAL network). One of the methods to build sustainability into development programs is through the creation of in-country, stakeholder networks. Online courses often incorporate discussion forums to stimulate dialogue on a particular subject between learners and this flow

of communication and ideas can further strengthen networks and develop a deeper sense of identity as a member of a particular network.

Initial efforts to develop an open and distance learning for this program began in 2005/06 with the development of a first online proposal writing course. This initial course was offered in what could be termed the first-generation style of online learning. While plans were discussed and proposed to develop additional online courses, none were offered until the course under discussion here was offered in 2009 for the RENEWAL program. In the following sections we examine some of the best practices that online course designers and capacity strengthening programs use and how they were applied to the current case-study course. We begin with a description of the on-line course and its methodology.

### **RENEWAL Online Course Training Methodology**

In response to a need identified by the RENEWAL program, an online course was developed to provide hands-on technical assistance in the development of action research proposals. This course provided the opportunity for researchers in the RENEWAL network to use a real-life proposal in their course work and emerge with a high quality proposal that could be submitted to potential donors for further consideration.

Specific objectives of the course included:

- developing the skills for preparing policy research proposals
- understanding the elements of a winning proposal
- analyzing some examples of good proposals
- gaining practical skills for organizing the components of a proposal
- reviewing some of the existing resources for proposal writing.

The course reviewed the standard elements that comprise competitive grant applications, and, through studying real and stylized proposals and completing a series of exercises and quizzes, to help participants recognize the characteristics of good, fundable proposals. Participants learned to write clear, compelling prose that demonstrates their expertise and their qualifications to do the work they propose. Participants learned to identify which grant-makers fund the kind of work proposed, to generate proposal ideas through a literature search and brainstorming, and to pitch their ideas and research plans convincingly.

One of our primary goals was to capitalize on, and further strengthen, the network of practitioners, policy makers and researchers gathered during the RENEWAL capacity strengthening workshops conducted in 2008 through open dialogues during the course modules. In order to further strengthen the network, the course was open only to participants who were nominated by the RENEWAL National Coordinators in Malawi, Kenya, South Africa, Uganda and Zambia.

The course was designed based on proposal writing courses previously given in a face-to-face format in 2005 and later transformed into an online course in 2006. For the purposes of the 2009 course, the course materials were adapted to Moodle (Stewart et al, 2007; Witworth and Benson, 2010), an open source, online course management system, and tailored to fit the needs and expectations of the RENEWAL

participants. The course was designed to take participants approximately two hours per week over of four weeks.

### **The Target Group and their Needs**

As institutions develop strategic plans for web-based, open and distance education programs, it is important that they know precisely who it is that they are targeting as the end consumer, or the learner in question. One of the attributes of the latest generation of online delivery methods is its capacity to specialize and tailor courses to precisely fit the needs of the target learners.

There are four categories of information about their potential learners in particular that course designers can use to tailor learning materials: (i) demographics; (ii) motivation; (iii) learning factors (study skills); and, (iv) subject background (Freeman, 2004). Information on learner demographics - such as age range, gender, and employment - can be used by the course organizers to group potential learners into various classes (if more than one class is being offered during the year. For example, many times it is desirable to have courses filled with learners from diverse demographic backgrounds so that learner-to-learner exchanges are more informative as learners from different backgrounds are able to share their individual experiences and areas of expertise. Motivational factors such as learning for problem solving on the job compared to gaining additional certification for the purposes of getting promoted to a higher position may have implications for the participation and demand for knowledge from the course contents. Study skills of the learners, such as time management, nature of preparation for the course, and familiarity with on-line methods of learning, have implications for the design and delivery of the course materials. Participants with an adequate background may advance smoothly compared to those who have not covered the prerequisites.

Armed with information regarding the potential learners' motivation, study skills and prior subject matter knowledge, course designers and developers are able to target the learning materials to fit the needs of the learners. This information might be useful in designing the types of learning tools and activities for the course assessment and exchanges between learners and tutors/facilitators and between the learners themselves. How this information is gathered is dependent on how the course enrollment is planned. If it is an open enrollment course, it is more difficult to gather the information with sufficient lead time for the information to be used to shape the learning materials of the course. While not always feasible, if the course has closed enrollment pre-enrollment learner questionnaires might be gathered in order to shape and tailor the course's learning materials during the course development phases. Useful data might include: reasons the learners are planning on taking the course, why they were nominated; what background knowledge they have in the subject matter (e.g., if any previous courses in the subject matter have been taken); and prior experience with online distance learning.

