



Experiential learning, action research and outreach: A comparative and gap analysis

Consultancy Report for the Project

“Shifting from Outreach to Engagement: Transforming Universities’ response to current development trends in agricultural research and training in Eastern, Central and Southern Africa”

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Contents

Abbreviations	4
Acknowledgements.....	5
Executive Summary	6
1 Introduction	16
1.1 Context of this consultancy.....	16
1.2 About this report	17
2 Basic concepts of learning and research.....	20
2.1 Learning Theory.....	20
2.2 Research Approaches.....	28
2.3 Conclusions.....	36
3 Concepts of EL in the 3 universities.....	37
3.1 Current understanding of learning concepts	37
3.2 Project expectations in EL	38
3.3 Capacity of staff in EL	39
3.4 Conclusions and suggestions	41
4 Classroom practice	42
4.1 Current practice at participating universities	42
4.2 Limitations and challenges	43
4.3 Conclusions and Suggestions.....	45
5 Practicals and field attachments.....	47
5.1 Field excursions, practice.....	47
5.2 Project mode courses	47
5.3 Field attachments	48
5.4 Conclusions and suggestions	52
6 EL and postgraduate programmes	53
6.1 Course work	53
6.2 Thesis research.....	54
6.3 Conclusions and suggestions	55
7 Experiential learning and curricula.....	58
7.1 Curriculum structure	58
7.2 Curricula development processes	59
7.3 Conclusions and suggestions	64
8 Outreach	66
8.1 Makerere University	66
8.2 Moi University	67
8.3 Bunda College of Agriculture	67
8.4 Conclusions and suggestions	69
9 The Community Action Research Programme (CARP)	71
9.1 Makerere University	71
9.2 Moi University	73

9.3	Bunda College of Agriculture	75
9.4	Comments and suggestions	76
10	Linkages with other projects	79
10.1	Innovations Project	79
10.2	Catalysing Change (CCAU)	80
10.3	Agricultural and Rural Innovations Studies (ARIS)	82
10.4	Enhancing Research Capacity and Skills (ERESA)	83
10.5	Quality Assurance Management (QAM)	84
10.6	Strengthening University Processes (SUCAPRI)	86
10.7	SA Collective Innovation	88
10.8	Conclusions and suggestions	89
11	Review of experience with experiential learning	90
11.1	University of Western Sydney at Hawkesbury	90
11.2	EARTH University “Licenciatura” Programme	93
11.3	The PAU PhD programme, Wageningen University	96
11.4	The ARIS PhD programme, Egerton University	99
11.5	The MDRI programme, Wageningen University	102
11.6	ICRA’s Post Academic ARD Programme	104
11.7	Implications for the Outreach Project	106
	References and Bibliography	108
	References	108
	Additional bibliography	110
	Appendix 1 Terms of Reference “Gap Analysis”	113
	Appendix 2 Persons contacted	116
A 2.1	Persons Contacted, Makerere University (4-6 August 2010)	116
A 2.2	Persons Contacted, Moi University (9-11 August, 2011)	118
A 2.3	Persons Contacted, Bunda College of Agriculture (12-17 August, 2010) ..	119
	Appendix 3 Structure of the 3 university units visited	120
A 3.1	Makerere University	120
A 3.2	Moi School of Agriculture and Biotechnology	122
A 3.3	Bunda College of Agriculture	124

Abbreviations

ACAAUN	Organisation of Farmers' Groups, Kenya (literally, "brightness")
ACP	African, Caribbean and Pacific group of states of the European Union
AEE	Agricultural Extension and Education (Depts. at MAK, Moi Universities)
AR	Action research
ARDEP	Agricultural Research and Development Programme, Bunda College of Agriculture
ARIS	Agricultural and Rural Innovations Studies (Regional PhD Programme)
BARI	Bachelor of Agriculture and Rural Innovation (MAK)
BCA	Bunda College of Agriculture, University of Malawi
BSc	Bachelor of Science
BUSSFO	Bungoma Small-Scale Farmers Forum, Kenya
CAEC	Continuing Agriculture Education Centre, Makerere University
CARP	Community Action Research Programme
CCAU	Catalysing Change in African Universities (Project)
CTA	Technical Centre for Agricultural and Rural Cooperation, The Netherlands
DFID	Department for International Development (United Kingdom)
DVC	Deputy Vice Chancellor
EARTH	<i>Escuela de Agricultura de la Región Tropical Húmeda</i> , Costa Rica
EL	Experiential learning
ERESA	Enhancing Research Capacity and Skills (Project)
EUR	Euros (European currency)
FAO	Food and Agriculture Organisation of the United Nations
FORMAT	Forum for Organic Resource Management, (NGO, Kenya)
HEI	Higher Education Institute
HOD	Head of Department
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICRA	International Centre for development oriented Research in Agriculture
ICT	Information and Communications Technology
KARI	Kenya Agricultural Research Institute
MAK	Makerere University (mostly referring to the Faculty of Agriculture in this report)
MDGs	Millennium Development Goals
MDRI	Masters in Development and Rural Innovation (Wageningen University)
MoAFS	Ministry of Agriculture and Food Security (Malawi)
MSAB	Moi University, School of Agriculture and Biotechnology
MSc	Master of Science
MUARIK	Makerere University Agricultural Research Institute at Kabanyolo
NAADS	National Agricultural Advisory Services, Uganda
NaCRRI	National Crops Resources Research Institute, Uganda
NARES	National Agriculture Research and Extension Organisations
NARO	National Agricultural Research Organisation, Uganda
NEPAD	New Partnership for African Development
NGO	Non-government Organisation
OCE	Off-campus experience
PEA	Participatory Extension Approach
PCO	Programmes Coordinating Office, Bunda College of Agriculture
PhD	Doctor of Philosophy
PM	Personal mastery
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
QAM	Quality Assurance Management (Project)
SAFE	Sasakawa Africa Fund for Extension Education
SELP	Supervised Experiential Learning Project
SEP	Supervised Enterprise Project
SME	Small and Medium Enterprises
SUCAPRI	Strengthening University Capacity for Rural Innovation Processes (Project)
TOR	Terms of Reference
UK	United Kingdom
UNIMA	University of Malawi
USAID	United States Aid Programme
WOUGNET	Women of Uganda Network
WUR	Wageningen University and Research Centre, The Netherlands

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Executive Summary

Introduction

This consultancy was carried out as part of the project “Shifting from Outreach to Engagement: Transforming Universities’ response to current development trends in agricultural research and training in Eastern, Central and Southern Africa” – referred to in this report as the “Outreach Project”

The Outreach Project is managed by RUFORUM. African university partners are Makerere University (MAK) in Uganda, Moi University School of Agriculture and Biotechnology (MSAB) in Kenya, and Bunda College of Agriculture (BCA) in Malawi. Wageningen University and Research Centre (WUR) in The Netherlands also supports the project. The project is also linked to the Community Action Research Programme (CARP), managed by RUFORUM, and which includes outreach projects at MAK, MSAB and BCA.

Objectives

The consultancy had the following objectives:

1. Review concepts and key principles of experiential learning, and conditions that enhance or impede its application;
2. Assess current teaching and learning approaches being used in the project partner universities, conditions that support or impede experiential learning, and identify ways to shift towards more experiential learning;
3. Identify and describe best practices of experiential learning and how such practices could be adopted and/or scaled up in African universities;
4. Identify the critical competence gap areas of faculty staff for them to apply experiential learning approaches; identify areas where current curricula limit experiential learning;
5. Identify and describe initiatives that move towards experiential learning, and draw lessons from these;
6. Make practical recommendations on how to initiate and promote experiential learning approaches in the project faculties/colleges of agriculture.

Methodology

The methodology utilised for this consultancy followed 2 main phases. In the first phase, carried out between August 4th and 17th of August, 2010, a series of individual and focus group interviews were carried out with staff, students and CARP project partners at MAK, MSAB and BCA. Information from these interviews and discussions was used to describe and analyse, in this report, how experiential learning and action research are understood and implemented within the context of outreach programmes and CARP. The second phase of this consultancy, during August 24-September 10 consisted of a “desk study” of concepts concerning experiential learning and action research, and how these concepts have been put into practice. A number of (what are considered to be) innovative academic programmes based on experiential learning principles were reviewed to draw lessons for the 3 university partners in the Outreach Project. Finally, the report was reviewed by the RUFORUM

and Outreach Project partners at a one-day workshop in Uganda on November 14, after which the report was edited to include feedback given.

Report Structure

The report is structured in 11 Sections:

- Section 1 provides the context and objectives of the consultancy.
- Section 2 reviews the basic concepts of experiential learning and how this relates to action research, contrasting the different but complementary approaches of “conventional” (empirical) and action research.
- Section 3 first looks at the concept of experiential learning as understood by staff and students at the universities.
- Sections 4,5 and 6 then look at how these concepts are put into practice, in the classroom, in the context of field attachments (internships) and in postgraduate research, respectively.
- Section 7 then takes a more general look at the processes of curriculum development, and one case in each university where the programme is more constructed around experiential learning.
- Sections 8 and 9 then review outreach programmes at the universities in general, and the plans for the CARP projects in particular.
- Section 10 reviews the potential linkages and areas of overlap between the Outreach Project and a number of other similar projects being implemented by MAK, MSAB and BCA. Finally,
- Section 11 reviews a number of academic programmes that are constructed around experiential learning, to derive principles and good practices that can be applied by the Project universities. For each section, the implications and recommendations for the Outreach Project are given.

Conclusions

Experiential learning

There are many different concepts of “knowledge” and “learning” in the literature. Learning theories tend to contrast between “instructivist” approaches, which treat learners as empty vessels to be filled with knowledge, and “constructivist” approaches where the learner constructs new knowledge by relating new information to prior knowledge and experience. At its simplest “experiential learning” can be equated to learning from experience, but experience does not automatically lead to learning. It is perhaps more accurate to talk about learning through reflecting upon, and giving meaning to experience. The linking of action with a deeper reflection therefore forms the basis of most experiential learning and action research approaches, such as those based on Kolb’s “experiential learning cycle”. The concept of the experiential learning cycle has its critics, but it is considered here to be especially valuable in the context of outreach, and research in innovation with communities and other stakeholders in value chains, as promoted by the Outreach and CARP Projects.

University understanding of key concepts

Unlike schoolteachers, most university lecturers have had little or no formal training in learning theory or teaching. Their professional preparation consists mainly of individual and conventional research. It is therefore hardly surprising that there is a range of understanding of learning concepts in general, and EL, AR and outreach concepts in particular, at the universities, and within staff and students and collaborators implementing the Outreach Project and CARP projects.

For some staff and students, EL is simply putting into practice what has been learned, or learning through experiments. For others, it is a more complex yet structured process of reflecting upon the experience gained through interaction with others. For some, outreach and “action research”, are simply processes of disseminating technology generated through conventional research, while to others it represents a deeper engagement and co-learning with other stakeholders in development. For the Outreach Project to be successful therefore, it will be necessary to promote a common and also deeper understanding of EL, AR and outreach.

Classroom practice

Given the above, it is also unsurprising that there is a range of teaching practice at the universities visited. Some faculty staff members maintain a “traditional” lecture-based approach, where knowledge is regarded as something to hand on. Others, typically younger staff members, try to incorporate more group work and discussion, more student research of course material, and presentations by students themselves. The Outreach Project needs to build on this diversity, by encouraging debate and sharing of experience between staff members, identification and further dissemination of good practice.

At the same time, there are a number of organisational constraints that limit more innovative teaching methods. These include staff time for preparation of courses and lesson plans, large class sizes, classroom infrastructure (e.g. fixed seating that cannot be moved to facilitate group discussion), staff incentives (which may or may not include evaluation by students or teaching quality), and the expectations of students themselves. In particular, the perceived role of the university – whether this is seen as a source of knowledge, or a means to promote change in society – has implications for what students are expected to learn, and how they are expected to learn it.

Field attachments

Many faculty staff members consider field attachments as the main way in which EL is incorporated into academic programmes at the universities visited. All the departments visited incorporate field attachments into their undergraduate programmes, albeit with significant differences. This diversity of practice provides scope for exchange of experience, synthesis of lessons learned and good practice. In particular, aspects that could be adjusted to maximise the value of attachments include:

- *Length and timing.* Early attachments (e.g. after 1 year) give experience that can be used in following courses, while later attachments give more scope for putting into practice theory learned.
- *Learning objectives – what.* Focussing early attachments on relatively simple and practical skills of crop, livestock management, and later attachments on

more complicated processes of personal and organisational management and stakeholder interaction.

- *Learning objectives - who.* Encouraging students to identify their own learning expectations, keep logbooks of progress, etc.
- *Context.* Locating students within a multi-stakeholder context of business or development projects, to allow development of communication and personal skills, in addition to simple practice with machinery, animals etc.
- *Learning in groups.* Encouraging an interdisciplinary perspective through locating students in small interdepartmental groups.
- *Academic recognition.* Weighting attachments, in terms of credit units, commensurate with the time, effort and learning involved.
- *Assessment methods.* Achieving a balance between clients/partners (“external supervisors”), academic supervisors, peer and self-assessment.

At the same time, there are also institutional constraints to improving attachments that need to be considered. Principal among these is cost: in a number of cases, student attachments were limited or shortened (e.g. from 8 weeks to 2 weeks) because of a shortage of funding for the students as well as resources for faculty staff to visit students while on attachment. Perhaps the main option here is to explore more options for co-financing from partners, and particularly through outreach projects in the universities.

Postgraduate Research

The universities see postgraduate research mainly as a conventional empirical process to produce disciplinary knowledge. For the universities to be more consistent with stated institutional policy, which emphasises solving the problems of communities and national development, empirical research needs to be balanced by and integrated with more development-oriented and participatory action research.

Postgraduate research is bounded by academic tradition and protocols, which need to be reviewed if action research is to be encouraged. The Outreach Project envisages the development of new academic programmes, based on experiential learning principles, multi-disciplinary and multi-stakeholder engagement. The graduates of these new programmes are expected to be managers of rural innovation, who can facilitate complex development processes, rather than disciplinary specialists or scientists. This change will require more than upgrading skills of faculty staff or introducing new courses – it will require discussion and policy changes at the level of senior managers and the university administration.

Meanwhile, suggested and incremental ways of encouraging an AR approach to current postgraduate research programmes include:

- *Inclusion of core courses on systems concepts;* and application via approaches such as farming systems, livelihood systems, innovation systems, value chains.
- *Inclusion of additional elective courses* in qualitative research methods, social organisation, economic analysis.
- *Inclusion of attachments* in postgraduate programmes, where possible to provide the context and background for the research thesis.

- *Inclusion of more seminars from outside (non-academic) actors*, including farmers, agri-business, development projects, etc.
- *Modifications of thesis structure and content.*
 - Inclusion of a chapter/section with a *systems perspective*, analysing the context and relevance of the research problem being researched: the farming system, innovation system, or market chain, etc.
 - Inclusion of a chapter/section of *practical/ economic implications* of technology evaluated, in language accessible to end-user (whether farmer, development agency, etc).
 - Inclusion of a chapter/section on reflection by the student, including a *self-assessment of the research and learning process*, and *implications for future curricula modification* in the relevant postgraduate programme.
 - Inclusion, where possible, of an *assessment by research partners and clients* of the value of the thesis.
- *Organising interdepartmental postgraduate research projects*, where different students conduct research around a common problem from different disciplinary perspectives.
- *Feedback actions*, to disseminate findings to farmers and/or end users (farmer field days/ training sessions, radio programmes, etc). Ideally, such actions would also be documented as an integral part of the thesis.

Curricula and curriculum development

Most of the programmes offered at MAK, MSAB and BCA are disciplinary focused, and oriented towards knowledge acquisition rather than skills development. To incorporate EL and to allow students of these programmes to participate effectively in outreach programmes, these academic programmes should consider the incorporation of courses on:

- The philosophy of science (concepts of knowledge, science, learning, etc) and critical thinking.
- *Systems thinking*, and the application of such thinking to farming systems, livelihood systems, innovation systems, value chains, etc.,
- *Personal development skills* (inter-personal communication, interactive and reflective learning, etc);
- *Process management skills* (planning, facilitation, organisational change, etc), and
- *Qualitative research methods* (individual, community and focus group interviews, and other methods used in social science)
- *Adult learning approaches* (epistemology, experiential learning concepts and approaches, reflection methods and tools, etc).

Each university visited has recently developed an undergraduate course aimed more towards developing competencies of graduates in management of rural innovation processes, and based more on EL principles, than the “traditional” courses in agriculture and extension. Two of these programmes (MAK-BARI, and BCA “mid-

career” programme) have been in operation for several years now, giving scope to review initial lessons for more general applicability.

However, the “ideal” approach for an EL-based programme - embedding learning in personal action - is limited by the degree to which students are concurrently engaged in a professional context. For programmes such as the “mid-career” programme at BCA, students can relate learning to their ongoing professional responsibilities. For programmes such as the BARI programme at MAK, where students may not have professional experience, it is necessary to integrate experience into the programme itself. In these cases, the linkage between academic programmes and outreach activities of the university becomes even more important.

Each of the universities visited also has in place mechanisms to involve stakeholders in the development of curricula, to a greater or lesser extent. Again, this diversity of experience gives opportunities for sharing, reflecting and deriving lessons learned and good practice.

Outreach

Each of the three universities has substantial outreach activity, in the form “research” projects that in many cases involve interaction with farmers, communities and other stakeholders. However, and in spite of the recognition that the universities give to outreach in their mandates, there is little overall coordination of outreach activities across the faculty/school (except in BCA, in the form of the Programmes Office).

Especially at MAK and MSAB, the establishment of an outreach (or “programmes”) office, at the administrative level equivalent to Dean/Deputy Dean, would allow a more coordinated approach to outreach. The experience of BCA provides a model that the other two universities could adapt and build upon. Experience with restructuring to promote outreach in other regional universities should also be examined to provide lessons learned that can be applied when functional reviews are undertaken at the project universities.

