GLOBAL AGRICULTURAL KNOWLEDGE INITIATIVE: STRENGTHENING THE GLOBAL COMPETENCE OF STUDENTS, FACULTY AND EXTENSION AGENTS

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Theme: Community Development
Sub theme: Innovative pathways to knowledge society

1 INTRODUCTION

Education and Training traditionally involve learning from teachers and other pedagogical standards. The role of the teacher is to impart knowledge to those who do not possess them. Teachers talk in front of the class, and the pupils have to listen and write down what the "knowing" teacher says. This top-down method is not only used in the formal education system, also training staff uses this method to train the people. Even though this way of teaching and learning is part of our culture, the changing scenarios and expectation of today's learners demand that teachers adapt new ways to update their skills and knowledge for making information and knowledge available to farmers.

Advent of Internet and advances in Information and Communication Technologies (ICTs), and specifically in Multimedia, Networking, and Software Engineering have promoted the enormous amount of learning resources and Learning Management Systems (LMSs). During the last years, thousands of electronic texts, images, movies, or Java applet based learning resources have been developed for learning purposes in Internet environments. To take advantage of this situation, new services were developed for creating synchronous (Chat, Flash meetings, Breeze meeting, Teleconferencing and Video Conferencing to name a few) and asynchronous (Internet education portals, web based learning management systems, Forums, and wiki's to name a few) learning environments. With the help of these contemporary Information and Communication Technology based

services, the search, classification, organization, and peer-to-peer exchange of learning resources by learners, instructors, and course developers are becoming commonplace. However most of these technologies and virtual knowledge networks are part of corporate knowledge management. Academia has yet to recognize and fully explore the significance of systematic network development tools for agricultural education purposes. A dynamic computer-based model of knowledge management can now be applied to agricultural research done at any university anywhere on the globe and this research can be exchanged in a matter of seconds among faculty scientists, private industry, and students.

2 BEGINNINGS OF GLOBAL ACADEMY FOR EXTENSION PRACTICE

Food security will continue to pose a critical challenge for years to come, reminding us that innovative solutions will be needed if we are to achieve global food security. Innovations may involve a wide variety of types of changes, including changes in: technology (use of inputs), management systems (production systems), institutions (organizations and linkages), governance (political and priority setting structures), policies (regulation), investment, marketing (value chain development, processing, value addition) and resource conservation and use. Any of such rural innovation requires changes in knowledge, attitudes, and behavior of rural people, all of which depend on access to new information, ideas, and technologies.

Extension has to escape from its narrow mindset and methods currently being used.   If this can be achieved, with the help of innovative and knowledge intensive advisory services, extension will become more diversified, more demand driven, and more effective in meeting the informational needs of wide variety of clientele, including women farmers, agribusiness, rural youth, resource poor farmers and minority groups; and also succeed in meeting the new demands from wide variety of areas, including market information and development, producer organization development, enterprise development, sustainable use of natural resources, food safety, health, nutrition, etc. Modern extension can also play an important role as a feedback mechanism, aggregating, interpreting and representing rural needs to research programs, public agencies and other institutions. After realizing the need for revitalizing the extension systems, Iowa State University has started a worldwide program – Global Academy for Extension Practice, in 2008.

This program is premised on the assumption that the virtual knowledge networks being facilitated by contemporary information and communication technologies will enable knowledge aggregation and dissemination from different regions of the globe. With these virtual knowledge networks in place, the students, faculty, and extension agents across the globe can access information and meet educational needs.

3   APPROACH

Global Academy for Extension Practice is a strategic, coalition of regional, national and international partners for extension practice. The program is designed to bring widespread systematic change in the existing extension functionaries by inculcating (1) core competencies in the extension professionals, (2) enhancing institutional level capacities with pluralistic approaches, and (3) creating cadre of new extension professionals, with rural women and youth, to promote rural innovation necessary to achieve sustainable food security, reduce poverty, conserve natural resources and address other rural problems.