As mentioned in the previous section, the RENEWAL online proposal writing course was developed specifically for the RENEWAL hub country networks in Kenya, Malawi, South Africa, Uganda, and Zambia. The National Regional Coordinators in each country nominated up to ten participants for this closed enrollment course. The nomination process took place one month prior to the commencement of the course so specific learner profile information was not incorporated into the learning materials. However, the course was specifically designed for the RENEWAL network, even without knowing who

the specific learners would be, and thus incorporated RENEWAL documents and background resource materials into the learning materials as will be discussed in the following section.

### **Developing Learning Materials**

As indicated above, online learning provides a high level of flexibility that enables institutions to surpass geographical boundaries and the boundaries of time zones. However, along with this level of flexibility comes a heightened importance that the learning materials be designed to engage learners and promote learning based on a sound pedagogy (Ally, 2004). There are four key factors that determine a good learning experience – be it formal or informal, traditional or distance learning: (i) how the course is organized; (ii) how the learning information is presented; (iii) the quality of resources; and (iv) how the tutor-facilitator responds to learners (O’Rourke, 2003). This section will look at how the first three areas were addressed in developing the learning materials for the RENEWAL proposal writing course. A later section on facilitating group learning and learner support will address the role of the tutor-facilitator’s responsiveness to learners.

Developing online courses from traditional face-to-face capacity strengthening courses requires more than simply posting the face-to-face printed materials online. The learning experience cannot be directly translated from one format to the other so the learning resources and materials from the face-to-face course need be redesigned in order to create a more effective learning experience in an online environment (Abel, 2005). However, there are important aspects of many face-to-face courses that need to be converted in as close to its original form as possible in order to maintain the benefits for the learners. Active learning is an important aspect of on-line courses, as it engages the learner beyond the reading course materials, particularly when there are no face-to-face sessions. It helps to make learning practical and interactive with peer learners and helps to increase the analytical and evaluative nature of learning processes. For example, course projects are an important practice that should not be left in the traditional classroom but also incorporated into online learning (Tobin, 2004). Many activities and exercises that are typically offered in a group setting during a traditional face-to-face course can be redesigned as a group online activity using course management system applications such as discussion forums.

During the four-week course, course modules were designed to cover all aspects involved in writing a proposal from start to finish. The course was organized with lesson materials broken down into four to five brief lesson modules covered on a weekly basis and designed to take approximately half an hour per module. The learning materials began with an introduction to the purpose of proposals and a discussion of when writing a full proposal is required. Topics over the following weeks addressed the specific components of a proposal and the suggested order in which proposals should be developed. During the latter half of the course, modules addressed topics such as the proposal’s logical framework, budgets and the proposal components that are prepared at the end of the development process, such as the background section, summary and proposal cover letters.

Generally speaking, the skills necessary in writing proposals are universal and not a subject matter that can be tailored; however, throughout the course, material examples were used to illustrate the point of the lessons. These examples and illustrations were drawn from RENEWAL specific subject matter, published RENEWAL documents and RENEWAL proposals. Additionally, learners were encouraged to use any

proposals that they might be working on in the completion of lesson exercises and/or discussions in the forums. Such an output oriented approach to learning helps the participants to relate the learning to their own on-going projects and make learning meaningful. This would enable the participants to seek advice and suggestions for improvement by the course tutor-facilitator and other participants. Some sample proposals were also included in the additional resources section of the course. These proposals were actual proposals that were submitted by various divisions of the International Food Policy Research Institute (IFPRI) to donors for funding. All of the sample proposals used in this course were successfully granted funding and, as such, served as good examples of what comprises a convincing proposal.

The proposal writing course resources were presented using, primarily, brief text webpages with the lesson material. This was done in order to circumvent any problems learners might have with connectivity issues. With this format the materials could readily be printed and worked on physically until their internet connection was restored. Following the first RENEWAL online course, a second course on the writing and presentation of scientific research was also developed for the RENEWAL network. With this second course, in order to adjust the lesson materials to different types of learners with different study skills, the lesson materials were presented in two formats – both as text webpages, as with the first course, and in a PowerPoint presentation slide format. Learners were able to choose their preferred method of viewing the materials.

In developing the RENEWAL online courses, no formal review process took place in order to assure the quality of resources; however, the learning materials were drawn from courses conducted in both traditional and distance learning formats. While preparing the materials for this specific course, the evaluation reports and feedback from the previous courses was consulted in order to address any issues and serve as a quality control check.

### **Application of E-Learning Best Practices**

Tobin (2004) highlights a set of best practices for the development and implementation of e-learning programs. Table 1 summarizes how these best practices were observed during the development of the case study course and the related challenges. They are further elaborated on below.