Responsibilities of the outreach office could include:

- Developing and promoting a school or faculty-wide understanding of outreach as an action research and learning process;
- Developing a more comprehensive strategy for outreach, as a context for individual research projects developed by faculty staff;
- Coordinating the activities of the different research projects of the faculty, to promote interdisciplinary action, mutual learning;
- Reviewing and promoting changes to thesis research processes and formats, to encourage interdisciplinary and action research;
- Identifying opportunities for, and arranging undergraduate field attachments (in inter-departmental groups, where possible);
- Ensuring a gradual build up of competencies through outreach activities structured in different years of the curriculum;
- Identifying and arranging opportunities for postgraduate research topics (including integration of inter-departmental groups, where possible);
- Developing and managing a process to ensure lessons learned in outreach activities feed back to undergraduate and postgraduate curricula;

- Initiating (or reviving) extension bulletins and other forms of user-friendly communication of research output.
- Raising the visibility of the faculty with communities and other stakeholders.

CARP projects

Each of the CARP projects involves a good range of partners to address the respective developmental challenges. The projects have not yet started, and it will be important that through inception meetings/workshops, stakeholders validate objectives, proposed strategy, and activities. It will also be important at these planning meetings to agree how the partnerships will be managed - who will adopt the role of facilitating the joint learning expected. It is not clear that all the university staff members or students currently involved are in a position to do this, due to a lack of knowledge and skills in the analysis and facilitation of innovation systems and action research. Facilitating joint reflection sessions that are the key element to action research and experiential learning will require significant skills development in project personnel.

Reflecting the general situation, postgraduate studies proposed under the CARP projects largely fall within the prevailing conventional (empirical) research paradigm, rather than action research processes. The intention to conduct action research is present, and “key developmental research questions” are relevant, but it is not clear that the prevailing institutional setting and postgraduate research protocols are conducive to the action research necessary to answer these questions. The adaptations to postgraduate programmes and thesis formats suggested above would go part way to meeting the goals of the Outreach Project.

The CARP projects currently emphasise postgraduate research activities; they could also usefully incorporate undergraduate field attachments. These offer a structured experiential learning experience a relatively inexpensive way of additional engagement of the university in the communities. Inter-disciplinary groups of students could undertake community assessments, livelihood systems analysis, diagnostic services, documentation of outreach processes etc., which would greatly complement the more focussed, disciplinary studies of postgraduate students.

The lessons learned through the experience gained in the CARP projects are expected to influence curricula in the 3 universities. At the moment, there is no clear mechanism for this feedback. The CARP projects represent only a relatively minor part of the overall outreach efforts at each university, hence any mechanism developed needs to be part of a more comprehensive and sustainable strategy that incorporates feedback from most or all outreach projects being implemented in the faculty/school. The Outreach Project should focus on developing such a mechanism, which in turn will require a more coordinated and organised overall outreach strategy at each university.

Meanwhile however, the postgraduate studies under the CARP programme could make a useful contribution in this direction by including implications for curricula as an integral section in theses funded under the CARP projects.

Linkages with other projects

There is considerable overlap between the objectives and activities of a number of projects being implemented by RUFORUM and one or more of the African partners in the Outreach Project. These projects include: The “Innovations Project”, “Catalysing Change (CCAU), Agricultural and Rural Innovations Management

(ARIS), Enhancing Research Capacity and Skills (ERESA), Quality Assurance Management (QAM), and Strengthening University Capacity in Rural Innovation Processes (SUCAPRI). The “Collective Innovation” project being implemented by 3 “historically disadvantaged” universities in South Africa also has very similar objectives (and timing) to the Outreach Project, which would therefore benefit from exchange of experience.

Areas where these other projects can support the Outreach Project are in:

- Developing courses in innovations systems (Innovations, ARIS Projects);
- Courses and workshops to develop personal (“soft”) skills, (ERESA);
- Courses in (qualitative) research approaches, methods and skills that support AR to balance the current bias towards “conventional” or “empirical” research approaches (ERESA);
- Workshops for senior managers to review policies, management structures and mechanisms that limit or support EL, AR and outreach in general (Innovations, QAM)
- Workshops for staff and managers to review the linkage between outreach and curricula (SUCAPRI)
- Development of learning materials in AR related themes (SUCAPRI, RUFORUM e-learning project and other).

The MAK Faculty of Agriculture MAK is a partner in these “other” projects described (with the exception of the SA project), BCA in most, and MSAB in none. Special efforts will therefore be necessary to share experience and materials from MAK and BCA with MSAB.

Case studies in experiential learning

Six case studies are described in the report to illustrate strategies and features of programmes that can be described as “good practice” for academic programmes organised around experiential learning principles:

- *Integration of formal academic learning with ongoing development projects.* This requires the development of partnerships with suitable organisations (government, NGOs, private sector). The “real world” context allows analysis of complex problems and integration of the perspectives, actions of different stakeholders, as well as the opportunity for students to practice skills of interaction and facilitation.
- *Autonomous learning.* This requires the inclusion of more elective courses, tailor-made courses that can provide flexible pathways to allow learners to focus on areas of particular professional relevance or interest to them, or emerging issues as they arise in the context of development projects.
- *The development of social and facilitation skills.* This requires specialised, innovative courses, seminars or special workshops where group work, exercises and role plays allow practice of skill, with feedback from colleagues and structured reflection to develop personal skills and attitudes.
- *Interdisciplinary group work.* This allows the analysis of complex development problems from different disciplines, both technical and social.

Group work also promotes the social and teamwork skills required for interactive learning.

- *Innovative assessment methods.* The abilities of students to work with colleagues and stakeholders can best be assessed by the individuals themselves, as well as peers and collaborators, rather than by academic supervisors alone. Personal assessment also encourages reflection on learning processes.
- *Supportive institutional context.* The innovativeness of the above features of EL academic programmes inevitably challenges well-established policies or practices in many academic organisations. Development of linkages with the demand sector (i.e. graduates and employers of graduates, policy makers, etc), “champions” to push the boundaries within organisations, and specific events to explain new programmes and share experiences with colleagues, are all necessary to develop and maintain support for new ways of doing things.

The time needed for more profound changes in organisational structure, culture and policies, that are necessary to provide the environment for experiential learning, action research and effective outreach should not be underestimated. While the Outreach Project cannot achieve all the changes that will be necessary during the project lifetime, it should strive to encourage debate on these issues and find “entry points” for such change.

Suggestions on way forward

The above findings and conclusions suggest that the capacity strengthening workshops proposed in the Outreach Project need to fall under 3 categories:

1. *Workshops for Outreach Project implementing staff, project students and outreach partners*, to share experience, review case studies, and develop individual capacity in:
 - Concepts of learning, experiential learning; strategies to incorporate experiential learning into undergraduate and postgraduate academic programmes; and methods/tools to develop reflective learning. Such workshops should be planned and implemented in conjunction with the Education Departments of relevant universities where possible, to both develop university capacity and also ensure sustainability beyond the immediate Outreach Project.
 - Concepts of action research, and skills in facilitating multi-stakeholder action research and learning processes (in collaboration with the ERESA Project as well as staff of current Agricultural Extension and Education Departments).
 - Concepts of systems, systems thinking, “innovation systems” and skills in the analysis of innovation systems (in collaboration with the Innovations, ARIS Projects);
 - Approaches to qualitative and social science research methods (in collaboration with the ERESA Project);
2. *Workshops for university managers* (Deans, HODs) to review institutional constraints and develop organisational capacity for experiential learning, action research and outreach, including:

- Development of an organisational strategy for outreach (vision, aims, scope, approaches);
- Review of current mechanisms for coordinating research projects and outreach activities;
- Review of postgraduate research protocols and thesis structure, guidelines for students;
- Review of curricula review and development procedures, including mechanisms for feedback of experience from outreach activities to curriculum development;
- Review of university policy in terms of staff activities, incentives, course evaluation;
- Development of overall action plans to create a more conducive organisational environment for EL.

These workshops should be planned and implemented in collaboration/coordination with the QAM and Innovations Projects. These workshops should also be integrated with the workshops for project staff and partners described above, in order to allow feedback from staff and promote discussion on organisational constraints.

3. *Workshops for coordinators and key staff of related projects* to share experience in, and coordinate plans for:
 - Additional courses in innovation systems concepts and analytical approaches;
 - Courses in qualitative, social science research methods;
 - Courses and workshops in personal development and facilitation (“soft”) skills;
 - Development of learning materials;
 - Organisational policies and procedures (quality assurance mechanisms)

1 Introduction

1.1 Context of this consultancy

This consultancy report has been commissioned against a backdrop of criticism over recent decades that African Universities are “ivory tower” institutions; not producing graduates capable of supporting and promoting agricultural development. A number of initiatives and projects have attempted to respond to this criticism, including the “Outreach Project” for which this consultancy report forms an integral activity.

1.1.1 The “Shifting from Outreach to Engagement” Project

The “Shifting from Outreach to Engagement: Transforming Universities’ response to current development trends in agricultural research and training in Eastern, Central and Southern Africa” Project – referred to in this report as the “Outreach Project” - is a project managed by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM). Collaborating partners include Makerere University (MAK) in Uganda, Moi University School of Agriculture and Biotechnology (MSAB) in Kenya, Bunda College of Agriculture (BCA), of the University of Malawi, and Wageningen University and Research Centre (WUR) in The Netherlands.

The project is supported by finance from the European Union, through the African, Caribbean and Pacific (ACP), Science and Technology Programme, 9th European Development Fund, which is contributing EUR 997,000 to a total project budget of EUR 1,172,940 over the 3 years (2010-2012).

1.1.1.1 Rationale

The rationale for the project is the widely reported inadequacy of university graduates to foster agricultural development in Africa: *“Unfortunately, the human capital equipped with skills to guide innovative approaches to foster agricultural development, including driving CAADP is lacking in most SSA countries. Students are churned out by some universities at B.Sc. and MSc. Level but with low capacity for critical thinking and to solve farmer problems. This project envisions a transformation in the capacity building sector, particularly universities, to build sustainable capacity for facilitating farmers and small and medium enterprise in leading development in Africa”¹.*

1.1.1.2 Objectives

The **overall objective** of the project is to contribute to sustainable food security and incomes in the (ECSA) region and accelerate achievement of the MDGs.

The **specific objective** of the project is to facilitate the creation of responsive university programmes (research, education and outreach) that deliver competent graduates to support farmers and small and medium enterprises (SMEs) establish sustainable agro-food value chains. The proposed action aims to transform the way universities engage in research, training and outreach services. The action places

1 Taken from: The Workshop Report on Development of the Project Implementation Plan, 5-8 February 2010, Imperial Resort Beach Hotel, Entebbe. RUFORUM.

university staff and students within a given real world situation as part of experiential learning process².

Expected **project outputs** include

1. Engagement of multi-stakeholders communities of practice to improve student experiential learning and strengthen specific value chains for farmers facilitated;
2. Training, research and outreach programs reviewed and opportunities for integration of experiential learning into the curriculum identified;
3. An integrated set of industry responsive, competency-based materials, toolkits modules and training materials co-created by university faculty and industry representatives to meet the experiential learning requirements of specified courses and curriculum; and,
4. A set of integrated, industry responsive, experiential, value chain based training, research and outreach programmes piloted over year 2 and 3³.

1.1.2 The “Community Action Research Programme”

The Community Action Research Programme (CARP) has been developed by RUFORUM along thematic lines recommended by the Technical Committee in consultation with the National Forums. The purpose of the Programme is to demonstrate innovative approaches towards strengthened University engagement with development practice in Eastern and Southern Africa.

With financing from the Bill and Melinda Gates Foundation, RUFORUM has commissioned 3 action research projects which link participating university researchers with all stakeholders along the value chain, including national and international research and development agencies, where appropriate. These projects are located at the same three African universities partnering in the Outreach Project: MAK, MSAB and BCA. The Outreach Project and the CARP overlap and complement each other both in actions and collaborators. This consultancy therefore looks at the proposed actions of both the Outreach Project and the CARP programme (both of these projects are in the initial stages of implementation in 2010).

1.2 *About this report*

1.2.1 Purpose

This consultancy corresponds to two (sub) activities within the Outreach Project:

The first activity aims to validate, through a; n institutional analysis, key gaps and identify opportunities for integrating experie; ntial learning into courses and departments’ training, research and outreach programmes. Based on this gap analysis, priority areas for action will be defined and harmonized for the experiential learning process.

² Taken from the Project Proposal Document: “Shifting from Outreach to Engagement: Transforming Universities’ response to current development trends in agricultural research and training in Eastern, Central and Southern Africa” EuropeAid/127860/D/ACT/ACP

³ Taken from: The Workshop Report on Development of the Project Implementation Plan, 5-8 February 2010, Imperial Resort Beach Hotel, Entebbe. RUFORUM.

The second activity is a comparative analysis of good practice in integrating experiential learning into the agricultural curriculum the partner universities. This will ensure that the experiential learning process in the universities starts from what already exists in the departments and courses, and will allow for lesson learning and avoid duplication of efforts and repetition.

These (sub) activities are intended to lead to a series of workshops in each university for all faculty interested in experiential learning. The aim of these workshops will be to introduce and train faculty on experiential learning methods, different models of application and identify opportunities to integrate experiential learning into specific course curricula at each university.

1.2.2 Objectives

The full terms of reference for this consultancy are given in Appendix 1. Summarised here, these TOR were to work in consultation with teams in participating institutions to:

1. Review literature and describe the concept of experiential learning, key principles that guide experiential learning in a university context and the conditions that enhance or impede its application;
2. Assess current teaching and learning approaches being used in the faculties/colleges of agriculture in the targeted universities with respect to their effectiveness/relevance, strengths and limitations. Describe the conditions (including institutional issues) that promote the learning approaches currently being used and how these conditions may support or impede use of experiential learning. Identify what can be done to enable a shift towards more experiential learning in the targeted universities;
3. Identify and describe best practices of experiential learning and how such practices could be adopted and/or scaled up in African universities. Describe the methods and tools that have been successfully applied;
4. Identify the critical competence gap areas of faculty staff for them to fully apply experiential learning approaches as their normal way of training, and identify areas where current curricula limit experiential learning.
5. Identify and describe initiatives that attempt to address improvement of teaching/learning transaction with a view of moving towards experiential learning. What has worked and what has not worked so far; thus what lessons do we draw from those initiatives?
6. Make practical recommendations on how to initiate and promote experiential learning approaches in the Faculties/Colleges of agriculture in the targeted universities;

1.2.3 Methodology

The methodology utilised for this consultancy followed 2 main phases.

In the first phase, carried out between August 4th and 17th of August, 2010, a series of individual and focus group interviews were carried out with staff and students of the 3 African institutions involved: Faculty of Agriculture (MAK), School of Agriculture and Biotechnology (Moi University) and Bunda College of Agriculture. In addition, a number of collaborators in the CARP projects of each university were interviewed,

including field visits in both Kenya and Malawi. Information from these interviews and discussions was used to describe and analyse, in this report, the “state of the art” in experiential learning methods used, as well as how these methods relate to the proposed outreach activities under the CARP. Owing to the time and staff available at each university, as well as the nature of the assignment, no attempt was made to collect quantitative information on university practice.

The second phase of this consultancy consisted of a “desk study” of concepts concerning experiential learning and action research, and how these concepts have been put into practice. A number of (what are considered to be) innovative academic programmes based on experiential learning principles were reviewed to draw lessons for the 3 university partners in the Outreach Project.

Finally, the report was reviewed and discussed by project partners at a one-day workshop on November 14, 2010. Comments and suggestions from that meeting were included in the final edit.

1.2.4 Structure

This report is structured in 11 Sections.

- Section 1 provides the context and objectives of the consultancy.
- Section 2 reviews the basic concepts of experiential learning and how this relates to action research, contrasting the different but complementary approaches of “conventional” (empirical) and action research.
- Section 3 first looks at the concept of experiential learning as understood by staff and students at the universities.
- Sections 4, 5 and 6 then look at how these concepts are put into practice, in the classroom, in the context of field attachments (internships) and in postgraduate research, respectively.
- Section 7 then takes a more general look at the processes of curriculum development, and one case in each university where the programme is more constructed around experiential learning.
- Sections 8 and 9 then review outreach programmes at the universities in general, and the plans for the CARP projects in particular.
- Section 10 reviews the potential linkages and areas of overlap between the Outreach Project and a number of other similar projects being implemented by MAK, MSAB and BCA.
- Finally, Section 11 reviews a number of academic programmes that are constructed around experiential learning, to derive principles and good practices that can be applied by the Project universities. For each section, the implications and recommendations for the Outreach Project are given.

2 Basic concepts of learning and research

2.1 Learning Theory⁴

2.1.1 Learning

Moon (2004) describes 2 view of learning: the “brick wall”, where the teacher provides bricks that build the wall of knowledge, and the “flexible network”, where new ideas are assimilated into a steadily increasing network of knowledge and understanding. In the “network” model (and unlike the “wall” model) new ideas do not just accumulate, but also influence or change what is already known in a process known as “accommodation”. Accommodation can therefore also lead to change in attitudes and behaviour.

Building on the ideas of others who describe how students’ views of knowledge develop as they mature, Moon cites 4 stages of knowledge described by Baxter Magolda (1992):

- *Absolutist* – knowledge is certain or absolute
- *Transitional* – there is partial certainty and partial uncertainty
- *Independent knowing* – learning is uncertain, everyone has their own beliefs
- *Contextual knowing* – knowledge is constructed and any judgement must be made on the basis of the evidence in that context.

As learners become more sophisticated in how they deal with knowledge, they become more flexible, able to deal with complex situations and work with others.

These ideas are related to the notion that learning approaches are either “surface” or “deep”. In a “surface” learning approach, the intention of the learner is to absorb as much content as necessary for the task at hand. The “deep” learning approach is characterised by an intention of the learning to understand the material of learning, and seek meaning in the ideas in it.

These different concepts of “learning” underpin much of the following concepts of learning theory and hence experiential learning.

2.1.2 Pedagogy vs andragogy

“Pedagogy” is often considered to be the profession of teaching. But it has come to be associated with certain styles of teaching⁵. It seems likely that ancient civilisations placed value on learning through experience, but a more authoritarian way of teaching was developed in the monastic schools of Christian Europe during 7th to 12th centuries AD. These schools emphasised instruction or transfer of knowledge from one who knows (the instructor), to one who doesn’t (the student). Pedagogy is therefore often regarded as the technique of teaching children. Even more specifically, it is now often associated with the more instructivist or teacher-directed approach still often used with children – even when this approach is applied to adults.

⁴ Concepts of learning and research in this report are based on Hawkins (Ed), 2009, and Hawkins *et al.*, 2009.

⁵ “Pedagogy” is derived from the Greek “*paedagogus*”, who was a slave who took a boy to and from school (“*agogos*”, meaning leader, and “*paidos*” meaning child).

