

**A Case Study of Capacity Building:  
Adapting and Applying E-Learning in Afghanistan**

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**Abstract**

*The purpose of this case study is to share how e-learning is being used as a capacity building tool in Afghanistan through the PEACE Project, short for Pastoral Engagement, Adaptation and Capacity Enhancement (<http://www.afghanpeace.org>) (USAID, 2006). The PEACE Project is building capacity through the use of new technologies within its broader objective of helping Afghanistan to improve livestock production and manage its rangelands. The infrastructure and support provided by the government's initiatives has provided an ideal setting for the PEACE project to collaborate with Afghanistan's universities and government institutions to build capacity. The case study reveals characteristics and qualities of Afghans that were considered when adapting and applying e-learning as a medium for delivering training on Near Infrared Spectroscopy (NIRS) technology to analyze livestock fecal samples. The authors strive to raise awareness regarding the setting in which e-learning is being used to build capacity and share techniques that were implemented to encourage success. Detailed descriptions of how interactivity and supporting materials were interlaced to enhance the educational experience are included.*

**Keywords:** capacity building, e-learning, training, NIRS, Afghanistan

## Introduction

Advances in computer technologies continue to allow increased means of providing education through e-learning. As documented by Russell (1999), a synthesis of research comparing traditional face-to-face instruction with non-traditional delivery revealed a “no significant difference phenomenon.” However, one could argue that the difference exists not in effectiveness, but in access and consistency. Delivery of instruction via electronic means provides a consistent message that can be re-visited by learners on an as-needed basis, thus enhancing the learning process. Leary and Berge (2006) reported that “Compared to other business and management fields, e-learning in agriculture-related fields is still in the early phases of adoption” (p. 51). International agricultural settings offer unique challenges to using e-learning given diversity in culture and content. One setting that is being benefited by an e-learning approach is Afghanistan.

More than 80% of Afghanistan’s livestock production originates from the 3 million nomadic Kuchi herders who have grazed the region for hundreds of years. Drought, environmental degradation, and conflict have severely affected the livestock sector, and eroded the livelihood and sustainability of the Kuchi way of life (Whisenant, Schloeder, & Jacobs, 2009). A long history of conflict has also prohibited development in general and led to a diminished or non-existent capacity in most government and private sectors. Consequently, there is a lack of capacity to resolve the crisis of Afghanistan’s rangelands and its failing livestock economy.

Effective capacity building can create an enabling environment with appropriate policies and lead to institutional development and community participation, following which societies can strengthen. The change in government in Afghanistan in 2001 opened the door for donors to assist with rebuilding of the country’s capacity and to improve the socio-economic livelihoods of Afghans. Donors are currently working closely with the Islamic Government of Afghanistan under the auspices of its five-year strategic plan for improving the quality of education at all levels:

“Our goal is to significantly improve the quality of, and promote equitable access to, education, skills development, and other social services in order to re-invigorate Afghanistan’s human capital, reduce poverty, and facilitate economic growth” (Office of President, 2006).

One project working to build capacity in Afghanistan is the PEACE Project, short for Pastoral Engagement, Adaptation and Capacity Enhancement (<http://www.afghanpeace.org>) (USAID, 2006). The PEACE Project is building capacity within its broader objective of helping Afghanistan to improve livestock production and manage its rangelands through the use of new technologies. The infrastructure and support provided by the government’s initiatives has provided an ideal setting for the PEACE project to collaborate with Afghanistan’s universities and government institutions to build capacity.

To facilitate the adoption of new technologies, an e-learning course titled “Implementing NIRS Fecal Sampling Technology” was created to train university students and Ministry of Agriculture, Irrigation and Livestock (MAIL) personnel on how to use Near Infrared Spectroscopy (NIRS) technology to analyze livestock fecal samples. The information obtained from NIRS fecal scans is designed to help the government and herders understand the nutritional value of forage ingested by their livestock and determine whether this forage is providing adequate nutrients for their herd. The information provided by the analysis will also help herders make better decisions on where to graze, for how long, whether or not to provide supplements, and when to sell. The government can use this information for planning and rangeland management purposes. Once Afghans are trained in

the utilization of NIRS technology to provide diet quality information, leaders of programs such as the 2003 FAO distribution of emergency feed to Kuchi herders (FAO, 2003) will be able to quantitatively decide what type of feed, to whom, and how much should be distributed.