*Table 1. Application of the E-learning Best Practices*

<b>Best Practice Principles of a E-Learning Design (Tobin, 2004)</b>	<b>How Applied to the Case Study</b>
<i>Student-Faculty Contact</i>	The course offered no face to face opportunity for the students and the faculty to interact. However, there were several discussion sessions on-line in which the interactions with students helped to further guide the students in the learning process.

<i>Cooperation Among Students</i>	The course was designed for the adult learners who are in their beginning to mid-career levels. As most of the participants were from similar thematic backgrounds there was natural cooperation among the participants. However, due to varying levels of research involvement and experience as researchers, participants differed in their learning speed.
<i>Active Learning</i>	The main learning objective was to develop the ability of the participants to develop their own winning proposal. This made it possible to incorporate the active learning aspect of the e-learning. Since participants had their own assignment of developing a proposal for funding their research, the learning process involved analyses and evaluation of their practical outputs and higher level of participation in the discussions. The active learning also helped to improve the knowledge, attitude and practice of developing a winning proposal.
<i>Prompt Feedback</i>	E-learning programs can be effective only when the feedback on the assignments and the regular enquiries are addressed on a regular and prompt basis. This is essential to keep the interest of the participants and help them learn on the routine basis. Moderator for the course was available for the duration of the course on a regular basis and this met the expectation of the participants.
<i>Time on Task</i>	Timing of the tasks assigned to the participants and regular followup helps to increase the retention and the completion rate of the participants. However, the availability of computers and access to internet connections could be challenging in the context of the developing country's participants. Yet, frequent reminders and holding the participants accountable for their contributions and assignments help in reducing delinquency.
<i>Communicating High Expectations</i>	Courses that expect high levels of participation and involvement of the students in the course activities and that expect high quality of work during assignments and reporting could be a way of increasing the status of on-line learning. When the course contents were connected to an outcome that could result in further rewards such as career development opportunities and further funding for research through high quality outputs, learning could be taken seriously. However, such expectation from the participants should be

	communicated clearly at the beginning of on-line programs.
<i>Respecting Diverse Talents and Ways of Learning</i>	On-line courses, particularly adult-learning programs, attract participants who may come from diverse backgrounds and who are used to different approaches to learning. Yet, bringing them all together in virtual mode requires respect and appreciation for this diversity by the course managers. Aligning the contexts and delivery of the course to meet this diversity could help in increasing the retention and completion rates of on-line courses

Source: Authors' compilation.

### **The Student-Faculty Contact**

Much of the student-faculty contact was developed through the tutoring sessions. The role of the tutor-faculty is much more than either an uninvolved administrator of the course or just that of a professor imparting knowledge to a group of students; rather, in web-based, open and distance learning, tutors are “facilitators of learning” (Denis et al., 2004). This is further emphasized by Howell et al.’s (2003) description of tutors as serving the roles of: facilitator, teacher, organizer, assessor, mentor, role model, counselor, coach, supervisor, problem solver and liaison. O’Rourke (2003) suggests that there are four main categories of tutoring skills: (i) guiding the learning process; (ii) enabling the learning; (iii) supportive; and, (iv) administrative. With the RENEWAL proposal writing course, one tutor-facilitator performed all four of the tasks outlined above in order to fully support the learners. These tasks took a greater amount of time when corresponding on a regular basis than had been budgeted or foreseen by the course developers, particularly with regards to the supportive tasks, since few of the learners had previous experience with online courses. The most challenging role was that of facilitating and encouraging learner-to-learner exchanges as will be seen in the following section.

### **Cooperation among the Students**

As in traditional courses, the value of learner-to-learner exchanges and class dialogues cannot be underestimated. Spontaneous and cultivated discussions among students and collaborative activities often aid in the translation of theoretical lessons into concrete concepts that learners can apply in practice. The benefits of these interactions are necessary regardless of whether the classroom is a physical or virtual one; however, in an online learning environment, strategies need to be developed during the planning stages and learner-to-learner exchanges need to be carefully cultivated in order to bear fruit. O’Rourke (2003) suggests three possible strategies in designing a collaborative group learning situation: plan a complete program of group activities for the entire course duration; prepare a few activities at first and then enable learners to direct their own group work; or provide learners with guidelines for planning their own group activities and let them carry out their own plans.

In two of the three strategies, the tutor-facilitator plays a direct role in shaping the interactions between learners; however, even then, it is the learners themselves, Thorpe (2002) suggests, that ultimately shape the substance and meaning of the collaborations. This would indicate that the most supportive role that a

tutor-facilitator might play is that of a motivator. Understanding the motivation of the participants in taking the course was helpful in guiding them on how the course contents might help in achieving their career goals. If the appropriate triggers are found to motivate learners to participate in group activities, it would follow that meaningful exchanges between learners would ensue. Just as in traditional face-to-face classroom settings, the various types of group learning activities include: small-group discussions, debates, demonstration and practice, situational analysis, case studies, learner presentations, and role-plays.