During the 20th century, it was increasingly argued that adults do not necessarily learn effectively through an instructivist or pedagogical approach. Adults are more independent and responsible for their own actions. They are often motivated to learn by a desire to solve immediate problems or improve skills needed for work and leisure. Adults also have accumulated experiences and knowledge, into which new knowledge and skills need to be integrated.

Table 1 **Contrasts between pedagogy and andragogy**

Pedagogy	Andragogy
The learner is dependent – the teacher determines what is learned, when it is learned, and how learning is evaluated.	The learner is more independent – the teacher encourages this independence and guides the learner.
The experience of the learner is not considered to be significant -teaching methods are didactic.	Experience is valued as a rich resource for learning – and forms the basis of discussions and problem solving, etc.
People learn what society expects them to – the curriculum is standardised.	People learn what they need to – the curriculum is organised around their needs.
Learning themes are organised around abstract disciplines.	Learning themes are organised around experiences, problems and/or expected competencies.

In 1970, Malcolm Knowles⁶ therefore introduced the term “andragogy” (“andros” meaning adult) as “the art and science of helping adults learn” (Smith, 2002). Contrasting pedagogy and andragogy is sometimes regarded as a false dichotomy. Nevertheless, for illustrative purposes the two different approaches of pedagogy and andragogy are contrasted in Table 1 below:

From this table, effective adult learning principles can be emphasised:

- *Self-concept* - let the learner know why something is important to learn.
- *Experience* - relate the learning content to the learner’s experiences.
- *Readiness* – help the learner to overcome inhibitions, behaviours and beliefs about learning.
- *Orientation* – show the learner how to direct her/himself through the information.
- *Motivation* - recognise that learning will not occur until the learner is motivated and ready to learn.

⁶ Knowles, M.S. 1970. “The Modern Practice of Adult Education: Andragogy vs Pedagogy” New York Association Press.

2.1.3 Instructivist vs. constructivist approaches⁷

A similar and related way of contrasting learning approaches is to refer to “instructivist” and “constructivist” approaches, which are related to ways of viewing the world. Understanding these views is important for the scope of this report – for understanding how knowledge should be gained, and what sort of research processes are valid in different circumstances.

Positivism holds that there exists a true knowledge of ‘reality’, that this reality is universal and unchanging, and that it can be gradually revealed by the scientific method. Science, it is thought, must limit itself to what is observable and measurable (‘empiricism’)—it is a way of getting at the true nature of things. The underlying assumption is that the universe is governed by laws, which science must understand in order to predict and control. This view of reality influences the way scientists approach concepts and methods: systems, problems and solutions are seen as objective truth—which is assumed to be ‘value free’ or independent of the values of the different observers or interested parties. From a positivist viewpoint, the problem to be solved, the opportunity to be exploited, or the development action needed in a particular situation, are assumed to be characteristics that can be precisely and unequivocally determined.

Constructivism is interpreted in many ways (see, for example Matthews, 2000). When used in an epistemological sense and contrasted to positivism, its main thrust is to assume that knowledge is a function of how the individual ‘constructs’ meaning from his or her experience. ‘Reality’ is therefore not independent of our perception: different people may interpret the same phenomenon in different ways, and knowledge is deconstructed and then reconstructed during its transfer from one person to another. Under this view, technology, policy and development actions are not independent from people’s perceptions. Their perceptions of a particular problem are different. Thus, an optimal solution is one which is acceptable to most people. Following this constructivist perspective, data are often less important than the processes activated during their collection, and the role of the expert is to facilitate processes of communication between diverse interests and come to a common understanding and agreed action.

While the above represents an oversimplified dichotomy between positivism and constructivism, it does underlie much of the discussion about knowledge, research methods, and the validity of more constructivist approaches such as action research. A purely positivist view of science and development, can be seen as responsible for many of the difficulties scientists have in communicating with other stakeholders, in understanding the interaction between stakeholders, and in integrating their knowledge and actions with those of other stakeholders—all important features of learning and research.

Instructivist and constructivist learning approaches are contrasted in Table 2. Instructivist learning approaches therefore refer to the more authoritarian approaches, with transfer of knowledge analogous to filling an empty vessel. Constructivist approaches recognize that new knowledge needs to be integrated with existing knowledge, and also that learning is often gained through dialogue and consequent exploration of different ideas and progressive understanding. As can be seen from the

⁷ This section, 2.1.2, is adapted from Hawkins *et al* (2009).

two tables, there is quite a degree of similarity between the instructivist approach and pedagogy, and between the constructivist approach and andragogy.

Table 2 Instructivist and constructivist learning approaches

Instructivist	Constructivist
Knowledge is transferred to the learner through instruction by a knowledgeable "authority" – the teacher.	The learner constructs new knowledge by relating new information to prior knowledge and experience.
Knowledge is objective – a “given”: it is external to the learner.	Knowledge is socially constructed through dialogue and consideration of multiple perspectives.
Learning – through “study” - is an individual process.	Learning – through dialogue - is a group process.
The teacher is responsible for, and controls the learning process through sequenced, hierarchical learning objectives	The learner takes responsibility for learning according to personal need. Teachers become guides rather than dispensers of knowledge
Evaluation is against set standards.	Evaluation of learning is through observation and dialogue

2.1.4 Experiential learning

“One must learn by doing the thing; though you think you know it, you have no certainty until you try”. (Sophocles, 495-406 BC)

“Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand” (Confucius, 551-479 BC)

“Knowledge is experience, everything else is just information”. (Albert Einstein, 1879 – 1955).

Many thinkers, ancient and modern, have emphasised learning through experience, or “experiential learning”. At its simplest, experiential learning (EL) can occur after any unstructured or unintentional experience. Indeed, some take the view that all learning is, in effect, learning from experience (e.g. Moon, 2004).

However, EL can also refer to more developed theories of how people learn, which can then be used to develop more structured and effective learning programmes. There is a vast literature on EL⁸ that includes a range of meanings, practices, and ideologies. Moon (2004) reviews some of these definitions, citing that of McGill and Warner Weil (1989) as one of the most useful:

⁸ See bibliography. The Kolbs’ website (www.learningfromexperience.com) also includes a useful video on “what is experiential learning”, as well as comprehensive bibliographies of EL.

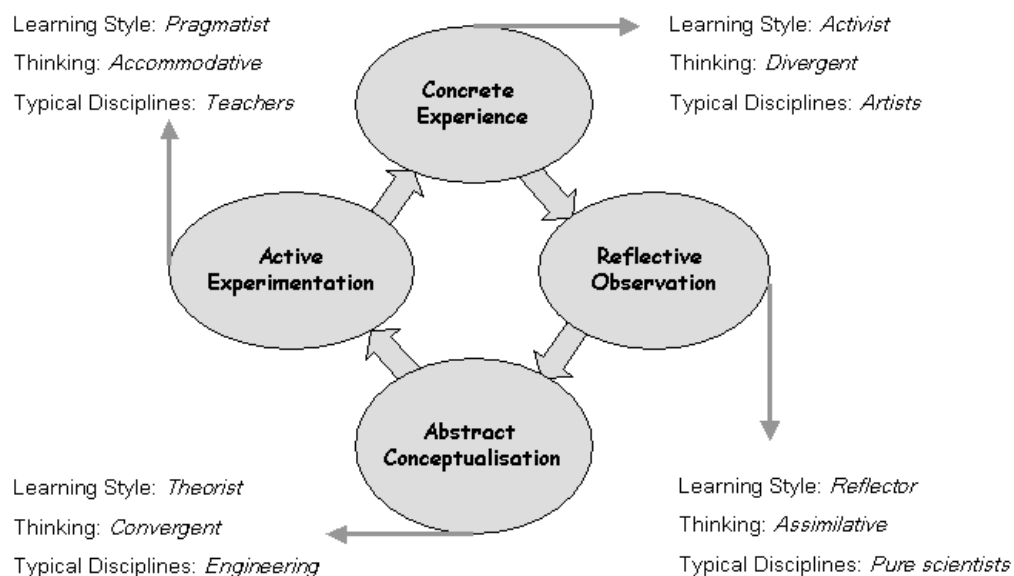
[EL is] “the process whereby people individually and in association with others, engage in direct encounter, then purposefully reflect upon, validate, transform, give personal meaning to and seek to integrate their different ways of knowing. Experiential learning therefore enables the discovery of possibilities that may not be evident from direct experience alone.”

Moon goes on to review what can be described as characteristics of experiential learning:

- The learning is personally significant to the learner;
- It is not usually mediated or “taught” (rather “facilitated” or managed);
- The material of learning is usually direct experience (rather than texts, information);
- There is a process of reflection
- There is usually a formal intention to learn, and learning events are usually structured (adapted from Moon, 2004).

In his influential book, David Kolb (1984) described the process of experiential learning as a cyclical “learning cycle”. He suggested that there are 4 different but linked sub-processes that interact over a period of time (which may be minutes or months) to achieve learning. In this learning cycle, direct (“concrete”) experience is followed by reflection on what happened, then the formulation of a general rule or conclusion (conceptualization), followed by more experimentation that gives rise to new experience etc. (see Figure 1, adapted from Atherton, 2010).

Figure 1 Kolb’s experiential learning cycle



Peter Honey and Alan Mumford (1986) developed this model to suggest that different learners have different and individual “learning styles”. That is, they have a preference for, or are stronger in one or other of the component learning processes. People that like to learn, or learn more effectively, from concrete experience are referred to as “activist” learners. Similarly, “reflectors” learn more from reflective observation, “theorists” from abstract conceptualisation, and “pragmatists” from experimentation. Others have also developed similar learning style “typologies”, and have designed tests (“learning style inventories”) to help individuals identify their respective strengths and styles, and hence derive learning processes that play to those strengths or balance the needs of a group where different individual learning styles are prevalent.

Kolb himself and his colleagues also went further and related his learning cycle and learning styles to different and contrasting types of knowledge identified by Hudson and by Piaget:

- Linking concrete experience and reflective observation represents *divergent* thinking. People with this learning style tend to be strong in imaginative ability, good at generating ideas and seeing things from different perspectives (i.e. “systemic” or “systems thinking”), and interested in people. Such thinking is often found in people such as artists.
- In the opposite quadrant connecting abstract conceptualisation and active experimentation, *convergent* thinkers are strong in the practical application of ideas, applying deductive reasoning to specific problems (e.g. the “systematic thinking” that is required for logical frameworks), may be unemotional and perhaps with narrow interests. This type of learning style or thinking is typically found in applied scientists.
- Relating reflective observation and abstract conceptualisation represents *assimilative* thinking and inductive reasoning, typified by a strong ability to create theoretical models that relate to abstract concepts rather than the more day-to-day affairs of people. Such thinking is often found in more basic or pure scientists.
- Linking active experimentation and concrete experience represents *accommodative* thinking. People with these traits are strong at doing things, tend to be more risk takers and solve problems intuitively.

Kolb’s model and the linkages between actions, types of thinking or knowledge and disciplines represent considerable generalizations, and the model has been extensively criticized from many different perspectives. Nevertheless, it does indicate the value of bringing the strengths of different types of thinking and different disciplines together in a broad social learning process, and it underpins approaches such as “action research and learning” (see Section 2.2).

As seen above, “reflection” is a critical aspect of experiential learning. While it is an everyday process, similar to thinking (most people would say they “reflect” upon experience), but it can be developed into a more rigorous process to maximise the effectiveness of experiential learning. It can be described as a thinking process applied to relatively complicated, ill-structured ideas for which there is no obvious solution, and is largely based on the further processing of knowledge and understanding that we already possess. It leads to outcomes such as new or revised

understanding and knowledge, new processes of critical review, new theories of how things work, resolutions about personal behaviour, plans for future action, etc. Reflection also enables learners to be aware of their own learning processes, leading to higher overall achievement (adapted from Moon, 2004).

Professionals vary in the effectiveness with which they use reflection, and that is not just a function of their experience (Moon, 2004)⁹. In fact, as others have noted, we do not learn from experience, but rather from processing the knowledge that results from experience (Mason, 2000, cited by Moon, 2004). “Deeper” processes of reflection can be learned, which do not just describe what happened, but also consider alternative viewpoints, recognise that alternative explanations may exist, and analyse how different actions relate to different contexts.

2.1.5 Problem-based learning

A similar learning-by-doing approach promoted extensively in recent years, is that of “problem-based learning” (PBL). Initially promoted more in medical and professional schools, PBL now provides the “core model” for all programmes in universities such as Maastricht in the Netherlands¹⁰.

Following a PBL approach, students orient their learning around complex, real-world problems, and work collaboratively in small groups towards identifying solutions, emphasizing meaning making over fact collecting. The group members define what they need to learn to solve the problem, and divide tasks accordingly, thus taking responsibility for their own learning. PBL therefore requires good library resources and an adequate number of tutors to act as support and facilitators (guiding and asking critical questions, and sharing their knowledge when needed - rather than the more traditional lecturer’s role of content provider).

PBL therefore provides improved motivation to learn. According to Rhem, 1998, “students achieve higher levels of comprehension, develop more learning and knowledge-forming skills and more social skills as well. This approach to teaching brings prior knowledge into play more rapidly and ends up fostering learning that adapts to new situations and related domains as quickly and with the same joyous magic as a stone skipped over a body of water.” Rhem goes on to add that “interest in PBL grows because not only does research show a higher quality of learning (though not a greater amount if “amount” equates with the number of facts), but problem-based learning simply feels right intuitively. It seems to reflect the way the mind actually works, not a set of parlour-game procedures for manipulating students into learning”.

According to a review by Albanese and Mitchell (1993) for medical students, PBL is more nurturing and enjoyable. PBL graduates perform as well, and sometimes better, on clinical examinations and faculty evaluations; and they are more likely to enter family medicine. Also, faculty enjoy teaching using PBL. However, PBL students in a

⁹ Shane Warne is reputed to have said about a fellow test cricket player: “he has not played 33 test matches - he has played the 1st test 33 times”.

¹⁰ See: For experience at Maastricht University, see: <http://www.maastrichtuniversity.nl/web/Main/Education/EducationalProfile/ProblemBasedLearning.htm>. Extensive and up-to-date resources on PBL are also provided by the UK Centre for Legal Education at: <http://www.ukcle.ac.uk/resources/teaching-and-learning-practices/resources>

few instances scored lower on basic sciences examinations and viewed themselves as less well prepared in the basic sciences than were their conventionally trained counterparts. PBL graduates tended to engage in backward reasoning rather than the forward reasoning experts engage in, and there appeared to be gaps in their cognitive knowledge base that could affect practice outcomes. The costs of PBL may slow its implementation in schools with class sizes larger than 100. They therefore recommended that caution be exercised in making comprehensive, curriculum-wide conversions until more is understood about some of these issues.

2.1.6 A dissenting viewpoint

Not all scholars agree on the value of constructivist or experiential learning, especially when it relates to objective “facts” and relatively inexperienced learners (see Pickles and R. Greenaway, 2010). Paul Kirschner *et al* (2006), argue that “minimal guidance approaches” do not fit with cognitive theory, not are they supported by empirical evidence.

By “minimal guidance approaches” they refer to “discovery learning”, “problem-based learning”, “inquiry learning”, “experiential learning” and “constructivist learning”. They regard these approaches as “differently named but essentially pedagogically equivalent approaches [that] include science instruction in which students are placed in inquiry learning contexts and asked to discover the fundamental and well-known principles of science by modeling the investigatory activities of professional researchers.”

Kirschner *et al* argue that problem solving approaches do not fit with what we now know about human cognitive architecture; the interplay between working memory and long-term memory. They emphasise the value of information stored in long-term memory to recognise new situations and identify what to do and when to do it. Inquiry based instruction uses working memory, which does not lead to long-term memory - and “*if nothing is changed in long-term memory, nothing has been learned.*”

The authors go on to say that minimalist approaches are especially ineffective and even damaging in the case of novice learners, who lack the schemas to integrate new information with their prior knowledge. They note that when students learn science in classrooms with pure-discovery methods and minimal feedback, they often become lost and frustrated.

The authors conclude by agreeing with other quoted authors that “outstanding scientists who demand rigorous proof for scientific assertions...defend on the bias of intuition alone, teaching methods that are not the most effective” and that “educational reform efforts [should move] from the fuzzy and unproductive world of ideology—which sometimes hides under the various banners of constructivism—to the sharp and productive world of theory-based research on how people learn”.

2.1.7 Making learning happen

Another critique of the experiential learning cycle, as well as the distinction between “andragogy” and pedagogy, and the “questionable thinking about learning styles”, is provided by Phil Race, in his book “Making Learning Happen: A Guide for Post-Compulsory Education” (Race, 2010)¹¹. Using a more pragmatic approach, based on

¹¹ Phil Race also makes available many of his resources (PowerPoint presentations, book chapters etc.) on his website: www.phil-race.co.uk

his own experience and extensive research (having asked “getting on for 100,000 people about how they learned”), Race identifies seven fundamental factors underpinning successful learning:

1. Wanting to learn (“intrinsic motivation”);
2. Taking ownership of the need to learn (“extrinsic motivation”);
3. Learning by doing (practice, repetition, trial and error, learning through experience);
4. Learning through feedback (from fellow learners, from tutors, from learning resources, from results);
5. Making sense of what is learned (“getting one’s head around ideas, concepts and theories”);
6. Deepening learning through explaining, coaching and teaching (i.e. using these processes to help others and ourselves, intensifying the making sense part);
7. Further deepening learning through assessing (“learning through feedback”, tutor and peer assessment as well as self-assessment).

While several of these 7 factors have features in common with the “experiential learning cycle” described above (e.g. “learning by doing”, “making sense of what is learned”), Race considers the “learning cycle” concept to be too simple (“though all of the processes may have a part to play in successful learning, they are unlikely to follow on from each other in a neat circle”). Rather, Race prefers to use the analogy of “ripples on a pond”, which constantly interact to reinforce each other. He then uses these factors as a basis for curriculum design, assessment, making learning happen in large and small groups, etc.

Race applies his ideas especially to “classroom practice” as described in Section 4 of this report. However, the factors are fundamental enough to be also valid to field attachments and postgraduate research practice.