4   PROGRAM METHODOLOGY

The ISU extension is the hub for "Global Academy for Extension Practice" process development, recruitment, curriculum design, communication, monitoring, evaluation, and administration. The ISU extension hub recruits several country level hubs or regional centers (each regional center is a coalition of an university, NGO, and private entity) and train regional facilitators (either electronically or face-to-face) on needs assessment, mobilizing resources, localizing extension core competency modules, innovative capacity building and information or knowledge delivery methods to create new cadre of extension professionals, recruitment of extension specialists, and local linkages with public and private entities for cost sharing. The partnership agreements between ISU hub and regional centers in various countries are cooperative in nature and mutually beneficial. The program seeks to employ wide range of innovative technologies (for e.g. web tools, mobile, video conferencing) apart from traditional approaches, pluralistic institutional approaches, and public-private partnerships to create efficient, effective and sustainable forms of rural extension and advisory services.

5   PROGRAM OBJECTIVES

1. Develop Core Competency Curriculum for extension professionals around the world
2. Develop several regional centers (two to four in the beginning) to create decentralized training environments with a central repository.
3. Develop formal and non-formal training environments
   a) Use capabilities of ISU staff to develop a multilingual Course Management System to make the Core Competency Curriculum available in different languages at a centralized location
   b) Working with other regional partners for designing formal and informal training methods.
   c) Create Global Academy fellowships, and a community of Global Academy fellows.
4. Design formative evaluation and assessment tools and protocols to continuously inform project development activities.

6   EXPERIENCES SO FAR

6.1   Develop Core Competency Curriculum for extension professionals around the world

Food security and employment generation is becoming more and more knowledge intensive rather than input intensive[1]. Agricultural Extension, in this context has been recognized as an essential mechanism for delivering knowledge (information) and advices as an input into modern farming[2]. However in recent times many scholars and observers have commented on the recent changes in the land grant university extension systems[3]; some of them felt that there is little mechanism for information coordination coupled with service coordination, whereas others recorded, from their evaluation studies in Pakistan & Kenya, that the Training and Visit system approach (which was considered as an

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[1] Swaminathan, M.S. (2004). Community-led approaches to ending food insecurity and poverty. Retrieved August 13, 2010, from http://www.ifad.org/poverty/swa.pdf.

[2] Jones, G.E. (1997) 'The history, development and the future of agricultural extension' in B.E. Swanson, R.P. Bentz and A.J. Sofranko (1997) *Improving agricultural extension – a reference manual*. Rome:FAO.

[3] Fischer, K. (2009). Economy Forces Land-Grant Universities to Reshape Extension Work. *The Chronicle of Higher Education*. Retrieved August 02, 2010, from http://chronicle.com/article/Economy-Forces-Land-Grant/49456/.

innovative approach in 70s & 80s) have no significant impact in a long run[4].

These failures are due to number of factors, including the following:

- Professional development processes do not emphasize the application of emerging new technologies.
- End users do not trust the Ministers of Agriculture of Finance, NGOs, or corporate or land-grant service providers because these providers have not learned to speak the end users' language.
- The gap between research and practice leaves an even larger gap in the agricultural value chain including food, fiber, fuel, and pharmaceutical production.
- Deficiency in knowledge, skills, and ability among extension personnel, particularly those of Asia, Africa, and Latin America were notable.

In this backdrop, providing continuous information and training support to the extension workers is going to be a major issue. It was therefore ISU proposes development of a Global Academy that will address these issues and establish a set of core competencies for extension professionals around the world. Table 1 shows the proposed core competencies to be taught to the extension educators.

Table 1: Global Core Competencies

Subject Matter	Mastery of or competency within a scientific discipline, a research body of knowledge, or a technical proficiency that enhances individual and organizational effectiveness
Community and Social Action Processes	Ability to identify and monitor variables and issues important to community vitality (eg., demographics, economics, human services, environment), and the ability to use and apply these variables to program prioritization, planning, and delivery
Educational Programming	Ability to plan, design, implement, evaluate, account for, and market significant extension education programs that improve quality of life for extension learners
Engagement	Ability to recognize, understand, and facilitate opportunities and to broker the necessary resources that best respond to the needs of individuals and communities

[4] J. R. Anderson, G. Feder, and S. Ganguly, "The Rise and Fall of Training and Visit Extension: An Asian mini-drama with an African Epilogue?," in *Changing Roles of Agricultural Economics*. New Delhi: B. R. Publishing Company, 2006, pp. 149-172.