During the first course on proposal writing, the second strategy listed above was applied to the course. The tutor-facilitator encouraged participants to initiate group interactions via the discussion forum online learning tool, beginning with introductions and providing the learners with information regarding what types of proposals they were working on within the particular RENEWAL subject area. The group discussions were not required as part of the assessment of the course participation and while, it was encouraged, the tutor-facilitator did not play an ongoing active role to stimulate dialogue; rather, it was hoped that the dialogue would be spontaneous following the first few planned activities. It was found, however, that this did not provide sufficient motivation. Just over a third of the learners participated in the initial discussion forums with the very few of the discussions resulting in any interchange of ideas; rather, the discussion forum became static with individual postings that were not connected and learners did not tend to respond to each other's entries.

The second online course on writing and presenting scientific research adopted a different approach and made participating in discussion forums a mandatory component of the course as suggested by Tobin (2004). Additionally, the first of O'Rourke's (2003) strategies was applied with discussion forums being planned for each week's set of lessons. The discussion forums had specific topics and specific questions were asked of the learners. This approach had dramatically different results with over three-fourths of the learners participating in the discussion forums. However, it should be noted that while participation in the forums did take place with this first strategy there were no spontaneous discussions; exchanges between learners took place as required and on the subject matter specifically suggested by the tutor-facilitator. One of the similarities between the learner-to-learner exchange strategies between the two courses was that in both the tutor-facilitator did not take an active and ongoing role. Several of the studies examined during the literature review for this paper (Tobin, 2004, O'Rourke, 2003, and Thorpe, 2002) suggested that consistent active correspondence and encouragement on the part of the tutor might be a key to motivating learners to participate.

### **Prompt Feedback through Assessments**

One of the ways to provide feedback on the progress made by the participants is through the assessment of their assignments and discussion points. There are two primary considerations when planning the various course elements with the aim of assessing learners: (i) how assignments, exercises, tests, etc. are designed to evaluate learner knowledge; and (ii) what role assessment and feedback serve for the course and the institution's online, distance learning program. Assessing learners presents a difficult challenge for institutions such as IFPRI in which learners participating in capacity strengthening workshops and short courses do not receive any credit for the course per se. Also, in the traditional face-to-face workshop counterpart to the online courses there are no assignments or quizzes, rather, participation is typically voluntary and consists of only group discussions or group exercises followed by plenary sessions.

Prompt feedback to the participants is effective regardless of the type of online course being offered (e.g., credited course from an institution of higher education or a non-credited capacity strengthening short course from a development institution) as long as there are some assessment tools applied during the course (O'Rourke, 2003). During the RENEWAL proposal writing course two primary assessment methods were used to monitor learner progress: quizzes and brief writing assignments. During the scientific writing course an additional assessment method was used as already mentioned in the form of participation in discussion forums. Additional indicators were gathered on an informal basis to monitor learner progress and participation. These indicators included: the number of course modules attended, level of participation in online discussions, frequency of visitation to the online course website, the number of assignments completed, and finally, the average score on each assignment.

### **Time on Tasks**

Timing various tasks during the course is essential for the successful completion of the learning objectives. Course assignments were a key part of the RENEWAL course. The course assignments need to be carefully developed, keeping in mind the various elements of the online learning environment and full range of possibilities offered by the course management software program being applied. While the list of elements below that lead to a good assignment is not exclusive to online and open distance learning programs, they warrant inclusion here partly because there is less room for error in an online setting where there is not frequent physical contact between learners and tutor-facilitators. Through ensuring that these elements are included in the course assignments, the course tutor-facilitator will more readily be able to accurately assess the learner's progress and ensure that the assignments are of high quality.

### **Communicating High Expectations**

Communicating a high level of expectation and holding the staff offering the course to that high expectation requires increasing the intensity of activities on several fronts. It could be equally rewarding in terms of better participation and successful completion of the courses. Typical activities in the management and administration of an online learning course include: financial aspects (developing and monitoring course budgets), student recruitment, processing inquiries, learner enrollment and registration, material development, assessment, and technological considerations (Freeman, 2004). With an online learning program there is a blurring of the lines between administrative tasks, course development and learner support tasks. With small online learning programs, individuals, often the course facilitator or tutor may need to play several of these roles at once. In planning the management and administration aspects of an online learning program, Freeman (2004) suggests that there are three areas in particular to consider: staff development, quality assurance and support staff.