2.2 Research Approaches

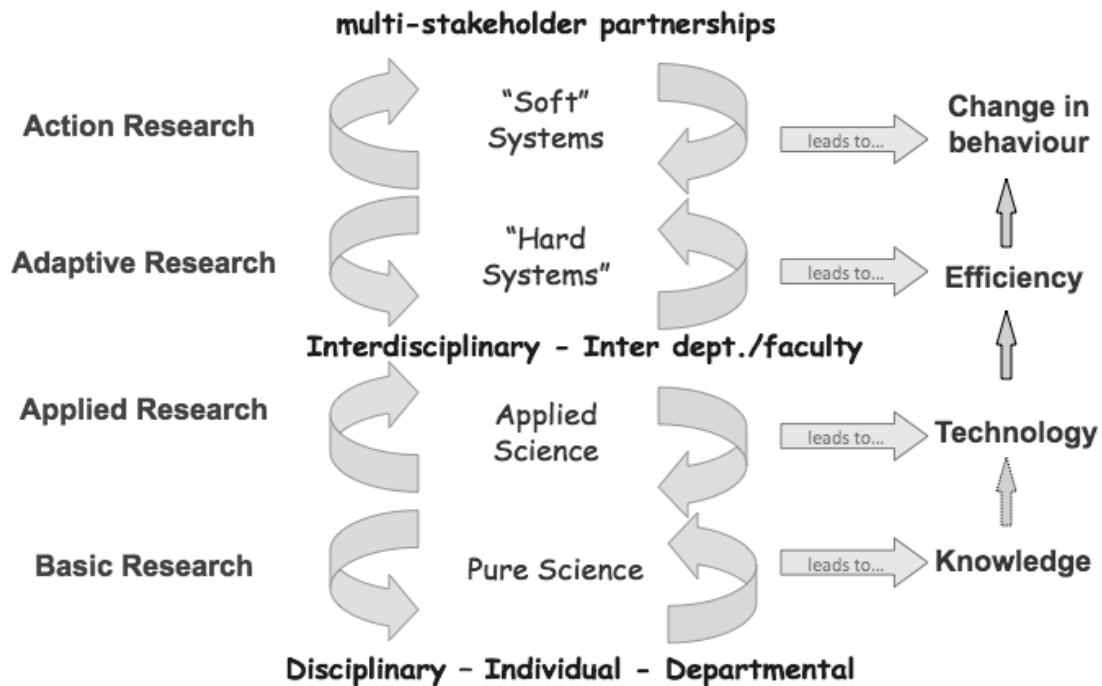
Research is of course a means of learning about the world. The above ideas concerning learning therefore very much affect the way people view research methods.

2.2.1 The “research continuum”

This report builds on the idea that there are different types of research, with different purposes, different processes, and a different cast of actors.

Figure 2 shows this author’s concept of a “research continuum”, from a reductionist approach of “pure science”, through “applied science”, “hard systems” approaches, to “soft systems” approaches. Each of these approaches seeks to answer a different question. What do we know? What can we do with this knowledge? How can we do things most efficiently (assuming, of course, that we know which criteria to use). What sort of change (innovation) do we want to see, and how do we organise ourselves to promote this innovation?

Figure 2 Types of research action”



(Source: R. Hawkins, adapted from presentation at the Conference on Higher Education in Agriculture (CHEA), November 2010)

2.2.2 Conventional vs. action research

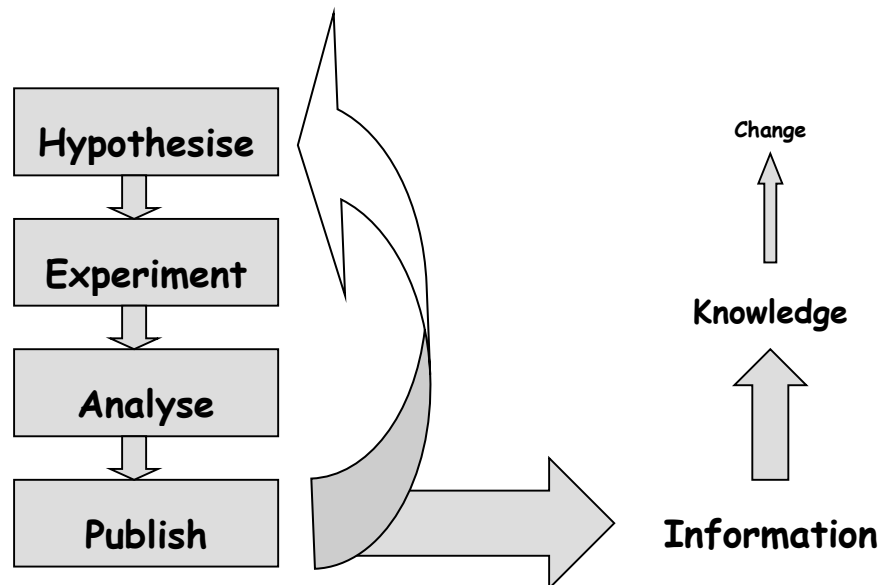
Another way of looking at this continuum is to contrast the processes of “conventional” research (i.e. as usually applied to pure and applied sciences and technology) and “action research”, as usually applied to human activity systems.

“**Conventional**” scientific research is considered here (to contrast it with action research) to be a linear or cyclical process leading from the formulation of some hypothesis, through experimentation, to analysis of the results leading to some conclusion concerning how things are or new hypotheses (see Figure 3). These findings are then usually published in an appropriate professional journal.

The main output of this process is information (represented by the publication). This information *may* lead to knowledge (in the sense that someone uses the information to do something differently), which in turn *may* lead to broader outcome – beneficial change among a particular group of stakeholders or society. But equally it may not: the information may remain unused or “on the shelf”. As the publications themselves (in terms of number and reputation of the publishing authority) often form the basis of evaluating professional capabilities, the scientist may have little incentive to ensure that the information is useful or used.

Figure 3 The conventional scientific research process

(Source: R. Hawkins)



Action research, by contrast (see Figure 3), is *specifically* intended to lead to action (improvement, development) as an outcome, in addition to research (knowledge, understanding). The understanding allows more informed change, and at the same time understanding is improved by observing and reflecting on the results of the action carried out (as Kurt Lewin, who is credited with first using the term “action research¹²”, is reputed to have said: “If you want to know how things are – just try to change them.”).

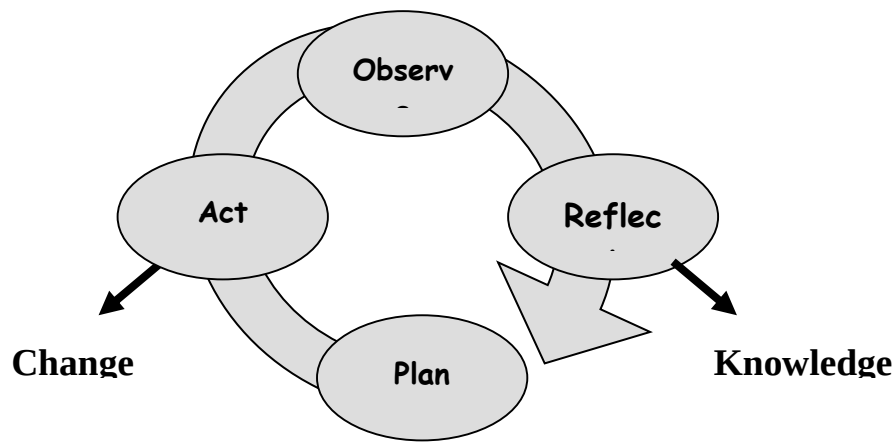
Action Research tends to be cyclic, participatory, and qualitative:

- Action research is cyclical in that it is based on Kolb’s learning cycle described above. It is also iterative in that the cycle is repeated, with new planning based on the lessons learned through reflection of previous experience and actions.
- Action research is participatory because needs to involve the people who are likely to be affected by the change. This allows the understanding to be widely shared and the change to be pursued with commitment.

¹² Lewin, K. (1946) Action research and minority problems. J Soc. Issues 2: 34-46

Figure 4 The basic action research process

Source: Adapted from Dick, 2010¹³



Action research tends to be mostly qualitative, in that it focuses on the actions and behaviour of people, and these actions are less amenable to more formal scientific quantification and analysis.

2.2.3 Action research and community development

A number of exponents have developed and applied the concepts of action research to agricultural and community development. One example is the “Participatory Extension Approach” (PEA) described by Ramaru et al (2009) and by Hlamalani Ngwenya and Jürgen Hagmann (see Figure 5).

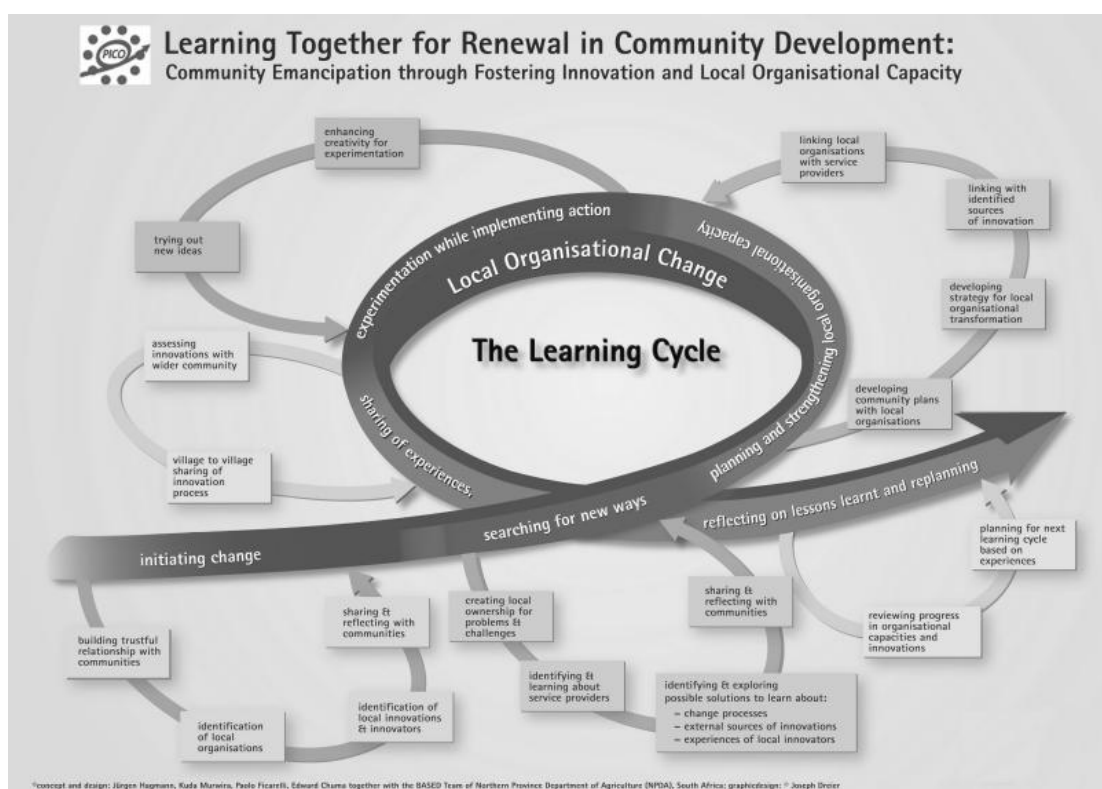
The PEA recognises that agricultural challenges are complex and need to be dealt with in a complex manner. It deals with the social dynamics involved in an innovation system in smallholder farming. It attempts to establish a common platform for trying out new things by community members, and enhance their capacity to address the different factors involved in change: social, economic, ecological, and organizational.

The PEA approach therefore is intended to:

- Develop the individual and organisational capacities of communities to be able to deal with the dynamic challenges of development
- Facilitate a process of self organisation and community emancipation to enable people to better articulate and represent their needs for agricultural and social services to service providers and government.
- Develop and spread technical and social innovations in a process of joint learning, which builds on the local knowledge of rural people.
- Link rural people and organisations to external service providers, input and output markets and sources of innovation in a functional innovation system.

¹³ Bob Dick’s website, with extensive resources and links on action research, can be found at: <http://uqconnect.net/~zzbdick/default.html>

Figure 5 Action research applied to community development



Source: Ngwenya and Hagmann (n.d.)

The learning cycle of PEA is based on **6 iterative phases**:

- Initiating change;
- Searching for new ways;
- Planning and strengthening local organizational capacity;
- Experimenting while implementing action and
- Sharing of experiments and
- Reflecting on lessons learnt and re-planning.

Ngwenya and Hagmann discuss the importance of facilitating this action-research process – what they call “facilitation for change”. They describe the **fundamental factors** in this facilitation process:

- Building trust in the community;
- Creating discomfort – the recognition of the need for change;
- Creating a vision of what can be achieved;
- Helping people analyse their situation critically;
- Creating ownership of the process and self reliance
- Discovering behavioural problems and hidden potentials;
- Helping people discover the systemic nature of their development problems;
- Developing local organisation;

- Discovering norms and values;
- Creating linkages between stakeholders;
- Stimulating creativity and entrepreneurship;
- Establishing a culture of feedback and reflection;
- Sharing information;
- Helping people see facts, not politics.

These factors lead Ngwenya and Hagmann to identify the **competencies** needed to be an effective facilitator of the action research process:

- A vision and set of core values for development;
- Personal skills (self- awareness, critical thinking and reflection, empathy, and self-regulation);
- Process related skills (observation, visualisation, questioning/probing, giving/receiving feedback understanding and managing group processes, documentation, etc);
- Knowledge of concepts and methodologies in extension organisation, community development, operational and process management.

Lastly, Ngwenya and Hagmann state that **developing these competencies** cannot be dealt with in a conventional modular training way, but requires its own process of experiential learning - learning by doing, by interacting with communities and reflection thereafter.

2.2.4 Empirical, participatory and action research

German and Stroud (2007) also discuss the different types of learning and research approaches that support agricultural development.

- **Empirical research** follows well-known standards for academic rigor and uses formal, controlled experiments and/or replicability to support a claim of validity. Methods are defined up front based on a pre-determined hypothesis. Methods are not modified once the process of data collection has started. While researchers and end users may jointly define research objectives, specialist researchers generally design the research design, collect the data, and interpret findings.
- **Participatory action learning (PAL)** comprises approaches described elsewhere as participatory research, experiential learning, and social learning. The primary aim of PAL is development impact (enabling localized social or institutional change). Methods are not formalized, and emphasize actor-based learning grounded in shared experience. PAL may be carried out within R&D institutions as a process of institutional change, by policy makers taking an adaptive approach to policy implementation, or by local communities as they seek solutions to common problems. The approach is composed of iterative cycles of institutional or community-level action and reflection that empower by placing the nexus of development strategizing in the hands of the beneficiaries or implementers themselves. Methods for ensuring quality in PAL include planning and monitoring frameworks, effective facilitation and

an inclusive change process that effectively integrates broad-based concerns and perspectives.

- **Action research**, as argued by German and Stroud, goes beyond local development impact to distil experience, derive general lessons and principles that can be disseminated and used elsewhere. AR therefore has the aim to advance theory, improve the effectiveness of the specific change process in which research is embedded, and generally influence development practice. Key research questions focus on how things were done to enable successful outcomes, including key bottlenecks encountered, how they were addressed and the derivation of key elements of successful change processes. AR is semi-formal; research questions defined at the outset and fixed; methods of data capture may be relatively fixed or opportunistically defined to capture emergent realities. The process of inquiry is often more specialized or formalized than in PAR in that claims to validity mean that the research process must be recoverable through an explicit intellectual framework (framework of ideas, methodology and area of application) that will serve as a basis for determining which findings count as knowledge. The recoverability of an AR process clearly sets AR as “research” apart from PAL as “action.”

German and Stroud go on to illustrate the differences and complementarities of these three learning approaches with a series of case studies in Ethiopia, Uganda and Tanzania. They conclude that while the sequencing of learning approaches may vary, there is a strong tendency toward three discrete phases of research and action:

- **Empirical research for problem diagnosis**, so as to ground subsequent action learning and research in a firm understanding of problems and opportunities characterizing the system.
- **Participatory action learning to address the problems** through an iterative sequence of actions, reflections, and re-planning processes, with
- **Action research superimposed** so as to synthesize higher-level lessons and findings of potential application in addressing similar problems elsewhere.

2.2.5 Rapid appraisal of agricultural knowledge systems (RAAKS)

A particular approach to action research by a group of stakeholders around a particular issue is that known as “RAAKS” – or “Rapid Appraisal of Agricultural Knowledge Systems (Engel and Salomon, 1997). This type of approach consists in looking at the development issue from the different perspectives of the different stakeholders. For convenience, RAAKS breaks this process down into three major phases:

1. Define the problem:

- Identify the mutual problem or opportunity;
- Identify additional stakeholders or groups with an interest;
- Evaluate the diversity of objectives of these stakeholders;
- Evaluate the external factors that influence the situation (i.e. those factors over which the involved stakeholders have no control);
- Redefine the mutual and shared objective(s).

2. Analyse who is currently doing what and how:

- Identify what is already being done, and by whom, to reach the mutual objective;
- Identify what knowledge is needed, and who has this knowledge;
- Analyse how the different stakeholders interact to share knowledge and information;
- Analyse how the different stakeholders are organised to communicate, share information and coordinate activities.

3. Plan strategies and actions:

- Define what needs to be done to achieve the mutual objective, (including the exchange of information and knowledge, the interaction between and organisation of stakeholders);
- Define future roles - which stakeholder should undertake the activities needed;
- Agree on a joint plan of action (who, what, where, when and how).

RAAKS can therefore be considered as action research in innovation systems. It focuses on the perspectives, processes and interactions between stakeholders around an issue, rather than on the technical aspects of the issue *per se*. As such, it can provide an integral complement more typical disciplinary or technical research.

2.2.6 Other approaches to Integrated Agricultural Research for Development

In recent years, a number of publications have described research approaches that are based on action research principles. Many of these have been reviewed in Hawkins et al (2009), in their paper on “Integrated Agricultural Research for Development (IAR4D). A selection of such research approaches includes:

- The “Participatory Innovation Development (PID), promoted by the PROMoting Local INNOVAtion (PROLINNOVA) network (www.prolinnova.net).
- “Participatory Learning and Action Research”, PLAR (see, for example Defoer and Budelman (2000). Managing soil fertility in the Tropics: A resource guide for participatory learning and action research, published by KIT, The Netherlands.
- The “Sustainable Rural Livelihoods Approach”, as promoted by the Department for Rural Development (DFID) of the UK and others (see Sustainable Livelihoods Website: <http://www.livelihoods.org>)
- The “Enabling Rural Innovation (ERI) approach, promoted by the Centre for Tropical Agriculture (CIAT) in Africa (information available at <http://webapp.ciat.cgiar.org/africa/eri.htm>).
- The related “Territorial Approach for Rural Business Development” also promoted by CIAT, especially in Latin America (information at: http://webapp.ciat.cgiar.org/agroempresas/pdf/value_adding.pdf)
- “Integrated Natural Resources Management” (INRM), as illustrated in “Navigating amidst complexity: Guide to implementing effective research and development to improve livelihoods and the environment”, by Campbell et al (2006), and available at: <http://www.icarda.org/Publications/NavigatingAmidstComplexity.pdf>

2.3 Conclusions

A number of learning and research approaches have been presented in this chapter.