The people of Afghanistan are in the process of regaining their societal structure. Years of war has destroyed and then prevented the educational system from developing. Even now, most university professors are only capable of teaching their students material and concepts that are 30 years old. The learning and application of current ideas is not available to most students and becomes a major stumbling block to efficient development of the country. The MAIL recruits most of its employees from the Universities. New employees to the Ministry arrive with little or no practical experience and have little in the way of new ideas to offer their older colleagues. The current situation is not easily remedied due to persistent insecurity in the country. Visiting professors to the universities might be an ideal solution, but very few are willing to travel to Afghanistan, not to mention the language barrier given that most Afghans do not speak English. These issues make e-learning a more suitable method of delivering quality educational materials to students and government employees.

### **Purpose and Objectives**

The purpose of this case study is to share how e-learning is being used as a capacity building tool in Afghanistan. The objective is to raise awareness of the setting in which e-learning is being used to build capacity and how the various methods described can serve as a model for those interested in implementing e-learning in similar settings.

### **Methods**

The case study approach was used to examine how to develop and deliver e-learning to build capacity in Afghanistan. This approach to research dictates that an investigator should conduct a detailed examination of a specific phenomenon or group (Borg & Gall, 1983). This method was chosen because it provides a “thick description” of e-learning as a capacity building tool and the context in which the course was delivered. This description helps readers determine the transferability of the case and use the results for future capacity building efforts (Erlandson, 1993). Purposive sampling, which maximizes the ability of researchers to identify emerging themes, was used in this study. Critical case sampling was selected as the strategy to decide who and what to study. The power and logic of purposive sampling allows researchers to select information-rich cases for in-depth study (Patton, 1990).

PEACE team members interact daily with current and potential learners. Two of the authors serve as integral participants in the project. Schloeder (Research Scientist) and Jacobs (Principal Investigator and Chief of Party) currently reside in Kabul, Afghanistan. Their observations were used to collect data for this study. According to Guba and Lincoln:

“Observation...maximizes the inquirer’s ability to grasp motives, beliefs, concerns, interest, unconscious behaviors, customs, and the like; observation...allows the inquirer to see the world as his subjects see it, to live in their time frame, to capture the phenomenon in and on its own terms, and to grasp the culture in its own natural, ongoing environment” (1981, p. 193).

The e-learning course was developed based on the results of observations of Afghans, their culture, government, and technology limitations.

## Results

The development and delivery of an e-learning course to train university students and Ministry of Agriculture, Irrigation and Livestock (MAIL) personnel on the use of NIRS technology to analyze livestock fecal samples is described in the sections below.

### *Development of E-Learning Course*

Hunt and Ivergard (2005) share the importance of considering context, purpose and the usability of e-learning when preparing to implement technology-based learning. When considering e-learning for capacity building and how content should be developed, learning styles, prior experience of learners and identifying characteristics of the culture in which learning will take place are all important factors. According to the World Fact Book, only 28.1% of Afghans over the age of 15 are literate and the average length of time children stay in school is 8 years (CIA, 2009). These statistics indicate that content should be presented in simple terms. Selection of wording, length of expected engagement, and activity selection should be considered carefully.

PEACE team member experiences in Afghanistan indicated that Afghans tended to work and learn better as a group rather than individually. The team also found that most Afghans level of education and experience was extremely low and they had little or no knowledge of terminology commonly used in the livestock industry. The main languages in Afghanistan are Dari and Pashto. Dictionaries for these languages lack many of the livestock industry terms. While building capacity on the PEACE project, the authors found that many Afghans, even those educated by the standards set forth in country, have poor analytical training and skills in addition to lacking practical experience in animal nutrition and livestock management.

A number of instructional design techniques were employed to meet the needs identified. The course was divided into five learning modules, herein referred to as units. Each learning unit contained multiple sections. Content was presented in a variety of ways. The way in which the content was presented would probably seem repetitive to a highly educated student. Each section presented material using the following techniques:

- Moderated PowerPoint lecture
- Lecture audio transcript
- Printable slides for lecture
- Video demonstration
- Video audio transcript
- Supplemental readings on subject matter

Presenting the information in multiple formats provided an increased chance to meet the needs of students with diverse learning styles while providing the opportunity to learn by listening, watching, and reading.