Staff development is an important consideration for management when planning to incorporate an online distance learning program due to some of the unique characteristics and skill sets needed for designing and conducting a high quality, online learning programs. Staff labor time and financial resources are needed in order to ensure that staff development incorporates the necessary skill set in order to perform tutoring, course development, and technology related tasks (Freeman, 2004). As in this case study with the online proposal writing course, quite often staff need to work from the ground up to develop online courses, beginning with learning how to use the course management software package, in this case the Moodle program. Once staff are familiar and comfortable with the software package they can design and

develop the course using the full range of learning tools provided by this package. Finally, staff need to allocate sufficient labor resources to conduct the course and perform the various tutor functions. The case study course discussed here was run with minimal support staff. It did involve high intensity involvement of the staff involved, which may not always be possible unless the course generates adequate resources to hire more human resources.

Having high expectations for the participants is directly related to offering high quality content. As previously mentioned in earlier sections of this paper, there is great variance in the quality of online courses available to learners. Freeman (2004) suggests two areas in particular in which quality standards might best be addressed: (i) products - learning materials, courses, assessment, standard of learning achieved; and (ii) services - advice and counseling, registration, tutoring, and technology. Quality assurance is a delicate balance of course design, pedagogy, technology, and fulfilling the learners' needs (Rovai & Barnum, 2003). Quality assurance techniques for online distance learning that might be considered most appropriate for development and research institutes include: using expert groups to develop curricula, conducting a peer review of learning materials, piloting materials, and collecting feedback from learners (Freeman, 2004). The contents of the case study course was developed using several rounds of group presentations and discussion during the development of its face-to-face version.

As one increases the expectations for participants, the intensity of involvement increases for the staff designing and conducting the courses. One of the significant differences between traditional face-to-face learning and online, open and distance learning is that there is a far greater need for support staff assistance in running an online course. Some of the tasks the support staff perform include: dealing with inquiries from prospective learners, giving information and advice to prospective learners, enrolling and registering learners, maintaining learner records, producing learning materials and uploading and programming learning materials to the learning management system platform (Freeman, 2004). It is important to not underestimate the support staff time and necessary skill set for administering to these tasks. Quite often, these tasks may also be combined with the facilitator-tutor functions, such as in the case of the RENEWAL courses discussed in this paper, however, this further increases the time commitment needs of the tutor.

### **Respecting Diverse Talents and Ways of Learning**

Given the diverse nature of the participants, there is a need to appreciate the challenge some students face with a new way of learning through on-line courses. Studies seem to suggest that online, open distance courses have a considerably higher propensity for learners to withdraw or dropout. Studies suggest that 40-50% dropout rates are common in distance learning courses in general (Potashnik & Capper, 1998). Some of the reasons behind this seemingly high dropout rate include (Chyung, 2001) unattractive course layout, low relevancy of course objectives, lack of self-motivation on the part of the learners, and an unfamiliar on-line learning environment. While course designers could address some of these factors in advance, some of them, such as the lack of motivation on behalf of the learner cannot be foreseen without conducting fairly comprehensive learner profiles as previously discussed. In general, identifying the motivational factors that interests various groups and meeting them through appropriate incentives would help in increasing the retention and completion.

Internet connectivity in terms of the band-width remains a challenge for effective participation in the courses. For the RENEWAL proposal-writing course, forty-four participants registered from the five RENEWAL network hub countries. These registered learners came from an assorted background and included researchers, practitioners, policy makers and graduate students. Of these initial participants approximately 50% completed the course and participated on a weekly basis. Four participants needed to withdraw from the course almost immediately upon registering due to business travel conflicts. Of the other registered participants we do not know the reasons for their departure from the course but we know that learners from one of the countries, Malawi, with severe internet connectivity challenges had the lowest completion rate and thus it is suspected that technological issues were to blame for the high dropout rates amongst registered learners that country.

### **Course Assessments and Evaluations**

In addition to analysis of the best practices presented above, the on-line course studied here revealed further insights. Mandinach (2005) suggests three general goals for the evaluation of online learning courses: (i) measuring the impact learning has on the individual learner in order to measure the institution's capacity for fulfilling the learning objectives of the course; (ii) measure the impact of online learning as a relatively new learning process; and, (iii) gather information at the organizational level about the impact of the institution's online learning program. Additional reasons for conducting post-course learner surveys (and/or mid-course surveys) include evaluating (Freeman, 2004) the effectiveness of the course in terms of learner participation, quality of course materials, on-line support and assessment systems, and the accuracy and the current nature of the contents.