Learning approaches include “adult learning” (andragogy, as opposed to pedagogy) “experiential learning”, “problem-based learning”, and Phil Race’s “ripples on a pond” model. Most of these models emphasise the need for relevance (the motivation to learn), the need to try things out (learning by doing), and the need to make sense of what is being learned (putting new knowledge into a “personal construct”). It is not easy to empirically evaluate such models of learning – as “learning” incorporates different outcomes favoured by one or other approach: new factual knowledge, improved competencies and skills (including problem solving, as well as social skills and the ability to continue autonomous learning), changed attitudes, etc. The different methods of facilitating learning (i.e. “teaching”) also demand different resources (information technology, equipment, time of facilitators). Any attempt to design a learning programme therefore needs to strike a balance between desired learning outcomes and resource availability, as well as the ability of learners to take responsibility for their own learning.

Research approaches can be considered as a “continuum” from “basic” research, through “applied”, “adaptive” and “action research”. These different modes of research have different outcomes: ranging from knowledge, technology, efficiency of (e.g. production) systems, to change in behaviour of groups of people (or stakeholders in a particular issue). These different types of research are not alternatives, but complement each other in a process of innovation. The issue for universities in the Outreach Project is therefore to match the balance of research activities to expected outcomes and organisational mandates. The argument in this report is that the universities visited tend to over-emphasise applied and adaptive research, and weaker in the action research that is necessary to form outreach partnerships, change the behaviour of stakeholders, and hence lead to practical development in agriculture.

3 Concepts of EL in the 3 universities

In this section, the understanding of some of the above concepts in the universities visited for the consultancy will be discussed. This section is based on informal interviews with staff and students at the 3 universities visited.

3.1 Current understanding of learning concepts

The current understanding of experiential learning (EL) at the universities visited is perhaps best illustrated by a selection of quotes of different persons when asked: “what is experiential learning”:

- “*If someone has trained, [EL is how you] put that into practice*” (MAK staff)
- “[EL is] *gaining experience by practicing*” (MAK staff)
- “[EL is] *on the job learning*” (MAK staff)
- “[EL means] *applying emerging issues*” (MAK staff)
- “[EL is] *problem based learning*”, or “*learning through experiences*” (various)
- “[EL is] *lessons learned when conducting experiments* (MAK postgraduate student)
- “[EL is] *learning by doing*” (postgraduate student MAK; staff member BCA)
- “[EL means]... *if something goes wrong, you can correct, change course*” (BCA staff)
- “[EL means] *engaging the student to be part of, involved in the problem*” (BCA)
- “[EL is] *involvement leading to learning*” (BCA staff)
- “[EL means] *learning with farmers*”... “*developing a learning community*”... “*constant reflection*” (BCA staff)

These quotes show that there is a wide range of understanding of the concept of EL. To some, it simply means practice of theoretical knowledge. To others, it is an alternative way of learning. To yet others, it involves engaging with others. However, very few persons interviewed expressed a concept of EL that implies a more detailed process of learning, and involving the different steps of the “cycle” of planning-action-observation-reflection described in the previous section. .

Perhaps the most complete explanation came not from a staff member of one of the universities, but from the Director of Extension Services in Malawi: “[EL is]... *learning by doing, processing and internalising experience...where the individual takes ownership over the learning experience...where [lessons learned] are applied to the working situation...leading to sustainable behavioural change*¹⁴”.

It should also be noted that not all staff at the universities are convinced of the value of experiential learning: “...*it doesn’t teach facts*” was one opinion (this perhaps is in line with the views of Kirschner *et al* (2006), as reported in section 2.1)

¹⁴ It was notable that the Director of Extension Services in Malawi had specialised in EL during graduate studies.

When asked how EL has been integrated into academic programmes, many staff interviewed pointed to student field attachments or “internships”, or particular courses that have been designed with EL principles in mind. Some of this experience is described in more detail in Section 5 of this report.

3.2 Project expectations in EL

The Outreach Project places considerable emphasis on the introduction of EL as a means of making university programmes more relevant, and graduates more capable of engaging in, and promoting agricultural development. The project’s understanding is that

- *“Experiential learning requires that students and faculty engage and interact with other disciplines, the wider community and between cultures and in so doing master the competence to integrate, connect, confront and reconcile multiple ways of looking at the world.”¹⁵*

The vision of the project of how EL will be achieved can be seen from the following statements¹⁶:

- *[The] “experiential learning model...espouses the creation of linkages and a network between the university students, lecturers or researchers, the extension workers, the agro-industry or processors and farming communities or groups. The experiential learning model requires that students and professors work more closely with farmers, other agro-entrepreneurs and policymakers on problems impacting on agriculture and the rural landscape.*

and

- *Experiential learning will be iterative and reflective in nature, allowing for flexibility in responding to and addressing problems. Farmers’ leaders and service providers will be engaged as ‘programme fellows’ so that their inputs and priorities are fully incorporated into the proposed programme. These fellows will directly contribute their specialist knowledge and skills. This moves the programme clearly from a ‘top down’ information flow to a full partnership across the value chain where previously marginalized participants can contribute fully.*

The way in which the project aims to integrate EL into academic programmes is set out:

- *Experiential learning engagements will be conducted in the field with small farmers (groups) and Small and Medium Enterprises (SME’s). The actual form of the engagement may differ by course and subject area and commodity value chain. Some courses may have a series of little field engagements where students tackle small, separate and stand alone issues in each engagement, or alternatively course may integrate a substantial semester long project into the course that requires students to tackle a series of inter-linked issues and problems.*

¹⁵ Taken from the Project Proposal Document: “Shifting from Outreach to Engagement: Transforming Universities’ response to current development trends in agricultural research and training in Eastern, Central and Southern Africa” EuropeAid/127860/D/ACT/ACP

¹⁶ Ibid

The project document goes on to say that:

- *[The] transformation of a course from a faculty led lecture format to a student centred, industry-led and faculty-facilitated experiential learning format is a complex and non-trivial process with a large learning curve.*

The above statements indicate that the aspirations of the project, and implications and planned activities in terms of modifying academic programmes to incorporate EL go beyond the current concepts or capacity of many university staff. As will be noted below, they also raise a number of questions about institutional policies and overall management.

3.3 Capacity of staff in EL

Few faculty staff members interviewed have had any formal training in teaching or pedagogical approaches in general, much less in EL in particular. Such training does not appear to be a requirement for staff in any of the 3 universities visited: “we’ve never been taught how to teach”; “nobody penalises you for the way you teach” were typical comments. Teaching staff at the universities visited therefore mostly lack basic skills in curriculum development, definition of learning outcomes, developing appropriate learning activities and learning materials. A number of persons interviewed remarked on this general point, saying that something like an induction course for new faculty staff would be useful. Without such skills and understanding of basic concepts, it is difficult to see how EL concepts and approaches can be put into context.

However, there were some valuable exceptions to this general finding, which can provide a basis for future action. All universities have separate faculties (schools or colleges) of education. These faculties usually focus on preparing teachers of secondary education, although some instance were found of departments and staff who have an interest in, and capacity for training of fellow university staff. Two such examples were:

- The organisation by UNIMA of induction workshops on teaching practice for new university staff, through the Committee on University Teaching and Learning” (although the last workshop attended by BCA personnel appears to be have been about 4 years ago). Some 50-60% of BCA staff are estimated to have attended such workshops, and the Dept of Agricultural Education and Development Communication at BCA has developed its own workshop programme modelled on the UNIMA programme. In addition, a few staff of BCA had attended the teacher-training programme at Chancellor College (sister college in the University of Malawi). According to one senior person interviewed, the difference in staff members that have undergone training in learning methods is obvious.
- Another example is the current development of a training manual for a 3-day course in “learner-centred methodologies” by the Department of Curriculum, Teaching And Media in the School Of Education at MAK. This course covers constructivist theory, adult learning, learning cycles, changes in student and teacher roles, etc., and is course is aimed at staff of other MAK faculties (courses will be organised by the DVC Academic Affairs).

It is quite possible that other such initiatives exist: a thorough review of the activities of Education Faculties/Departments at the 3 universities was beyond the

scope of this consultancy. However, it would make sense to for the Outreach Project to explore linkages with these departments. Their future involvement would add sustainability to the efforts of the project and provide a mechanism for scaling up of practice in EL throughout the universities.

Other instances of training in learning methods mentioned by staff interviewed included:

- A Postgraduate Certificate in Academic Practice, offered by Kabarak University (Kenya) in collaboration with 3 other Kenyan Universities and York St. John University (UK), which was supported by the British Council. The Dean of MSAB had attended this programme, which involved a series of workshops over 1 year. The Dean related how he had changed his own teaching practice to more interactive learning as a result of the course. The programme was apparently subsequently extended to other Kenyan Universities in 2009/2010.
- Previous experience with “Personal Mastery (PM) Learning Cycles” at MAK, where a series of 5 workshops had been integrated with change by communities of practice in 3 Faculties at MAK. By one estimate, some 70% of the Agriculture Faculty staff had been “exposed” to PM ideas, although only about 20% had actually completed the programme. It was observed by persons interviewed that staff that had undergone the PM programmes “do a lot of things differently”, especially in terms of academic management (many alumni of the programme are now in management or administrative positions: Directors, Deans, HODs, etc).
- RUFORUM’s own programme (with DFID support) to improve the quality of learning materials, as well as improve the visibility and quality generally of staff and participating universities/academic programmes¹⁷ through the development of materials openly available electronically (“e-content”), using the Moodle platform. These learning materials include learning objectives, “content”, learning activities such as assignments, discussion guides and quizzes, etc. In an unrelated project, it was also noted that efforts are underway in Moi to prepare E-learning materials. The SUCAPRI project (MAK and 4 universities in Kenya) also includes a component on preparing learning materials. No doubt there are other similar initiatives in the region (and possibly involving the universities participating in the Outreach Project.
- Internal training by the Agricultural Extension and Education Dept. at the MAK Faculty Agric staff in methods of reflection and process documentation.

Again, these activities represent valuable experiences that can be reflected upon, built upon or integrated with the proposed capacity building activities of the Outreach Project.

¹⁷ Universities participating with RUFORUM on e-learning materials include BCA (Aquaculture and Agricultural Resource Economics); MAK (Plant Breeding and Biotechnology PhD); Egerton (PhD in Rural Innovation, MSc in Agricultural Communication Management (AICM); Nairobi (PhD Drylands, MSc in AICM); and Haramaya (MSc in AICM), and Sokoine (PhD in Soil Science and Water Management).

3.4 Conclusions and suggestions

Few faculty staff members at the universities in the Outreach Project have had any formal training in teaching or pedagogical approaches in general, much less in EL in particular. It is therefore unsurprising that there is a range of understanding of EL concepts at the universities. For the Outreach Project to be successful, it will be necessary to achieve a deeper and common understanding of EL. From the brief review of current understanding at the universities of EL concepts in particular, and training in teaching methods in general, it is suggested that:

- The Outreach Project organise both regional and in-house workshops to promote understanding of key concepts within and between universities, and strengthen capacity in EL. These workshops should include:
 - An introduction to the basic concepts of pedagogy, adult learning, etc (e.g. as reviewed in Part 1 of this report).
 - A more detailed introduction to, and leading to a shared understanding of the concepts of problem-based learning, experiential learning cycles and action research, and how these concepts have been put into practice (i.e. case studies).
- Senior managers are involved in the activities to strengthen capacity in pedagogy and EL: they should understand and apply – and be seen to apply – these approaches in their own teaching.
- The Outreach Project seek to establish a system for peer-to-peer learning and/or mentoring of teachers at the universities, to allow good practice to be extended within each university and continual improvement.
- The Outreach Project establish linkages with the relevant Education Faculty/School/Department in each university, to review existing plans of these departments in terms of developing university staff capacity in pedagogy in general, and EL in particular. Where interest exists, these units should be involved in the EL capacity strengthening events planned by the Outreach Project.
- “Contact persons” be identified in each department, to liaise with the education units, play a key role in the workshops organised, spearhead departmental efforts, document experiences and feedback from colleagues.
- Capacity strengthening workshops organised by the Outreach Project should also coordinate activities with other projects/initiatives to scale out training in personal mastery, reflection and process documentation, and preparation of learning materials.

4 Classroom practice

4.1 Current practice at participating universities

To promote an EL approach in the classroom, it is important to use methods that allow dialogue and group processes. In this way, the learner can relating new information to prior knowledge and experience, and can socially “construct” knowledge through a consideration of multiple perspectives (see Part 1 of this report).

In all three universities there appears to be a range of methods used in general classroom practice. On the one hand, some faculty staff members mainly follow the traditional format of **lecturing**, using largely chalkboard technology, representing a one-way communication process. Other faculty staff members try to adopt a more facilitative style (as one put it “*I’m not the mother bird*”). These lecturers assign individuals or groups of students to prepare topics for presentation to fellow students during the class. After the student presentation and discussion, the faculty staff member then usually gives a (shorter) presentation, or fills in any gaps or omissions by the student presenter. Assessment of the student presentation usually counts towards continuous assessment. Such methods promote a greater degree of classroom discussions. Students and staff interviewed claimed that students are more likely to challenge and question when a student colleague makes a presentation, rather than an academic staff member.

In other practice reported, lecturers give reading material in advance to students, using the classroom time for discussion of the material. In general, students interviewed much preferred approaches that maximise classroom discussion, and said they learned more, as well as developing the skills of discussion. In fact, it appears to be common (e.g. in MAK) for students to organise themselves into informal study groups. In some cases, students mentioned that valuable interaction with other students takes place mostly outside the classroom.

Games and role-play are other learning activities often considered to promote EL. However, few examples of such techniques were mentioned by those interviewed. One staff member at MAK (AEE), who had experimented with such techniques, said that such methods were considered as strange by other staff and also by students (“*they think you’re bonkers*”). It is likely that most teaching staff are unfamiliar with such techniques, but it may also be they are limited by the greater preparation time needed by staff.

Currently, many lecturers use written **handouts**, although the preparation of “open and distance learning materials” is being undertaken at MSAB and BCA for example. However, computer facilities are still limited at the universities (for example, there are 40 computers for 700 students at MSAB, although many postgraduate students now have their own laptops/notebooks). However, there are a number of initiatives underway at the universities visited to upgrade learning materials through making them available electronically (see section 3.3 above).

The use of **audio/video material** was reported in only a few instances (e.g. one on cell meiosis, another on tissue culture from the National Crops Resources Research Institute in Uganda as used at MAK). In these few cases, students regarded the material as very useful. However, it is likely that equipment limitations, cost (of the video material itself, the time taken in sourcing such material), is a limiting factor for more widespread use.

Similarly, the use of **case studies** does not appear to be widespread in the 3 universities visited. Exceptions noted include the MAK Economics and Agribusiness BSc Programme, as well as the Family and Consumer Science BSs at MSAB, both of which use case studies as material for analysis and class discussions.

Where individual and/or group work is a feature, **individual and peer assessment** is often suggested as a means of encouraging EL, in that it allows for the assessment of process skills (self management and organisational skills, research skills, communication and intellectual skills) which are not often visible to the teacher¹⁸.

The few examples of use of individual and peer assessment at the 3 universities mostly focussed on its use for assessing classroom presentations by groups by the Dept of Agricultural Extension and Education at MAK.

4.2 Limitations and challenges

The greater use of EL techniques in the classroom, or better teaching practice in general, is partly limited by the limitations in staff competence, which in turn reflects the absence of specialised preparation for teaching (see section 3.3 above). However, there are also a number of more institutional limitations and challenges, which have been reviewed by Taylor and Fransman (2004), among others. Many of these limitations were noted at the universities visited, including:

- **Staff time** for preparation of classes. There was a general feeling that EL methods such as group work, games, role plays, etc. require more preparation than conventional lectures, and that such class exercises generally result in more discussion and questions that again take more time. Most universities provide guidelines for staff time in terms of preparation, which probably assume a more traditional lecturing style (at MAK, for example, the graduate handbook of 2009 assumes 2 hours of “lecture preparation” for each hour of “lecture”).
- **Class sizes.** At MAK, for example, classes at undergraduate level said to often number over 100, and even up to 200, especially for courses that are combined across programmes. Such class sizes, which appear to be getting more common, present challenges for faculty staff to promote discussion or activity groups (although Race, 2010, provides a number of ideas on how to improve learning in large groups). For postgraduate courses, such limitations are less of a problem, as class sizes are typically more like 5-20 (with up to 40 in the Crop Science MSc at MAK), and small group discussions are easier to organise. At the other universities (MSAB and BCA, undergraduate class sizes are typically smaller (20-40), although they are expected to grow in the future.
- **Classroom infrastructure.** In MAK Faculty of Agriculture and MSAB, particularly, classrooms for undergraduates consist of fixed benches which face one way, and which cannot be moved to accommodate group discussions or group work. Again, the assumption here when infrastructure is

¹⁸ See, for example, discussion of peer assessment by Rob East of the University of Glamorgan at <http://www.ukcle.ac.uk/resources/assessment-and-feedback/group/>, and by Dr A. Mark Langan and Dr C. Philip Wheeler at <http://www.celt.mmu.ac.uk/ltia/issue4/langanwheater.shtml>.

procured/built is for a traditional lecturing mode of teaching. Other teaching equipment is also typically limited (the School of Agriculture and Biotechnology in Moi University apparently only has one multi-media projector, for example).