Information and Education Delivery	Mastery of communication skills (such as written and verbal), application of technology, and delivery methods for supporting educational programs and guiding behavior change among extension learners
Interpersonal Relations	Ability to successfully interact with diverse individuals and groups to create partnerships, networks, and dynamic human systems
Knowledge of Organization	An understanding of the history, philosophy, and contemporary nature of extension
Leadership	Ability to positively influence a wide range of diverse individuals and groups
Organizational Management	Ability to establish structure, organize processes, develop and monitor resources, and lead change to obtain educational outcomes effectively and efficiently
Professionalism	Demonstration of behaviors that reflect high levels of performance, a strong work ethic, and a commitment to continuing education and to the mission, vision, and goals of extension.

6.2 Develop several regional centers to create decentralized training environments with a central repository

Being a central hub, ISU extension develops generic core competency curriculum learning modules for enhancing the capacities of extension professionals around the world. All these modules are stored in a central repository[5], and this central repository is connected to the regional hubs through web enabled multilingual course management system, Content Management System and Forums. Regional hubs transform the generic learning modules into locale specific modules, and organize training programs (both onsite and virtual) with local designated training centers (Figure 1). This kind of "Hub and Spoke model"[6] enables Global Academy to create decentralized training environments with a central

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[5] The central repository, in this context, refers to the server/computer where learning modules, all information and knowledge resources are organized and stored. The newly created learning modules, information and knowledge resources will be continuously added to this repository in an organized way.

[6] The hub and spokes model has been described and used by Balaji, (2000) and Dileepkumar (2005) for implementing Information and Communication Technology mediated extension functionaries. In this model the hub is generally a set up with reasonable computing and network facilities and at hub the value edition to the generic information is derived from the networks to carried out, and location specific information is generated. Trained individuals with college-level education operate the hub to execute information and education services. The spokes are connected to the hub center in wide variety of ways and act as delivery points for satisfying the information and educational needs of target audience.
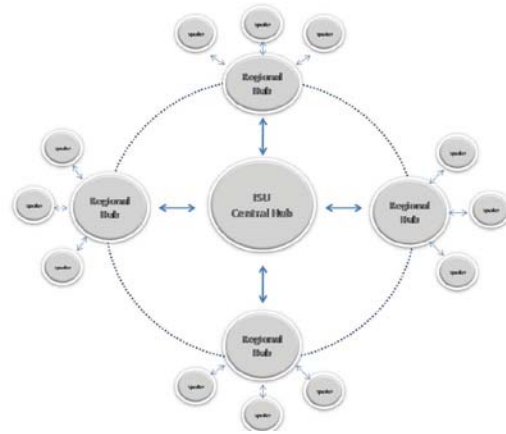
repository.

Fig 1: Hub and Spokes Model

6.3   Develop formal and non-formal training environments

In the past, capacity building activities at many national and international institutions has been conducted through residential, face-to-face mass training and education. This approach, although effective, is costly and has limited reach, and in many a times no follow up activities after trainings. This often resulted to give an impression that the conventional approaches to training and education have not sufficiently met the demand of the stakeholders. The international experiences show new approach to the capacity building envisions a world in which all stakeholders can easily access and share information, knowledge and skills they need-anywhere and anytime-in a cost effective manner. Hence the contemporary situation demands more innovative and efficient access to appropriate information, knowledge, and skills. This has led to increased interest in harnessing new tools and concepts in learning, education and training environments to complement and supplement its present capacity building activities.   ISU Extension experiments with open source application to develop these new tools and platforms (Figure 2, 3, 4). The protocols for these novel training approaches are being

Balaji, V., K. G. Rajamohan, R. Rajasekara Pandy, and S. Senthilkumaran. 2000. *Towards a Knowledge System for Sustainable Food Security: The information village experiment in Pondicherry.* On the Internet, Fall/Winter pp. 32-37. Available at http://www.isoc.org/oti/articles/0401/balaji.html Last visited 19 June 2007.