Course evaluations are essential in order to ensure the quality of the course and the institution's overall online distance learning program. It is essential that the evaluations be analyzed and the information within applied to subsequent courses. In the case of the proposal-writing course, summative evaluation methods were applied with a participant evaluation questionnaire distributed to learners following the course's completion at the end of October, 2009. With the scientific writing course, both formative and summative learner evaluations were administered, with formative evaluations gathered from learners every two weeks in order to ensure that the course was on the right track and fulfilling the needs of the learners.

From the submitted learner evaluations of the proposal writing course (50% of registered learners completed the post-course evaluation and sent in their feedback), overall satisfaction with the course was good,—83% of respondents ranked the course as good or excellent and the remaining respondents ranked the course as average (17%). Furthermore, the vast majority of respondents (94%) further indicated that the course was relevant and of use to them.

Most participants (60%) indicated that they did participate actively in the course though challenges with workloads, travel and internet connectivity issues were felt to interfere with course participation. Furthermore, suggestions for methods to improve group discussions included recommendations already reviewed in the previous section; specifically, increased participation on behalf of the tutor-facilitator to stimulate interesting discussions and making participation in discussion forums mandatory.

In reviewing the objectives of the course and the materials addressed, participant evaluations suggest that subsequent courses give fuller attention to reviewing existing resources for the preparation of proposals. Time management seemed to be an important consideration both for the individuals involved (e.g., juggling their work loads and travel schedules) and for the overall course (e.g., many felt that the course should have covered a longer period of time).

Finally, learners were asked what they considered to be particular strengths and weaknesses of the course. Some of the suggested strengths included: (i) concise and practical course materials; (ii) well organized with a logical and comprehensive succession of lesson modules; (iii) current course materials which were relevant to the learner's professions and needs. Perceived weaknesses included: (i) course duration was too short; (ii) some learning materials were too basic and/or vague; and, (iii) insufficient contact and/or the tutor-facilitator was not sufficiently active. These comments as well as other suggestions from the course evaluation are addressed in the following section on lessons learned.

### III. Lessons Learned

The key lessons learned and recommendations for future web-based distance education courses are as follows.

#### 1. *Profile Learners to Tailor Course Modules*

It is important to determine the learner profiles of prospective students (i.e., through a brief survey upon enrollment). This would serve several functions, including the assurance that the course is designed for the targeted population so that the lesson modules and materials are neither too technical nor too general. For example the learning approaches and methods will differ when courses are designed for adult learners as compared to one for young active learners (Arthur and Tait, 2004).

If possible a survey of potential learners should be conducted in advance of course development in order to tailor the course design to match the needs of the prospective learners. Courses need to be designed to ensure that they will trigger learners' motivations. As mentioned in the opening sections of this paper, learner profiles are changing as are their driving motivations. In the case study analyzed in this paper the feedback from the participants indicated that adult learners could be motivated by a strong connection between the learning outcomes and their careers and potential for professional advancement. External expectations and social relationships are also motivational forces for older learners (Howell et al., 2003). Furthermore, if a pool of students was obtained well in advance during, for example, the strategic planning of the year's courses, administrators would be able to group learners according to their existing and desired skill sets, moving towards an even more tailored and learner-oriented learning environment.

In lieu of profiling learners in advance of the course, formative evaluation methods might be applied at regular intervals throughout the course. This was the method applied to IFPRI's second online learning course for RENEWAL on writing and presentation of scientific research. With this method, the direction of the course and the presentation of learning materials could be altered mid-course in order to better fit the needs of the students.

This process of tailoring the course to fit the needs and expectations of the learners is important as the institution also looks for ways in which to build a reputation for offering high caliber online distance education programs. Tailoring courses also helps the institution find its niche in a competitive market for web-based distance education programs. Furthermore, providing courses that are too simplified or basic, present the risk of damaging the institution's reputation for providing high-quality resources.

## *2. Foster a Sense of Security and Confidence in Learners*

Adult learners tend to feel somewhat insecure when embarking on an online distance learning challenge (Howell et al., 2003). It is understandably even more challenging for adult learners without prior experience with online learning and located in developing countries that frequently experience connectivity challenges. Studies indicate that it is particularly important in the first few weeks of an online course that technological and support services be firmly established and visible to online learners so that they are made to feel comfortable (Howell et al., 2003) (Menchaca & Bekele, 2008). Exerting this extra effort during the initial stages of the course registration, enrollment and opening weeks can help reduce the potential risk for these participants to drop out of the course due to frustrations trying to learn how to maneuver within the online learning environment.