- **Staff incentives.** Promotion criteria for university staff usually include both research and teaching. For research, the usual criteria are publications in professional refereed journals and/or conferences. In terms of teaching, recent and revised guidelines for staff assessment appear to be placing more emphasis on quality, rather than the more traditional criteria of length of service, or how many students they have taught (years of teaching, number of MSc/PhD theses supervised. For example, the new MAK guidelines state “points [for staff advancement] to be awarded are based on evaluation/appraisal but not years”¹⁹. The “Criteria for Promotion and the Award of Merit Increments” of UNIMA (revised in 1996) recognised that reliable indications of teaching ability are difficult to obtain, but includes provision for evaluation by students and department heads (although this provision receives little weight compared to an assessment by the HOD on “fulfilment of teaching obligations” and “timely submission of marks”, etc). Of course, these extracts do not say much about how these policies on staff incentives are implemented in practice. However, and these recent guidelines notwithstanding, it seems that there is room for improvement the overall assessment of staff competence in teaching as an integral part of staff incentives.
- **Student evaluation of courses and lecturer performance** provides one means of such staff assessment. An example of good practice here is that of BCA, where the Registrar’s office evaluates each course at the BCA on the basis of feedback from students. The relevant forms used at BCA specifically includes assessment of “opportunities for practice”, the “opportunity to critically reflect on important issues, theories, concepts, arguments, to enhance learning” the degree to which the lecturer “allowed students to actively and meaningfully get involved in the lecture”, and degree to which the lecturer “stimulated my interest”, and “what should be done in this course to improve teaching and learning”. MSAB also practices student evaluation of instructors and courses, although the evaluation form perhaps assumes a more traditional role for the lecturer. The use (and improvement) of these student evaluation forms therefore represents another way in which staff incentives for better teaching practice and the use of EL techniques can be improved.
- **Student expectations.** Faculty staff also recognised that to improve teaching, student expectations - in terms of learning how to learn - also need to be addressed. In general, there appears to be an expectation of students to “feedback what is given”, in order to obtain good grades. Some programmes, the BARI programme at MAK for example (see section 7), do include courses on adult learning, but these appear to often too late in the programme (in the 4th year of the BARI programme, or in even later in an MSc programme) to

¹⁹ Taken from “The policy on appointment and promotion of academic staff, as amended at the 112th meeting of the University Council held on 10th September 2009”.

allow students to reflect on their own learning processes early on in their academic studies.

- **The perceived role of the university.** The mission statements of the 3 universities emphasise their role to development and society (see Appendix 3). However, many university staff and managers have perhaps a more traditional and limited focus on the production of “new knowledge” as the *raison d'être* of the university. Other - typically younger – staff members focus on the role of the university as means to change and improve society (which is perhaps more in line with the mission statements). Postgraduate programmes in particular are assumed to be a preparation for further research (to produce more knowledge), rather than for business, or the management of innovation processes and utilization of knowledge. It is notable that almost all of the programmes offered by the universities in agriculture are “science” rather than “management” although there are exceptions (the Masters in Agribusiness Management, and the Bachelor or Agricultural and Rural Innovations at MAK; the BSc/MSc in Agribusiness Management at BCA). The Faculty of Agriculture at MAK is considered to be a *science* faculty, and programmes are approved (or not) by the Senate *Science* Committee; programmes that are developed with more emphasis on processes, or EL in general, can find it difficult to get approval under the current prevailing understanding of the “science paradigm” (see Section 7).

4.3 Conclusions and Suggestions

There is a range of teaching practice at the universities visited, as practiced by different staff. The Outreach Project needs to build on this diversity, by encouraging debate and sharing of experience between staff members. At the same time, there are a number of organisational constraints, which need to be considered by university administrators and managers, to evaluate potential changes in policy and management practice that could create a more conducive environment for EL.

The implications for the Outreach Project are that 2 types of activity are needed to promote EL in the partner universities:

- A series of workshops to develop *individual capacity* on teaching methods that promote experiential learning. In these workshops, different classroom learning activities should be discussed by teaching staff, and experience shared. Where possible, faculty/departmental heads and senior managers should also participate and apply innovative methods in their own teaching;
- A series of workshops to review *organisational capacity* for EL. In these workshops for senior managers, policy, management and infrastructure constraints should be identified and discussed, leading to the formulation of action plans to create a more conducive organisational environment for EL, and integrate EL practice within general quality assurance measures. Important among these measures will be incentives for staff to improve teaching practice.

These 2 activities should be integrated to allow constraints and implications identified by teaching staff to be considered by managers (e.g. by bringing in managers during the final day or two of the workshops on teaching methods for an interactive discussion). Care will also have to be taken to involve both staff with more experience in innovative teaching methods and those with less experience (but motivation to

improve). Where possible, participants for these workshops should be chosen on the basis of their ability to interact with, and influence, colleagues (e.g. by including 2 or 3 key people from each department, who can promote a “community of practice”.

A one-off workshop (in each university) is unlikely to have the impact desired. A series of (shorter) workshops, organised over years 2-3 of the project, in such a way to introduce and discuss new ideas, plan improvements in teaching practice, and review experience with these (in the following workshops) is likely to be much more effective. In other words, the activity should itself be organised along the lines of an iterative “experiential learning cycle”, including organised mentoring and coaching, in the “practice periods” between workshops. In addition, an online site within the RUFORUM website should be created for staff to exchange experience (both between universities involved in the Outreach Project, and also with other RUFORUM member universities to create a “community of practice” in EL teaching methods).

5 Practicals and field attachments

Practical work as part of academic programmes can occur in the laboratory, on the university farm, or in communities (where the human factor is added). This practical work can take many forms: “field visits”, “field practice”, “project courses”, student “field attachments”, etc.

5.1 Field excursions, practice

Field visits or excursions to farms, firms or particular geographical regions are organised as an activity in some courses. Where these were mentioned, they appeared to be much appreciated by students. However, the greater use of excursions is no doubt limited by expense (one postgraduate student noted that during his MSc programme in Europe, excursions were much more common).

Most coursework at the universities visited consists of some practical experience. Typically, a course schedule over 1 week consists of 3 hours practical, 2 hours of lecture and 1 hour of assignment (e.g. at MSAB), although in some cases written assignments are considered as “practicals”

All three universities have extensive agricultural land, where students can develop practical skills in crop and animal management, etc. BSc Agriculture students are typically allocated plots where they manage a crop for a complete crop cycle, and gain practical skills (this period is called the “agricultural production practicum” at MSAB). In MSAB and BCA, the campus is located in the centre of the university farm, and students can easily walk to the fields during the semester. At MAK, the farm (MUARIK) is located some 40 km from the main university campus in Kampala, and students are relocated there for a 10-week period during the 3rd year (BSc Agriculture), where they gain practical skills (milking, machinery use, soil testing, record keeping, etc), as well as visiting nearby farms. This practical period at MAK is assigned 4 credits units, and was considered to be very useful by the students contacted, especially the opportunity to interact with other students (especially due to the accommodation facilities) and non-university staff.

In food science courses at both MSAB and BCA, at least, students from food science courses manage the faculty cafeterias (develop menus, procure supplies, cook meals, manage accounts, etc).

5.2 Project mode courses

A number of courses at the universities visited are organised more along the lines EL principles, in the form of a “project”:

- In the 3rd year of the BSc on Community Nutrition and Extension at MSAB, groups of students travel (walk) to nearby communities each Friday over 12 weeks over the normal semester to collect data on diet history and growth, etc., using surveys as well as direct measurements. They also follow the progress of measures such as kitchen gardens, as well as giving presentations to villagers on nutrition. Students are then assessed by the District Home Economics Officer on how well they communicate with villagers, as well as by their academic supervisor on the basis of the student’s written report.
- The new BSc Agricultural Extension Education Programme at MSAB includes a “field course”, where students define objectives, collect information from farmers using interviews, analyse farm practice, and develop

recommendations – for both farmers and the university. This course consists of a 1-week field visit, plus 1 week of report writing (e.g. 10-20 pages), and is assessed at 1 credit unit.

- As part of the BSc and MSc aquaculture programmes at BCA, students establish experiments with farmers, supervise farmers, collect data and write reports, which are then assessed (although staff and students give feedback to farmers through presentations and simple leaflets, etc., this stage is apparently not assessed)
- Four-year BSc courses also typically contain a “special project” or dissertation that is essentially a research project. These projects are mostly done on campus or in the greenhouse, although sometimes they are conducted with farmers. At MSAB, for example, these projects typically count for 4 credit units.
- The BSc in Agribusiness Management at BCA, includes a course which is constructed around the development of a business plan, based on market research, tender information, etc. In one of the courses on food science at BCA, students are expected to develop a new food product

5.3 Field attachments

Field attachments were mentioned by a number of staff as the main way in which EL is incorporated into academic programmes at the universities visited.

5.3.1 Organisation of field attachments

All three universities use field attachments (or “internships”), where students are attached to a suitable collaborating organisation for a period, usually during the long break between semesters (during the “recess term”, as it is known in MAK).

However, there are some differences between universities in the length of these attachments, as well as the management of these between universities, and between departments, programmes:

- **Field attachments at MAK** were introduced in about 2003 as a result of feedback from employers, who complained that graduates were too theoretical and did not have practical skills, or the skills to work within society. From early experiences in the AEE Dept. with support from USAID, the I@MAC programme introduced and financially supported a system of internships in other departments in the Faculty of Agriculture as well as other faculties. They were also organised in the long recess after each academic year of undergraduate programmes, but such an intensive programme proved too difficult to manage and demanding of staff time. Some staff members were also doubtful of the value of the attachment programme (“*are we preparing scientists or vocationalists?*”). Currently most undergraduate programmes in the Faculty of Agriculture include a 10-week field attachment period during the recess at the end of the 2nd or 3rd years, and a few programmes include 2 field attachments. Since 2004, when there was last a general review of curricula, attachments have been assessed, and are generally account for 5-6 credit units (of a total of about 250 for a complete BSc programme), with 70% of the grading from academic staff, and 30% from external partners. Current

plans in the Faculty of Agriculture are to extend field attachments to a full semester (18 weeks), with the possibility of group attachments²⁰

- **The BARI programme at MAK** includes 2 field attachments, each of 10 weeks, known as “Supervised Experiential Learning Projects” or SELPS. These are conducted in collaboration with, for example, NGOs, NAADS, NARO, local government and private companies. A short course (of 2 credit units) helps prepare students, covering discussion of theories of learning and experiential learning, action research, reflection practice, and the concept of “service learning”. The preparatory course also includes practical exercises on community assessment (transects, problem identification), as well as a case study on learning by previous student groups in communities (why learning did or did not occur). During the attachment periods themselves, students are given guidelines on what they should do and learn (e.g. understand a particular system, describe the physical and social aspects of a farming system, work with extension staff and farmers, etc). Students keep a journal for reflection on their experience, recording on a daily basis what happened, why it happened, and key lessons learned. Weekly summaries are also included and the journal is then used as part of the student assessment. Staff admitted that students still struggled to recognise that process is as important as content.
- **The MAK Faculty of Veterinary Science** modifies the field attachment (in the 5th year) to attach students to communities as veterinary service providers (living in the community for 2 periods of 3 weeks, with a break of 3-4 weeks in between). The private sector provides (and thus promotes) the drugs, the student gains experience in veterinary practice as well as interacting with communities, the government covers key gaps in manpower for animal health programmes, the university raises its visibility in the country. In preparation for the attachment, the student prepares a plan, budget, etc.
- **The BSC Economics and Agribusiness Programme at MAK** provides another example of a variation on the field attachment. In their “Community Farm Case Study”, undertaken during the recess at the end of the 2nd year, students identify farms and communities in their home area to locate the study. They then interact with a community group of 15-20, and the “progressive farmer”, to identify problems in the community, assess the resources/assets available to the community, and identify opportunities for improvement and development of agribusinesses. In the recess of the 3rd year, students undertake a second field attachment, either with commercial firms, or back with the same community. In preparation for the placements in the community, students are given a 2-week course in communication skills and group dynamics.
- **The Dept. of Family and Consumer Science** at MSAB includes 12-week attachments at the end of the 3rd year of the programme. Typical organisations receiving students include hospitals and NGOS such as World Vision. Students are given guidelines on reporting, which should include a description of what they did, what they were unable to do, the problems encountered that had not been covered in university courses, what they have learned, where they can apply these lessons. They are also expected to write a report for the

²⁰ It was not possible for the consultant to obtain the draft of the proposed new attachment policy of MAK

host organisation or community group. The external supervisor is also expected to write a report on the student.

- The **Animal Science Dept at MSAB** has a similar attachment programme, where students first set their own schedules for what they want to learn, keep a daily reflective log with weekly summaries etc. Students are attached to organisations such as KARI, Agricultural Development Corporation farms, Government Institutes, Veterinary Labs, NGOs such as Heifer International etc. Through these, they often get first hand experience of working with farmers.
- The **Dept of Agricultural Education and Development Communication of BCA** has students complete their attachments at secondary schools. The student report of the attachment includes a self-assessment of strengths and weaknesses, an account of what has been learned, interaction with fellow staff and students, and recommendations for teaching practice at BCA itself. BCA staff members assess students on their performance in preparing and delivering classes (80% of 10 credit units), and on the students report (20%). A new “science methods” course in the programme of the Dept is based on reflection of experience of students from the attachment period. Attachment experience is taken into account when curricula are reviewed.
- Internships are also a feature of **BSc programmes (3rd year recess) at BCA**, although limitations of financial resources for students and visiting supervisors mean that in some cases the period is reduced in practice from the nominal 8 weeks to 4 or even 2 weeks. Even so, the attachment at BCA accounts for 10 credit units, and is assessed by external supervisors (60%) as well as academic supervisors (40%). The expected learning outcomes are defined by the HOD (rather than the student).
- **Assessment** of the field attachments varies among the universities and departments contacted. For example, in the MAK Soil Science Dept., assessment is based 40% on evaluation forms as completed by external partners, and 60% based on the student’s report as assessed by the academic supervisor. At the MSAB Soil Science Dept., 15% of the assessment is based on the external partner’s report, 15% on the academic supervisors observations in the field, and 70% on the student’s report (as assessed by the academic supervisor). In the Animal Science Dept at MSAB, assessment is 70% based assessment in the field by external supervisor (25%) and the academic supervisor (45%), and 30 % based on the student report.
- In addition to the “normal” field attachments, the Economics and Agribusiness Dept. at MAK organises **voluntary** 6-month internships at the end of the formal academic programme. A similar “Bunda Volunteer Scheme” exists in Malawi, where students work for individuals, NGOs or government for a period of 3 months after the final year. In both these schemes (at MAK and BCA, the voluntary (post-programme) internships are not formally assessed, but are considered by students to add to their employability.

5.3.2 Good practice, potential improvements

Discussions of the attachments at the 3 universities confirmed their value as a means of incorporating EL into programmes at bachelor level. Students spoken to were almost universal in affirming the benefits of the attachments, some of which come close to the theoretical EL cycle described in Part 1 of this report. However, there is significant variation in practice, which suggests that there is scope for exchange of experience between departments and between universities, to develop recommendations for “good practice”. In particular, the following characteristics of attachments merit attention from an EL perspective:

- **Learning objectives.** EL theory would suggest that these should be set by students, rather than by faculty (or at least by students in discussion with faculty). It would also be useful if all students were located in attachments that offer scope for learning process and communication skills (i.e. where there is significant interaction between the students and other professionals, rather than simply exercising practical skills with machinery, animals etc.)
- **Learning in groups.** To develop an interdisciplinary perspective, it would be better for attachments to be done by interdepartmental groups of students (groups would also be easier to supervise). Group work would also promote learning of teamwork – especially if peer assessment methods were introduced.
- **Academic recognition.** Currently, the weighting of attachments in terms of credit units gained appears to undervalue the attachment, if one considers the time and effort involved. Credit units for field attachments appear to vary considerably – from 1 to 10 for an 8-10 week assignment. Relative to the (approximately) 18-20 credit units gained in a typical semester of 18 weeks, one could argue that a 8-10 week attachment should be assigned at least 8-10 credit units.
- **Assessment methods** need to be balanced between clients/partners (“external supervisors”), academic supervisors, and also self-assessment. Where attachments are undertaken in groups, this would also give scope for peer assessment.
- **Length and timing of attachments.** Attachments earlier in the programme (e.g. after 1 year) give experience that can be used in following courses, while attachments later in the academic programme offer more scope for putting into practice theory learned.

5.3.3 Limitations and challenges of practicals, attachments

All staff and students contacted affirmed the educational value of practicals and especially attachments. While there is some scope for improving staff concepts of EL, and how these concepts can be applied through practical sessions and attachments, the main limitations to expanding - or even maintaining – field attachments is cost. In a number of instances, student attachments were reported to be less than the intended period (e.g. 2-4 weeks typically at BCA, instead of 8 weeks), because of a shortage of funding for the students as well as resources for faculty staff to visit students while on attachment. In MAK, it was also reported that student attachments in the BSc in Agribusiness Management Programme could not be sustained once initial funding ceased from USAID (which helped establish the programme). In Moi, funding for

attachments comes from a separate fund from Central Government (albeit with some top-up from the University), which makes it difficult to extend the period from the current 8 weeks. The only option here appears to be to explore more options for co-financing from partners, and particularly through outreach projects in the universities.

5.4 Conclusions and suggestions

While a number of measures could be taken to improve field practice and excursions as integral components of individual courses, field attachments (internships) represent one of the most widely accepted and effective ways of incorporating a structured EL component into academic programmes.

Again, there is diversity in practice of field attachments, with examples of good practice at each university, giving scope for exchange of experience and lessons learned as an integral component of capacity strengthening workshops in EL organised by the Outreach Project. In particular, the value of attachments should be improved through:

- Allocating sufficient time to the attachments within the curricula;
- Developing university guidelines for optimizing the benefits of the attachment process, involvement of the student and the community in designing the interaction and the area of investigation. The development and refinement of such guidelines and their implementation should be seen as a valuable output of the Outreach Project;
- Ensuring that the student gives adequate feedback to the attachment host(s), e.g. by requiring a presentation of the findings to the host organisation or community as part of the credit requirement.
- Ensuring that the student and host organisation/community (as well as faculty staff) are involved in developing expected learning outcomes, and also in assessment;
- Allocating sufficient credit units for the attachment, to recognise their value and indicate to students the value of experiential learning;

At the same time, the expense of attachments and current difficulties in financing these are recognised. Additional resources could be sought through developing longer-term outreach/partnership arrangements with potential organisations interested in utilising student attachments and sponsorship/cost sharing. Staff of host/partner institutions may need training to effectively supervise students.

In this context, attachments could also be seen as a preliminary step towards student projects or postgraduate theses. In such cases, the host organisation/community should be involved in the determination of research objectives, and included in thesis committees.