Dileepkumar, G. 2005. ICT4D hub & spokes system for rural communities in Addakal. Available at ICRISAT, Patancheru, India.

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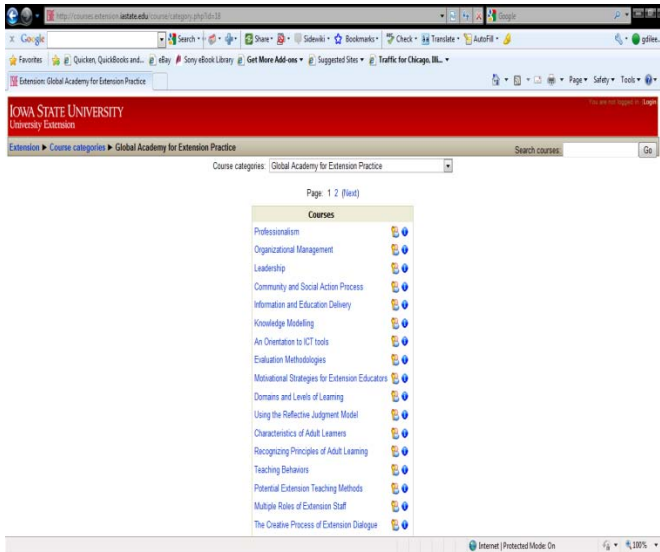developed based on the mutual interest of central and regional hub project staff.

Fig 2: Moodle Course Management System

https://courses.extension.iastate.edu/login/index.php

Experiments with the Moodle[7] open source software are in progress to develop a multi lingual course management system to host all the training modules of extension core competency curriculum in different languages. The system enables the central and regional hub personnel to upload their training modules from their respective locations. Moreover this system facilitates full pledged virtual learning environments at anytime and anywhere.