In order to smooth the way for learners to access the course website, the course facilitator took extra steps to pre-register and enroll all of the participants. Learners received an email prior to the course's commencement with complete and comprehensive instructions on how to enter the course website and access the learning materials. However, even with these preventative measures, several participants still encountered difficulties that delayed their participation in the course by a week or two. In subsequent courses it is recommended to plan an extra week for course registration and enrollment during which time learners can familiarize themselves with the learning environment prior to the course's commencement.

It is important to also build some flexibility into the course schedule to address issues that might arise once the course has already begun. For example, during the proposal writing course, several connectivity issues surfaced mid-course that required a course extension; these included electricity rationing in Kenya, and a series of prolonged connectivity failures for the Malawian learners. The course dates were extended by a full month so that all participants would have the time and opportunity to complete the materials. In addition to extending the course dates, the facilitator also made additional efforts to correspond regularly with those learners being affected by the connection failures so that they did not feel left behind.

## *3. Target All Types of Learners*

Just like in face-to-face, traditional classrooms, the design of online courses should acknowledge and attempt to target all different types of learners. There are three "types of learners": auditory learners (prefer to listen to information), visual learners (prefer to read information) and kinesthetic learners (prefer hands-on experience and/or demonstration) (Felder and Brent, 2005).

In distance education, it may be more difficult to determine what types of learners are participating in a course. Nevertheless, lessons, modules and exercises need to take different forms and methods by applying multiple tools (i.e., not exclusively PowerPoint presentations) in order to reach all three types of learners. Some learners, due to their learning style may find online learning to be more challenging, which may result in dropping out of the course. However, some studies suggest that this outcome might

be avoided through integrating a strong learner support system in the course and maintaining high levels of communication between the tutor-facilitator and challenged learners (Hubschman, 1999).

#### 4. *Fostering Dialogue between Learners*

Encouraging dialogue and learner-to-learner exchanges in an online setting is a formidable challenge. This could be one way to provide the needed support to the students in e-learning programs (Tait, 2003; Mason, 2006)). Incorporating dialogue among the learners serves two overall functions, in particular: (i) it helps create a social learning environment and social network; and (ii) it utilizes an additional type of learning tool to target all three types of learners discussed above. Additionally, learner-to-learner exchanges offer learners an additional type of resource as they are able to learn from each other's experiences and professional areas of expertise. However beneficial it may be, online learners seem to be somewhat reluctant to initiate dialogues and participate actively in discussion forums. One of the challenges seems to be one of motivation: learners do not necessarily realize the potential benefits they would receive if they participated more actively in learner-to-learner dialogues. If it is not a requirement (like an assignment or quiz) it is difficult to instill motivation in the participants. In the proposal writing course, participation in dialogues was voluntary and as a result, it was lackluster and not a dynamic component of the course. During the subsequent scientific writing online course, participation in at least a majority of the dialogue forums was made mandatory for course credit. The result of this was a dramatic increase in the interactivity of the learners.

Additionally, dialogue among learners is partly dependent on course momentum. During the first half of the proposal writing course there was more participation in the discussion forums, however, once the course dates were extended participation in the forums slowed considerably; the more drawn out the course the less intense the momentum and the less dynamic the interactions between learners.

The role of the tutor-facilitator is also vital to the process. When the tutor plays a less active role, the learners seem to take it as a cue. The tutor also has the unique ability to create direct links and identify similarities between learners. The role of the tutor as a rapporteur of the dialogues among the participants proved valuable in implementing the case study course discussed here.

#### 5. *Course Schedules and Time Management*

The course's time management strategy needs to be carefully planned in advance. An important consideration when determining the course schedule is the characteristics of the registered learners, or the learner profiles. As indicated in the immediately preceding recommendations, online course designers need to foster a learning environment that provides flexibility in time, space, and pace and facilitates active and interesting dialogue amongst learners. However, there is almost an inherent conflict between these two objectives. For instance, as experienced in the proposal-writing course, a long duration (e.g., two or three months for a short course) slows the course momentum and subsequently dampens the learners' motivation to participate in forum dialogues, and vice versa. A related challenge is that in order to encourage learners with tight schedules and limited time available to commit to an online course (particularly one for which the learners have no tangible outcome other than personal/professional growth – e.g., a course that is not accredited nor attached to a degree program) a longer course duration is often necessary (Howell et al., 2003). Achieving the correct balance between the two objectives takes careful

planning and the dedication and active involvement of the course facilitator. Tobin (2004) suggests that one remedy to this challenge is to space deadlines intermittently throughout the course in order to provide a context for regular contact with the course tutor and between the learners while still structuring the course to take place over a longer duration.