All of these measures will need a more coordinated approach to integrate attachments with outreach activities in general (as discussed further in Section 8).

6 EL and postgraduate programmes

6.1 Course work

All the postgraduate programmes reviewed incorporate both coursework with (thesis) research. Masters programmes typically involved 1 year (2 semesters) of courses, and one year of research and thesis writing (although this period often was sometimes extended to a third year). Presumably, coursework is intended to both deepen the student's knowledge of the discipline, and also give the student the theoretical background for the more practical research work to follow. The following observations were made in relation to postgraduate courses:

- **Relating learning to experience.** An important element of EL is relating learning to prior experience. About 50% of students interviewed seemed to have prior work experience when registering for a postgraduate degree, with others coming straight from BSc programmes. This proportion varied according to the programme. In the MSc programme AEE at MAK, for example, few students came straight from an undergraduate programme and so prior work experience was more common. Where they did have previous professional experience, students interviewed felt that they were given opportunity to reflect on this, and that this experience was valuable in designing and conducting their research and when collaborating with other stakeholders such as farmers, designing surveys, etc. In other words, it is likely that students with some professional experience are in a position to benefit more from postgraduate study.
- **Emphasis on quantitative research methods.** In terms of preparation for the (practical) research component, course work within the postgraduate programmes discussed almost entirely emphasises quantitative research methods and biometry. Few students, especially those in the more technical disciplines, considered themselves to have been sufficiently prepared to effectively use qualitative methods (e.g. focussing on innovation processes), although several students indicated that focus group discussions with farmers formed an important part of their methodology. Some staff members at BCA (for example) recognised that they themselves were trained mainly in quantitative methods, and consequently have little experience and competence in qualitative research methodology (this was said to be a problem currently being discussed within the college as part of the current overall curricula review process). Of course, exceptions were encountered. Some postgraduate extension or economics programmes (e.g. at BCA, MAK do contain courses on research methods for social sciences, which were considered to be extremely valuable by students contacted (*"after this, I realised that there is more to research than econometrics and statistics...these courses should be taken by everyone"*)).
- **Lack of economic analysis of technology.** In most technical programmes (crop, animal, soil science, etc), MSc coursework also offers little preparation for any kind of economic analysis, and hence technically focussed students usually neglect the economic evaluation of technology being researched (one supervisor is said to have questioned if economic analysis is part of soil science, when a student proposed including such an analysis as part of his thesis).

- **Lack of systems context.** The MSc technical programmes observed appear to be very disciplinary focused, and offer little possibility of electives from other disciplines and departments. Similarly, MSc coursework in the technical disciplines appears to offer little preparation for the study of social processes – such as agricultural innovation. These perspectives are however increasingly included in some extension and education programmes (e.g. in the MSc AEE programme at MAK). In general, students appear to have very little exposure to systems concepts and systems thinking, which would help place the research problem into context (e.g. the farm or livelihood system; the innovation system or value chain).

6.2 Thesis research

During the consultancy, it was not possible to make a comprehensive review of thesis research at the universities visited. The following observations are made on the basis of discussions with a relatively limited number of students, and may not represent a representative sample of all departments. However, they illustrate some of the limitations of postgraduate research as EL, and as a means of supporting and integrating with outreach activities of the universities (which will be explored further in section 8):

- **The research setting.** Agricultural research can take place in several settings: in the laboratory, in the experimental station, in farmers' fields, or within a broader innovation system or value chain. Research in the laboratory or experiment station normally focuses on technology development – how plants and animals react to different conditions. When farmers and other stakeholders become part of the research, the emphasis then switches to how people interact with and use technology. Action research, by definition involves interaction with people and so focuses on processes at the farm or innovation systems levels (see Section 2.2).
- **Interaction with farmers.** From the students contacted a majority of students' research appeared to include work with farmers. However, this does mean that significant interaction with the farmers is inevitable; the student may simply be using the farm as a "decentralised experiment station" and engage in little communication with the farmer. It was interesting that one student observed that farmers established "parallel" trials on their research topic when they were doing their own work in farmers' fields. This student admitted that the outcome of those related farmer trials did not figure in their own thesis results and discussions, presumably because such research was considered as non-scientific.
- **Focus on technology, not innovation.** Most of the postgraduate research observed focused on technology (plant and animal) performance and quantitative analysis, rather than on (inevitably qualitative) processes of human (stakeholder) interaction that lead to innovation and change. In general, students do not appear to know how to assess and document processes of interaction, analyse multi-stakeholder innovation processes, or reflect on their own learning about working with others. Several students said that they would have liked to have been able to pay more attention to these issues, but that that "these issues are not considered important" by their supervisors, or do not

constitute elements of the standard format for written theses. Staff at the Environmental Sciences faculty at BCA also said, for example, that “it is very difficult to graduate if students don’t have hard data”.

- **Thesis format.** All three universities have standard formats for MSc theses. In general, these require a standard presentation based on conventional scientific research processes: introduction and literature review, method, results, discussion and conclusions. This format does not encourage a process that follows an action research process, with several iterative cycles of planning, action, reflection, lessons learning, and re-planning, etc., or research that involves more qualitative analyses. The accepted format of postgraduate theses also offers limited opportunity to reflect on processes of interaction with other stakeholders (when thesis topic mostly “technical”). However, regulations at all three universities allow a second format option for thesis presentation – the “chapter format”. In this format, individual chapters are constructed as separate publications, with introduction, method, results, and discussion, etc. (some universities require these chapters to have been accepted for publication). While this format allows more leeway for an iterative process such as action research, it still emphasises the conventional research paradigm, and does not by itself guarantee a more “action learning” approach.
- **Limited application of results.** Most faculty staff encountered admitted that postgraduate research nearly always remains “on the shelf” Students met, who had worked with farmers as part of the research, admitted that their results are not written in a style accessible to farmers or end users, and are rarely communicated to others beyond the department.
- **Assessment limited to the academic.** Related to the previous point, theses (results, outcomes) are rarely assessed by end-users or “clients” (unlike internships at undergraduate level). Research assessment (in the form of thesis defence) is usually conducted with the academic supervisor and external advisor (also usually an academic, although occasionally an outside stakeholder such as a NARO scientist is included in committees at MAK)
- **Interdisciplinary interaction.** Most student thesis research is conducted in isolation, although examples were found of several postgraduate students working on the same (more complex) problem from several disciplinary perspectives (e.g. several PHD students at MAK had focussed on the issue of livestock waste management, from the disciplines of economics, animal science, crop science and soil science).

6.3 Conclusions and suggestions

The conclusion from the above is that the universities still see postgraduate research mainly as a process to produce more narrowly focussed disciplinary knowledge. This is in contrast to stated policy such as that at Moi University (“...*research projects are expected to maintain strong relationships with communities, conform to the broad national objectives, supplement teaching and solve problems of the rural communities*”) ²¹. The other inevitable conclusion from talking to postgraduate students is that their programme is designed to prepare them for a career of doing

²¹ Taken from: <http://www.mu.ac.ke/research/research.html>

more disciplinary focussed research, rather than prepare them to manage innovation processes, or even understand their role within such processes.

In fact, the impression is gained that the undergraduate field attachments and resulting reports are more in line with an EL or action research process than are postgraduate theses.

Suggested ways of encouraging an AR approach to postgraduate research are:

- **Inclusion of a core course on systems concepts** in postgraduate programmes (farming systems, livelihood systems, innovation systems, value chains). However, given their importance to practical research conducted in an outreach context, such courses should also be available to postgraduate students - at least as electives, if not as core courses.
- **Inclusion of additional elective courses** in qualitative research methods, social organisation, economic analysis, for students where methods and analyses are likely to be relevant to the research (students usually have submitted a concept note or proposal early in the 1st year of the postgraduate programme, and can evaluate the usefulness of these additional courses. To some extent, these topics are covered in undergraduate programmes, but need to be refreshed when they become relevant to research proposals.
- **Inclusion of more seminars from outside agencies** – progressive farmers, agribusiness firms, research organisations, NGOs, development programmes and projects, etc., to further expose students to thinking from outside academia.
- **Inclusion of attachments** as an integral part of the requirements of the postgraduate programme. These attachments (e.g. 8 weeks) could prepare the student for postgraduate research by establishing better relations with partner organisations and a broader context for the more focussed research. Attachments post-thesis could also be explored as a means of providing the student with work experience as well as the opportunity to apply and research results in ongoing development programmes.
- **Modifications of thesis structure and content.** A number of modifications to the structure of postgraduate theses would encourage an EL/ AR approach, and improve the usefulness of the research to university outreach programmes:
 - Inclusion of a chapter/section with a more-explicit **systems perspective**, analysing the context and relevance of the research problem being researched: the farming system, innovation system, or market chain, etc. Evaluation of the technology or innovation should then include an analysis of how the technology fits within this farming system and/or value chain that provides the context for the research.
 - Inclusion of short (e.g. 3 page) chapter/section of **practical implications** in language accessible to end-user (whether farmer, development agency, etc). Where appropriate, these implications should include a basic **economic analysis** of the benefits of any new technology being evaluated. These chapters could be published as stand-alone extension bulletins by the universities.
 - Inclusion of a chapter/section in which the student includes a reflection of experience in the field, including a **self-assessment of the research and**

learning process, with *implications for future curricula modification* in the relevant postgraduate programme.

- Inclusion, where possible, of an ***assessment by research partners and clients*** in the value of the thesis.
- **Feedback actions** to disseminate findings to farmers and/or end users (farmer field days/ training sessions, radio programmes, etc). Such practice is already being introduced within postgraduate research supported by ARDEP at BCA. Ideally, such actions would also be documented as an integral part of the thesis, and be recognised with appropriate academic credits.

Some of the changes suggested above can be considered and incorporated at the time of periodic curricula review (which tends to be every few years). Where changes need to be approved by senate, it may be necessary to “sensitise” or create an awareness among senate members for the reasons behind these proposed changes: one way of doing this would be to have senate members attend discussion/briefing sessions organised as an integral part of workshops organised by the Outreach Project.

The changes suggested above also will require considerable student time, implying that other current activities/courses will have to be reduced or dropped, even though these are considered interesting or useful. Ultimately, deeper change and restructuring to better equip graduates for a professional career (outside academia) will require more profound rethink of the nature of the postgraduate experience.

7 Experiential learning and curricula

7.1 Curriculum structure

It is beyond the scope of this consultancy to comprehensively review the structure of the different BSc and MSc programmes in the 3 universities visited. The details of the different academic programmes on offer (see Appendix 3) were not systematically reviewed.

However, a cursory look at some of these programmes suggests that most programmes focus the constituent courses on technical issues relating to *things*, rather than on *process* issues relating to *people*:

- Most courses, at both undergraduate and especially postgraduate level, are disciplinary oriented. There are few courses that develop *meta-disciplinary* concepts and skills such as systems thinking (and the application of such thinking to farming systems, livelihood systems, innovation systems, value chains, etc.), *personal development skills* (inter-personal communication, interactive and reflective learning, etc), and *management skills* (planning, facilitation, organisational change, etc). Put another way, the emphasis is on “hard science” rather than on the “soft skills” of management.
- Most courses – especially those at postgraduate level, emphasis *quantitative research methods* and statistical analysis that are suitable for research in crop and livestock performance *per se*, rather than on qualitative research methods that may be more suitable for research in multi-stakeholder processes of innovation in agricultural practice. Some early courses at BSc level discuss techniques such as individual or focus group interviews, but these topics are usually not taken up at postgraduate level (even though many postgraduate students interviewed use such methods).
- *Field attachments* (or “internships”), as discussed in Section 6 above, are often considered as the main means of students gaining practical skills, and incorporating experiential learning methods into BSc programmes. However, the weighting of these attachments, in terms of credit units, often means their importance within the overall programme (e.g. they account for only 1-4 CU from a total of 180 or so for a 4-year programme).
- Most 4-year BSc programmes include a *special project* (or dissertation). However, these mini-research projects tend to focus on technical and disciplinary issues, rather than on process issues. There is scope for organising special projects more along the lines field attachments and AR.
- MSc and PhD programmes are seen mainly as a preparation for a career in *research*, not a career in *management*. The MSc programmes seen at the 3 universities almost all follow a 2-year programme, with 2 semesters of courses and 2 semesters of research project. The courses included in MSc programmes focus mainly on in-depth disciplinary and reductionist topics.

Of course, there are exceptions to these tendencies. For example:

- Courses on communication skills (study skills, library skills, reading skills, listening skills, examination skills, writing skills, speaking skills, research skills) are included in the first year of MSAB BSc programmes (IRD 100, IRD 102).

- The Agricultural Extension and Rural Sociology course during the 3rd year of MSAB BSc programmes includes topics such as “analysis of human relationships”, “adoption and diffusion of innovation”, “processes of change in agricultural technology and community decision making”, etc. (ARE 371)
- Previous engagement of BCA with the CTA sponsored Agriculture, Science, Technology and Innovation (ASTI) training of trainers programme (2005) has led to several key staff members at BCA with experience in innovation systems concepts (staff from MAK and RUFORUM have also participated in this programme). These Malawian trainers have since gone on to train some 120 additional persons from Malawi and the region in innovation systems ideas (information was not collected for similar impact at MAK and in Uganda, or if Moi was involved). However, it seems that these experiences and systems concepts have yet to be incorporated into mainstream programmes at BCA (or the other universities)

There are also examples of programmes at the 3 universities that are constructed more around EL principles and content more oriented towards management of innovation. Examples here include:

- The Bachelor of Agriculture and Rural Innovations (BARI) Programme at MAK, which is organised around rural innovations concepts and professional skills (in addition to traditional agricultural themes), as well as including “Supervised Experiential Learning Projects (see Box 1)
- The recently developed BSc in Agricultural Extension Education at MSAB which includes a number of courses on “soft skills” (see Box 2),
- The “mid-career BSC programme” at BCA where learning is firmly located within the students work context (see Box 3).

All of these programmes have been recently developed (the BCA “mid-career” programme in 2005, the BARI programme at MAK in 2008, and the BSc in AEE at Moi is scheduled to start in 2010). Each of programmes has valuable elements that could be extended to other undergraduate programmes, and an exchange/ documentation of experience to date would be valuable.

7.2 Curricula development processes

In the three universities, the process of incremental change to existing programmes is constant, with a major revision at Faculty level every 4 years or so. In MAK there is evidence that a major review of curricula is likely to be undertaken soon, with some staff advocating for a radical “paradigm shift” in curricula. At BCA also, this curricula review was said to be overdue, and there was some indication that it is imminent.

All three universities involve stakeholders in curriculum development processes. At least in the case of MAK, evidence of stakeholder involvement (e.g. through minutes of meetings) is said to be a requirement for Senate Science Committee approval of new programmes, although not all staff considered stakeholder involvement to be mandatory or universal.

**Box 1 The Bachelor of Agriculture and Rural Innovations (BARI)
Programme at MAK**

The BARI curriculum encompasses the emerging, regional and national agricultural and rural development issues such as poverty, natural resource degradation and socio-economic inequity. Core courses offered organized by thematic area include:

Theme 1: Understanding Agricultural and Rural Innovation Systems for Development (Introduction to agricultural and rural development; rural sociology; innovation systems management)

Theme 2: Rural Institution Development and Management (Community mobilisation and group dynamics; developing sustainable rural organizations; organizational management and leadership)

Theme 3: Participatory methodologies, extension and training methods (Extension and training methods; participatory approaches to agriculture and rural development; sociology and psychology for rural innovations; project planning and management).

Theme 4: Communication for Rural Development (Introduction to communication for agrarian development; documenting and disseminating development information).

Theme 5: Research Methods and Statistics (Social research methods; statistics and data analysis)

Theme 6: Agriculture (Introduction to animal agriculture; livestock production and management; poultry management; animal nutrition and feeding; introduction to agronomy and farming systems; crop production and management; integrated soil fertility management; principles of soil management; farm engineering; post harvest technology and small scale agro-processing; food security and nutrition).

Theme 7: Agribusiness and Entrepreneurship (Principles of economics; production economics; entrepreneurship and small business management; agricultural marketing; principles of farm management and accounts).

Theme 8: Supervised Experiential Learning Projects (Introduction to SELPS; SELPS I & 2).

Theme 9: Professional and Personal Skills Development (Social skills for professional performance; ethics and Integrity).

Theme 10: Crosscutting areas (Gender and other socio-economic issues in development; introduction to computer applications; introductory mathematics).

Source: <http://agric.mak.ac.ug/index.php?mod=article&cat=programs&article=20>

Box 2 The BSc in Agricultural Extension Education at Moi School of Agriculture and Biotechnology

The new BSc in AEE at Moi University emphasises “effective communication and educational strategies”. This programme includes 4 “field courses” and “agricultural production practicum” between semesters (although these are only allocated 1 credit unit each, from a total of 184); one “extension education attachment” in the recess at the end of year 3 (worth 4 credit units), and a special project in the 2 semesters of year 4 (worth 4 credit units in total).

Courses in this programme also include

- The “extension programme planning, development and management” course (AEE 212), which includes topics such as “community based planning methods”, “concepts of organisational behaviour”, “leadership styles”, “communication strategies for conflict resolution management”, etc.
- The Human Resource Development in Agriculture course (AEE 213), which includes topics such as “leading, managing and motivating individuals”, “actors and behaviours in organisations”, “principles of effective management”, “typologies of leadership”, “creating positive working environments and learning organisations”, etc.
- Community-based needs assessment (AEE 221), including “participatory rural appraisal”, “collection of qualitative and quantitative data”, “focus group discussions and individual interviews”, “farmer group assessments”, etc.
- Environmental issues in Agriculture (AEE 311)
- Gender issues in agricultural extension (AEE 312)
- Non-formal adult education (AEE 321), including topics such as “experiential, participatory, learner centred teaching behaviour”, “learning approaches that depend on ...cooperative work, problem solving, authenticity and self-regulation”, learning styles and multiple intelligences”, etc.
- Research methodology (AEE 322), including “aspects of qualitative research”, “qualitative research methods”, “analysing, interpreting and reporting qualitative data”, “qualitative methodology as a complimentary component of mixed methods study designs”.
- Non-formal youth education (AEE 412), including “behaviourism and constructivism”, “inquiry-based learning approaches”, etc.