Experiments with Mediawiki[8] and Wordpress[9] are in progress to develop multi-lingual Agricultural Extension Community (AGREC) Wikipedia and Global Academy Virtual Forum system to enable the information and communication flows among and across project personnel, Global Academy Fellows, faculty, students and extension agents of national and international agricultural institutions, Extension Educators, formal and informal extension personnel around the world.
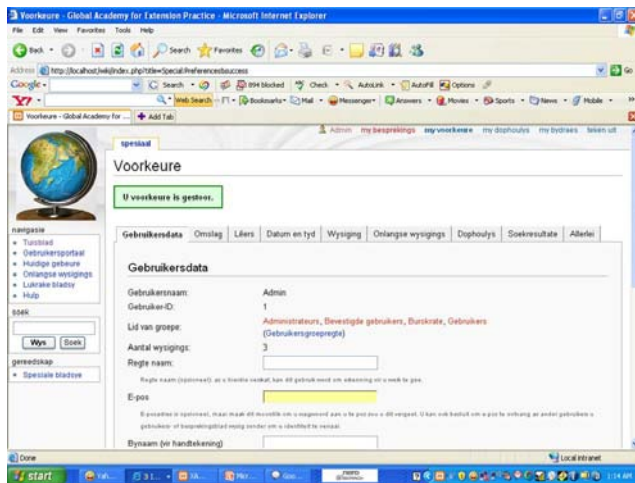
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[7] http://moodle.org/
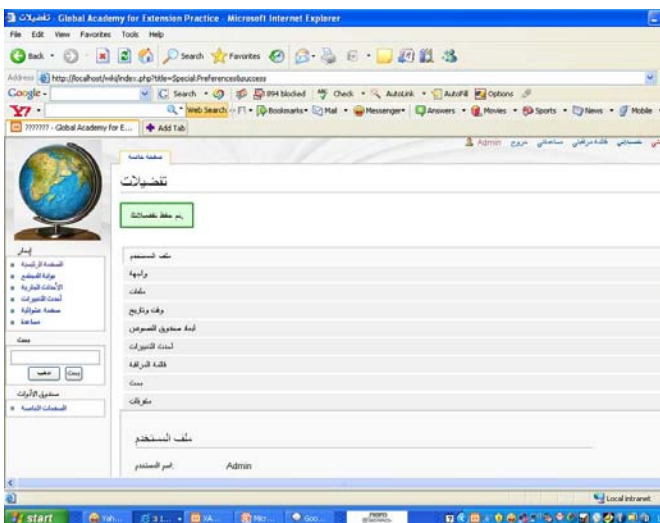[8] http://www.mediawiki.org/wiki/MediaWiki
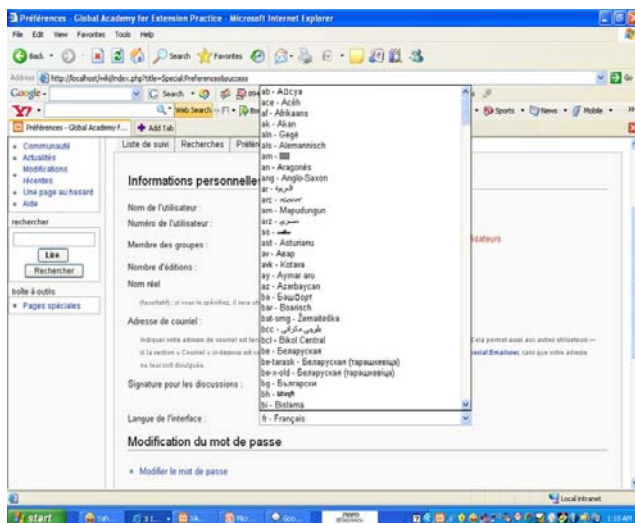[9] http://wordpress.org/
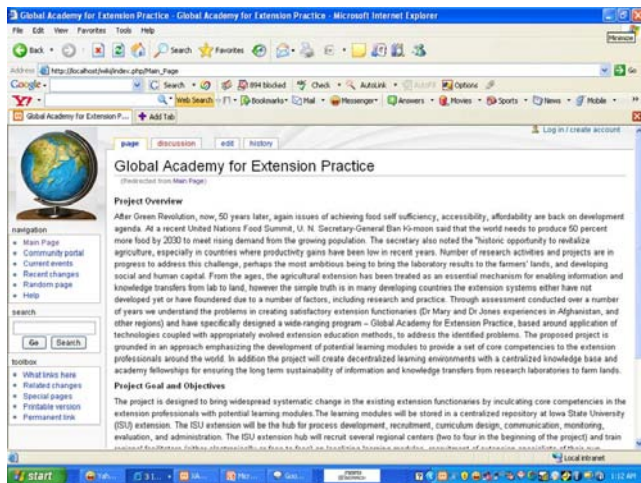
AGREC Wiki in English