The educational background of Afghans had a major impact on the design of the course content. All sections included page numbers as a reference, ensuring that learners were aware of not only where they were in the training but also the amount of material being covered in a given unit. Pages were numbered by section to reduce the likelihood of learners being overwhelmed by the amount of content. Given that the majority of the learners had not participated in e-learning previously, care was taken to inform them that the course could be started and stopped at any time. The realization that the course would require ten to twelve hours to complete could be overwhelming for the learners if they did not have the flexibility to start and stop the instruction. In addition, content was strategically embedded in the course through the use of animated images, tables, and graphics. Links to lectures, audio notes,

videos, and readings were made accessible by clicking icons. This design reduced the number of perceived screens in the course without compromising the content or objectives. (See Figure 1.)

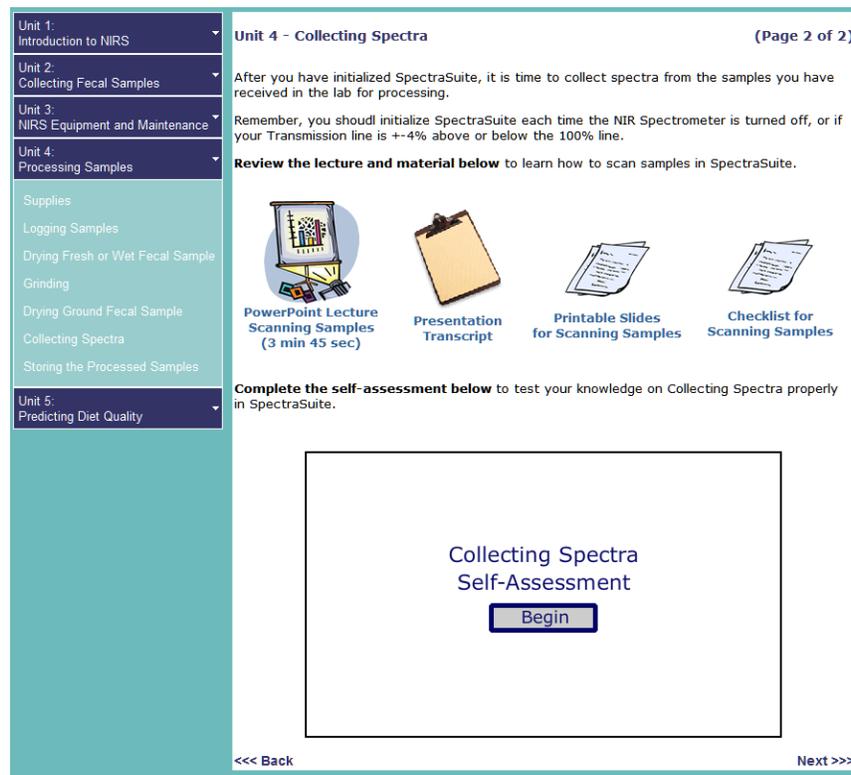


Figure 1. Screen capture of the elearning course illustrating embedded content, page numbering and use of icons.

All spoken content including videos, lectures and audio notes were translated into Dari by a translator familiar with NIRS technology and agricultural practices in Afghanistan. Qualified translators are often difficult to find. A key to the success of the translation was the translator's background in agriculture which allowed him to understand the terms within the transcripts and communicate the content effectively. English terms and detailed definitions were interjected in both the audio and written material when there was no equivalent term in Dari. This resulted in increased learning on the part of the Afghans. Each audio component was accompanied by a transcript that included each of the words spoken, presented first in English followed by the translation in Dari. This design helped Afghan learners cross reference the Dari spoken word with the English written word.

Afghan learners have limited access to computers on a regular basis; thus, they often work together on computers in groups. This supports the observation that they learn in groups. In an effort to support group learning, a course workbook was created. The workbook contains all of the material presented as audio notes, lectures, checklists, additional readings, and videos. Learners were able to refer to the workbook at any time and take notes in context.