#### *6. Importance of Tutor-facilitator Commitment*

It is important to accurately plan for the real time commitment involved in tutoring/facilitating online courses. Managers need to keep in mind the lengthy list of roles and responsibilities that tutor-facilitators must perform while conducting an online course, particularly if the tutor-facilitator roles are combined or intermingled with learner support roles and course development and design. In this context, courses that contain high doses of synchronous learning where all participants are expected to connect on-line at the same time and learn the same content could be much more involving than the asynchronous learning approaches which allows more flexibility to both facilitators and the students.

In addition to the sheer quantity of work and tasks involved in operating an online course on a day-to-day basis, it is important to recollect that modern, online learners tend to not be tolerant of delays by course organizers-facilitators, which can greatly affect the perceived quality of the online course (Howell et al., 2003). As evidenced by the evaluations of the proposal writing course, learners seemed appreciative of constant and immediate correspondence letting them know when their submissions would be evaluated and that their submissions had been received. When this correspondence faltered or was delayed, learner feedback was immediate. Thus, there is a need for effective management of learners' expectations relating to regular communications and the technical communication and feedback. Setting up clear rules of communication before beginning the course would be highly useful.

#### *7. Linking Online Distance Education Programs*

As mentioned in earlier sections of this paper, one of the motivations for incorporating online open and distance education programs for IFPRI is the potential for linking these learning resources to other existing and future programs. The strategic linking of tailored online courses to research projects within the institution, offers an opportunity to holistically package its research and capacity strengthening services in order to improve its competitive advantage in the pursuit of donor funding. Finally, this might promote the development of partnerships to offer additional courses or identify needs among the partner universities that do not currently have distance-learning programs.

#### *8. Maintaining an Ongoing Awareness of Technological Trends in Distance Education*

It is important that online course designers and managers maintain an awareness of both the latest trends and advances in the available technology and online learning management platforms, as well as the current technological capacity of their targeted learners. Appropriates of this medium of learning should recognize the challenges faced by developing countries in having adequate ICT infrastructure. The ICT field is constantly and rapidly evolving, as are the capabilities of course management software programs. In order to maintain low capacity strengthening expenses while developing the RENEWAL online courses, course developers utilized an open source course management software program (Moodle). As was addressed in the opening paragraphs of this paper, continuing education and lifelong learning is not limited to those learners that we are targeting. It also applies to the course designers as well. It is

important that they keep in touch with ongoing developments and the latest course development tools being offered by programs such as Moodle.

9. *Open source course management systems* present the appearance of a low-cost, flexible solution to online course delivery but that appearance is deceiving. The cost of the required programming and technical support must be added to the low cost of the source code. The inherent ability to customize an open source system for a particular use must be balanced with the need to provide students with an interface that does not detract from their learning. Finally, the ease of acquisition of open source systems by programs within institutions challenges the economies of scale that many institutions gain with centralized systems. Campus-level concerns can lead to distance educators being directed towards solutions that are less appropriate for their specific contexts.

## IV Concluding Remarks

Speeding up the development process will require increasing the productivity of various sectors such as agriculture, health and education in the developing world. However, knowledge and skills development are fundamental to increasing the productivity of human resources in these sectors. The development community has invested in various forms of capacity strengthening with limited success in the last fifty years. This is partly due to the lack of an adequate quantity of the human capital to address the emerging multidisciplinary development problems. The e-learning course described above is a result of the recognition of the extreme scarcity of interdisciplinary graduate training. A major benefit of developing such skills is to increase the ability of the local professionals to sustain their skills as well as to effectively use them in multidisciplinary problem solving. The case study described above brought out relevant lessons for the future implementation of the e-learning courses for development objectives. In summary, the case study demonstrates that an on-line course that increases faculty – student interaction, provides for adequate learner-learner interaction, gives adequate incentive to the participants, maintains high relevancy to real world problem solving, and respects the diversity of the participants' background and ways of learning is more likely to be successful. Finally, while there is a definitive role for e-learning programs in addressing the capacity constraints in developing countries the need for increasing their effectiveness and efficiency can hardly be overemphasized.

## Footnotes

1. Human capital as a factor explaining the growth of the countries has received increasing recognition since the publication of Barro (1996). Several empirical models have been attempted. Yet research on appropriate and cost effective methods for developing local capacity remains an under researched area.

2. See Fukuyama (2004) for an exposition of capacity development issues in the context of national building and the conflicting choices policy maker have to make in building local capacity for strengthening nations.

3. The University of South Africa and the Indira Gandhi National Open University are some good examples of distance education programs in developing countries. African Virtual University is another attempt to extend learning opportunities to learners in the distance and e-learning mode.

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