AGREC Wiki in Afrikaans

AGREC Wikip in Arabic

AGREC Wiki in Francais

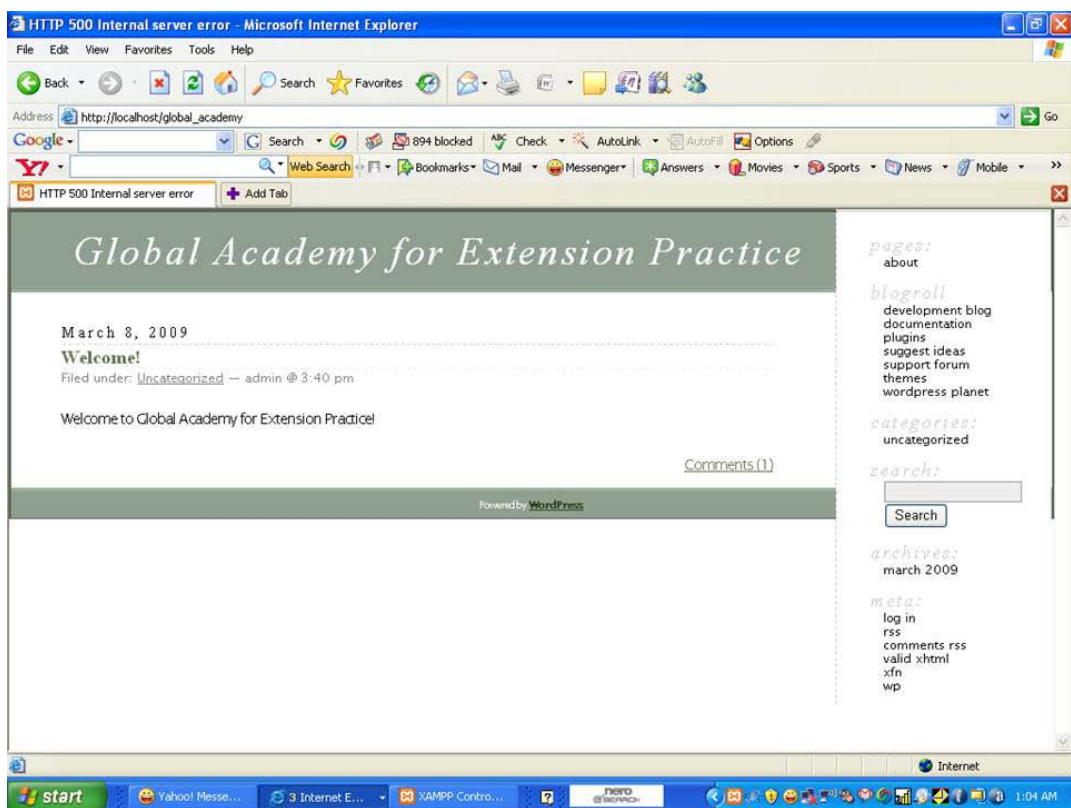Fig 3: Multilingual AGREC Wiki repository

Fig 4 Global Academy Virtual Forum

6.4   Evaluation

A comprehensive evaluation based on the goals and objectives of the program, and the impact of the activities on the target audience (students, faculty, and extension professionals) will be a central focus of the project. The evaluation will include both quantitative and qualitative methods to provide information for formative and summative purposes. The lessons learnt from the evaluation study will be shared with the Global Extension Community to replicate the project ideas and activities around the world to address the identified problems.

7   Proposed Future Activities of Global Academy Initiative:

- Scale up Knowledge Repository; bring together research-based communities of experts (ISU Faculty, Agriculture Faculty, and Extension Professional & Scientific Staff from several regional countries), institutional resources, and validated non-formal resources.

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- Establish a Classroom without Walls; creation of virtual learning environments with the ability to exchange research, technical knowledge, and core competencies used for educating students, faculty and extension agents.
- Extend and expand Virtual Forum activities; provide a platform for virtual discussions with participants collaborating on research, exchanging indigenous knowledge, and the latest in agricultural technologies.
- Learning content development and localization: build and test the framework for dynamic curriculum development; from the knowledge repository resource pool, build capacities at the institutional level to establish methodology and create curriculum using the latest research from the knowledge repository.
- Knowledge exchange and improved understanding of agricultural research between and among students, faculty and extension agents.
- Organize virtual seminars, webinars, and workshops to increase awareness of these new tools and novel approaches.

Conclusion

The proposed future activities will help students and faculty to get inputs for identifying new meaningful research areas, and the learning environments and forums will open avenues for collaborative research. It is expected that the faculty and students will have increased credibility on global agricultural issues with access to global information resources available in the knowledge repository which can be used to develop dynamic curriculum for students' course of study and training material for extension agents training.

Formal linkages will result in a database of faculty, students, and extension professionals for each area of expertise. Tools developed for this program will remain as live tools; accessible as long as collision of global partners and Iowa State University Global Extension finds support for this Global Agricultural Knowledge Initiative.

Please contact Iowa State University Global Extension Director, Mary Holz-Clause *mclause@iastate.edu* *to become part of this Global Agricultural Knowledge Initiative Program.*