#### *Delivery of the E-Learning Course*

The e-learning course was developed for delivery via the Internet and CD-ROM. For use on the Internet, a connection equivalent to DSL or Cable Modem in the United States is required due to in-depth videos and lectures. These types of connections are limited in

Afghanistan. Furthermore, Internet connectivity in general is limited in most areas in Afghanistan. If a connection is available, it is unreliable and slow. In order to meet the needs of the Afghan learner, it was decided to deliver the course via CD-ROM in order to avoid issues with Internet connectivity and access. Using CD-ROM for distribution also removed the limitations on the type of content that could be delivered.

The decision to distribute the course using CD-ROM instead of via the Internet was based on observations and experience. Using this approach, the following was achieved:

- Increased number of people trained – learners do not have to travel to attend training in a traditional classroom session and can learn at their convenience.
- Training was able to proceed without a lecturer – insecurity in some provinces limits training because lecturers are not able to safely travel and deliver training face-to-face.
- Reduced expense – providing security, cars and accommodations for trainers to travel in Afghanistan is expensive compared to the minimal cost incurred for CD-ROM duplication.
- Supported group-style learning – students can easily work and interact together on the computer as they complete the training.
- Learner repetition – learners who do not grasp the concepts the first time are afforded the opportunity to undergo training as many times as they need.

The course was first deployed for use by the MAIL – Central Veterinary Institute in Kabul, Afghanistan. For the duration of the PEACE Project (end date 2010), it will also be used as a learning tool at Kabul University to provide students hands-on experience in applied research techniques using a technology with widespread applications.

### **Conclusions and Recommendations**

Internationally, capacity building is one of the most essential components to any development project, particularly when there is the need to adopt new technologies. Agriculture training in Afghanistan needs to be rebuilt. There has been significant interest in studying and learning how other countries have used distance education to support training initiatives prior to the change in government (Cahill, 1985). The e-learning course developed by the PEACE project has been well received. There is potential for widespread adoption of e-learning to build capacity. E-learning directly supports the initiative set forth in the *ICT (Information and Communication of Technology) Policy Development and Implementation* (2002) plan for Afghanistan: “ICT will become the medium that will provide Afghans in all parts of the country the opportunity to acquire knowledge and skills” (UNDP, 2002, p.8).

In support of the initiatives mentioned in Afghanistan to extend learning opportunities, Afghan Next Generation e-Learning (ANGel) Centers for teaching and learning have been established at Kabul University, Kabul Medical University, Kabul Polytechnic University, Herat University, Herat Faculty of Education, Balkh University, Balkh Faculty of Education, and Shaik Zayed University in Khost (ANGel, 2009). While the NIRS course for the PEACE project was designed to be delivered via CD-ROM media to address the lack of internet connectivity in the region, the course could easily be placed on a web server and integrated into a Learning Management System environment such as ANGel. This increases the capacity-building potential for the course.

Teaching Afghans to predict diet quality using NIRS is the first step in increasing capacity for this technology in country. With proper training through e-learning, NIRS can be used to grade cashmere, determine grain quality, and assess nutrient content of feed, fertilizer, seeds, yeast, milk, wool, meat and cheese. This can build capacity for increased

profits for Afghan products, and have an overall economic impact on the livelihood of people trading these products. The PEACE Project is accelerating capacity-building efforts in the livestock sector, private sector, and the government while providing Afghans with more opportunities to learn through the use of e-learning. Government participation in the PEACE project and organizational support for capacity-building efforts played a tremendous role in the success of the e-learning course.

### **Educational Importance and Implications**

The development and delivery techniques outlined in this case study can be used as a guide for successful capacity building in Afghanistan and other countries where language, cultural, economic and political impediments prevent the use of traditional training techniques. Implications for similar applications of e-learning in international settings are broad. As shared by Leary and Berge (2006), "The challenge is to fully exploit electronic media, maximizing its usefulness and the realm of possible resources; elearning must not be Power Point presentations modified into online modules, but rather well-designed training that draw on the best electronic resources available" (p. 57). This case study strives to present one example of well-designed training that is being used in an international setting.

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