Box 3 The BSc Programme in Extension for Mid-Career Professionals at Bunda College of Agriculture

The “mid-career programme” at BCA is regarded as one of the programmes there that most exemplifies experiential learning. This BSc programme, supported by the Sasakawa Africa Fund for Extension Education (SAFE), was designed to upgrade experienced (age 40-50) agricultural extension professionals currently holding diplomas, or secondary school qualifications. The idea for the programme was introduced after BCA staff observed the similar programme in Ghana, and was developed after a needs assessment study and stakeholder workshop in 2003, being approved by UNIMA Senate at the end of 2004¹. The objective of the programme is to improve job performance, and all students are expected to be in employment, and to have identified areas where they want to improve their performance. The employer must also agree to be part of the supervisory team of the student.

The curriculum was designed to include 57% of the time on practical work, with 56 credit units on extension courses and 54 on technical courses such as crop and animal husbandry, aquaculture, soil and water conservation, etc. The programme includes 5 “supervised enterprise projects” (SEPs – also known as SELPs or structured experiential learning projects), which are considered as courses. These include an introduction to the concept, and a needs assessment with farmers (SEP 1) in their work area, conducted over 2-3 months during the recess between years 2 and 3, which leads to a project proposal. SEP 2 then consists of a planning phase to design the extension project with farmers and local stakeholders during the recess between years 3 and 4, leading to an implementation phase (SEP 3) during the 3-4 month period of the second semester in year 4. Finally, students prepare their SEP reports for evaluation at the end of the programme. The intention is that the SEP programme leads to a measurable impact or outcome within the life of the programme.

The programme has raised considerable enthusiasm in BCA, and with stakeholders such as the communities involved and the MoAFS (the Permanent Secretary is reported to have said that “*this group is completely transforming the agricultural sector*”; the Director of Extension Services said that “*graduates had been jacked up to think and operate at a higher level*”). The College is therefore interested for other programmes to adopt the overall approach. However, it is difficult to see how this can be done with students who do not have the professional work context or experience of the mid-career professionals.

Source: interviews at BCA and “Experiences with the Mid-Career programme: progress and challenges, University of Malawi, Bunda College of Agriculture. Paper presented at the East Africa Regional SAFE Networking Workshop, Addis Ababa, October 12-14 2009, published by the Sasakawa Africa Fund for Extension Education.

In Makerere, curricula first pass through the Undergraduate/Postgraduate Curriculum Committee. Stakeholders are invited to these committees, although they appear to be outnumbered proportionately to academics, by about 2 to 1. From these committees, the proposed programmes are then circulated prior to the larger Faculty Board meeting (of about 70-100 persons, again with academics outnumbering). Revised proposals go to the Senate Science Committee, revisions, then to Senate for approval. At BCA, stakeholders sit on the Department, Faculty and College level committees that develop curricula (according to staff interviewed).

In some cases, tensions were noted between what stakeholders wish to see in curricula - generally, more “skills” at managing processes - and what academics want to include - more “knowledge”. It therefore becomes critical who sits on the committees that eventually determine the shape of the programmes (i.e. Departmental, Faculty and Senate Committees).

Box 4 Development of the BARI curriculum at MAK

The Bachelors in Agriculture and Rural Innovation (BARI) programme at MAK was conceived by staff of the AEE Department as a new programme to replace the mid-career programme, open also to school leavers. Support was given by the British Council to develop the programme. Stakeholders were first surveyed, and then invited to meetings to develop a profile of the “competent graduate”, and to also participate in developing appropriate courses. When the resulting draft programme was submitted to the Undergraduate Committee, changes were required to put more emphasis on “content”. The programme also had to pass other committees, including the Libraries Committee, and the Infrastructure Committee, among others. The Faculty Board then considered the programme, and finally the Senate Science Committee, which required the most changes in answer to the questions “where’s the science?” and “where’s the agriculture?” Senior academics apparently saw the role of graduates as “advisors”, with a solid grounding in crops, livestock, soils, etc. rather than facilitators of rural innovation processes. The end result of the BARI curricula development process was a programme that included too many compromises, according to implementing staff; one that is “very heavy”, and “totally different” to the original programme they or outside stakeholders wanted (the original programme included an extra semester in the field, for example). This feeling was not universal however, with other staff suggesting that the final BARI programme was a “reasonable compromise”.

An example here is the development of the BARI programme at MAK (see Box 4). A similar experience of conflicting priorities between stakeholders and academics was reported with the development of a new MSc in Integrated Watershed Management (involving the Soils Science Dept. of the Faculty of Agriculture, and the Institute of Environment and Natural Resources at MAK). On the other hand, there were no similar conflicts of interest reported at BCA, as in the development of a the new diploma programmes in Animal Science, for example (see Box 5).

One limitation reported however was the lack finance to pay for such stakeholder participation. In once case, at BCA, for example, a new programme being developed

by the Agricultural Education and Development Communication Dept. had dropped plans to involve stakeholders because of lack of funds.

Another limitation in terms of stakeholder involvement in curriculum development is that none of the universities visited appears to have a good tracing system or formal records of where their graduates are employed. Inevitably, this limits feedback from either graduates or employers on the knowledge, skills and attitudes required by graduates, and corresponding adjustment of curricula.

Box 5 Development of the Diploma in Animal Science at BCA.

This programme represents collaboration between the 2 departments of Animal Science and Home Economics and Human Nutrition. Following discussions within BCA, and between BCA and UK University, a needs assessment of the dairy industry in Malawi was carried out using surveys. The new programme was then focused on 2 aspects: milk production and processing into a variety of dairy products, and the 2 implementing departments agreed to develop the programme at diploma level, with the intention to produce managers who are also technically competent. The next step was to invite a range of dairy stakeholders for a 5-day workshop to develop the curriculum; these stakeholders included representatives from academia (Malawi and UK), policy (Ministry of Agriculture), research (MoA Directorate of Research), production (dairy farmers), industry and the NGO sector. Following this workshop, the curriculum will be presented to the Faculty (Agriculture) Committee of BCA, where it will be approved by the HODs from the Faculty, then to the College Committee (HODs and Deans), and then finally to the Academic Planning and Courses Committee of the Senate of the University of Malawi for Senate approval. Stakeholder representation is included in many of these committees, and the course developers do not expect too much modification from the curricula developed at the workshop with stakeholders.

7.3 Conclusions and suggestions

Most of the programmes offered at MAK, MSAB and BCA are disciplinary focused, and oriented towards knowledge acquisition rather than skills development. To incorporate EL and to allow students of these programmes to participate effectively in outreach programmes, these academic programmes should consider the incorporation of courses on:

- *The philosophy of science*: critical thinking, what is knowledge, what is science, how does science relate to innovation and social change, how is learning achieved and promoted, etc.
- *Systems thinking*, and the application of such thinking to farming systems, livelihood systems, innovation systems, value chains, etc;
- *Personal development skills*, such as inter-personal communication, interactive and reflective learning, etc;

- *Management skills*, including planning, facilitation, organisational change, etc; and
- *Qualitative research methods* (individual, community and focus group interviews, and other methods used in social science), where these courses are not already available.

Interestingly, each university visited has recently developed a course aimed more towards developing competencies of graduates in management of rural innovation processes, and based more on EL principles, than the “traditional” courses in agriculture and extension. Two of these programmes (MAK-BARI, and BCA “mid-career”) have been in operation for several years now, and it would be worthwhile to review initial lessons for more general applicability. These lessons could then be extended to one or more other interested departments, as pilots for wider and deeper change. Efforts should be made at both undergraduate and postgraduate level: on the one hand, earlier exposure will reduce the need to “relearn”, on the other hand postgraduate programmes have the advantage of smaller group sizes.

However, the “ideal” for an EL-based programme - embedding learning in personal action - is limited by the degree to which students are currently engaged in a professional context. For programmes such as the “mid-career” programme at BCA, students can relate learning to their ongoing professional responsibilities; they have experience which academic programmes can build on. For programmes such as the BARI programme at MAK, it is necessary to provide such experience within the programme itself. In these cases, the linkage between academic programmes and outreach activities of the university becomes even more important.

Universities are often criticised for developing programmes in an academic “cocoon”. However, each the universities visited has in place mechanisms to involve stakeholders in the development of curricula, to a greater or lesser extent. Again, this diversity of experience gives opportunities for sharing, reflecting and deriving lessons learned and good practice.

Finally, the type of academic programmes developed by the universities, and how much these incorporate EL principles and structures, will depend on broader issues of policy: in particular, whether the role of the university is to produce scientists and technicians, or if they should produce managers of rural innovation processes. This is an issue that needs discussion and resolution at the level of senior managers and the university administration.

8 Outreach

All three universities place emphasis on their role for the betterment of society and national development (see, for example, mission statements in Appendix 3). However, outreach as a specific activity does not appear to be recognised administratively at the same level as academic activities.

There is also a range of views concerning the nature of outreach in the 3 universities. Some staff (and managers) view outreach as mainly a process of dissemination of research results or information - “*taking knowledge to the end user*”. These views are broadly in line with a “top down” paradigm, which sees “research” and outreach” as two separate steps in a linear process “technology transfer”. Other staff members interviewed see outreach more as a participatory process, developing partnerships with communities and stakeholders that lead to mutual learning. This view is more in line with the process of action research as described in Section 2, where research (learning) and action are integrated. Encouraging the universities to move from the view of outreach as “dissemination” to one of “action research and learning” is the goal of the “shifting from outreach to engagement” project.

In this section, the “outreach” activities of each university are first reviewed, to establish the context for EL activities in general.

8.1 Makerere University

Information from the Dean’s office of the Faculty, which keeps records of “research projects” for administrative purposes, lists some 180 projects, ranging from one to more than 10 years in duration. A cursory reading of the list suggests that about 40 of these projects could be described as mainly disciplinary, and probably consist mainly of laboratory or research station activities. The other 140 projects appear to be multi-disciplinary, and involve outside stakeholders – what this author would consider as “outreach” activities. This represents an impressive and substantial “portfolio” of outreach projects at the Faculty. In addition to these projects, the Faculty participates every year at the national exhibition of agricultural technology organised by the National Farmers Federation at Jinja (often winning prizes for the best stand).

The Faculty of Agriculture at MAK has a Dean, and Deputy Deans for Training (focussing on undergraduate studies), and Research (focussing on postgraduate studies). Currently, there is no specific office for outreach, or an overall outreach strategy. The lack of outreach coordination, and the lack of processes whereby outreach feeds back into policy and curriculum development, was recognised as a “structural weakness” by senior staff in the Agriculture Faculty at MAK.

However, a proposed reorganisation of MUARIK (Makerere University Agricultural Research Institute at Kabanyolo) would see outreach as one of three programme areas of the Institute, along with research and production. Under this proposed reorganisation, CAEC (the Continuing Agriculture Education Centre), which is currently mainly a training centre, will become the outreach unit under MUARIK, with a broader mandate and a full-time Deputy Director and one other staff member (currently CAEC has a part-time Director, from the Animal Science Dept). The intention is also that CAEC will play a larger role in engagement specifically with communities in the surrounding area, raising visibility of MAK in general. In fact, this appears to be a proposed revival of a previous arrangement. MUARIK apparently played such a role in the past, with a “mega-outreach project” previously organised by the Dept of Agricultural Extension and Education, under the leadership of the then

(influential) Head of Department. However this engagement with local communities ceased when the HOD moved on some years ago (i.e. the project was not “institutionalised”).

The CARP (Community Action Research Project) expects CAEC to develop into a “one-stop” centre where information is collated, and outreach activities are centred. It foresees that CAEC will maintain databases for the 3 value chains of interest to the CARP, maintain an inventory of actors, and a question and answer service. In other it expects CAEC to be a centre where all staff of the Faculty channel and disseminate information. However, this will presumably depend on the Centre upgrading to adequate ICT facilities (the current service providers to CAEC are considered to be “very slow” by the current Director). These visions of CAEC (by MUARIK, CAEC and CARP) undoubtedly will involve considerable change in the level of activity and capacity at CAEC.

8.2 *Moi University*

The mission statement of the Moi University School of Agriculture and Biotechnology is “to create, develop and disseminate knowledge in Agricultural Sciences and Technology through knowledge preservation, quality teaching, research and outreach”²². However, and as at MAK, there appears to be no specific office at the School (or the Campus, or the University) which has the specific responsibility office to coordinate outreach activities.

The University has a DVC for “Research and Extension” (R&E), and all research proposals seeking external/internal grants are expected to be channelled through this office. Each School is also expected to maintain a research committee. But both the DVC R&E office and the research committees appear to be more oriented to questions of research policy and conduct, rather than towards coordinating outreach and extension²³.

According to the Dean of the School of Agriculture and Biotechnology, a formal list of outreach projects in School does not exist. However, a list of research projects are listed on the Faculty website²⁴. Of the 27 research projects stated, 26 are focussed on agriculture/natural resources, and about half of which clearly need to include on-farm work to be successful.

The School does have a “newsletter”, but does not have an extension bulletin as such. The University also hosts a 3-day agribusiness fair in September, which is said to be highly popular.

8.3 *Bunda College of Agriculture*

Unlike MAK and MSAB, Bunda College of Agriculture does have an office to coordinate outreach activities. The Programmes Coordinating Office (PCO) was established in 1998, with support from the Norwegian Government, to coordinate the various programmes/ projects for BCA. However, the office appears to be only

²² <http://www.mu.ac.ke/academic/schools/agriculture/index.html>

²³ Information taken from Moi University Research Policy, November 2004.

²⁴ <http://www.mu.ac.ke/research/ongoing.html>

partially successful in coordinating projects, as individual staff members of BCA are not always keen to register grants, given that the College then levies an overhead.

One of the main programmes coordinated by the PCO is the Agricultural Research and Development Programme (ARDEP). Others include Agricultural Innovation in Drylands Africa (AIDA, funded by the European Union); Change and Livelihoods (funded by Norway); A study review of Agricultural and Natural Resources Policies Malawi Lake basin Programme Livelihoods Project; RUFORUM projects, which includes the Regional PhD programme in Aquaculture and Fisheries Science (AFS) and Agricultural and Resource Economics (ARE), “neglected crops” project, and CARP; the CTA Agriculture, Science, Technology and Innovation (ASTI) Systems Analysis Studies; and Child Labour issues in Agriculture²⁵.

CARP and other projects notwithstanding - ARDEP appears to currently represent the main outreach activity of BCA, and is in the process of being renewed (with Norwegian support) for a further 5 years. Since 2005, this programme, has implemented some 19 separate research and outreach projects across the country using a competitive grant system, each of some USD 120,000 -250,000 (over 3 years). Setting up the programme involved establishing formal multi-stakeholder cooperation mechanisms (committees) at local (project) and national (programme) levels – a process which was said to have taken about 2 years.

The ARDEP projects had involved 7 MSc research projects (from BCA) and 1 PhD research projects (from Norway), as well as a number of undergraduate attachments. All of these postgraduate research projects had involved students working with, and learning from communities and other stakeholders. In once case, 3 students are working on one project (livestock) from 3 different disciplinary viewpoints (production, adoption, and human nutrition), with interaction between the students on a regular basis to discuss what had been learned (although this interaction and learning was not documented). Two or three of the ARDEP research projects were specifically looking at process issues of stakeholder interaction or partnerships (e.g. public-private): these projects were said to be “different to the normal”. To support these research projects, extra coaching was laid on for students to specifically learn qualitative and social research methods. There are also plans to include innovation systems concepts in curricula (at both BSc and MSc), as a result of the need for such concepts being appreciated in ARDEP research projects.

ARDEP also organises an annual “dissemination seminar” each year, when the different projects come together and students, staff, stakeholders (including farmers) exchange views. However, it is recognised that there is no formal process whereby lessons learned from ARDEP are fed back to curriculum development processes.

For the next 5-year (2011-2016) phase of Norwegian support, ARDEP has been merged with the Bunda College Capacity Building Programme, which is likely to further integrate outreach with academic programmes and overall development of the BCA.

Outreach activities at BCA have also led to the establishment of an associated NGO “Trustees for Agricultural Promotion Programme” (TAPP).

BCA used to publish an extension bulletin, but was discontinued.

²⁵ Information taken from the BCA/PCO website: <http://www.bunda.unima.mw/pco.htm>

As a result of ARDEP and other programmes, outside opinion of BCA seems to have markedly improved. In 2005, an evaluation of on activities at BCA noted that there was “scathing” criticism of the College at that time by national stakeholders for “living in an academic cocoon, unable or unwilling to reach out to the ultimate beneficiaries of the research conducted”. By 2009, a new evaluation reported that this situation had greatly improved²⁶.

For research activities, staff promotion criteria normally place more emphasis on publications in professional refereed journals and/or conferences. However there are some indications that more recent criteria at BCA, for example, put more emphasis on outreach, dissemination and consultancy work, and it is likely that this will induce staff towards more outreach activities in future²⁷.

8.4 Conclusions and suggestions

Each of the three universities has a substantial portfolio of “research” projects, in many cases involving interaction with farmers, communities and other stakeholders. These research projects, are typically developed by individual staff members either alone or in collaboration with a few colleagues, and often provide the context postgraduate research studies. Unfortunately, the results of this research often then remain on the shelf, as academic publications, and are rarely converted into user-friendly, contextualised information and “disseminated”. Changing this situation will require a change in the incentives structures for researchers, which should promote a greater degree of participatory (rather than consultative) engagement with stakeholders.

Also, short-term projects (2-3 years) tend to have little impact on complex development processes involving innovation and the development of sustainable land use systems and competitive value chains. It would therefore lead to more impact in the longer term to locate short-term research projects within longer-term engagement of outreach programmes and partnerships of the university. Projects should seek out more established platforms and programmes that can provide the longer-term context (expected outcomes) for more specific, shorter-term, deliverables and outputs, and be designed to build on/add value to previous projects. This longer-term programming would imply a more developed strategy at university level for outreach than exists at the moment.

In spite of the recognition that all of the universities give to impact on society in their mandates, outreach does not appear to be a very organised activity, in that there is no overall coordination of outreach activities across the faculty/school (except in BCA, in the form of the Programmes Office, and even here the Programmes Officer admits that his office is not always aware of research/outreach projects in the College).

Where it does not already exist (e.g. at Moi, MAK), the establishment of an outreach office (or “programmes office”), at the same administrative level as the Dean or Deputy Dean, would allow a more coordinated approach to outreach. The Outreach Project should stimulate a debate in each project university concerning such a structural change. The experience of BCA provides a model here, which the other two

²⁶ “Research into Action: Synergising Research and Outreach for Development and Food Security in Malawi: Mid-term review of the Agricultural Research and Development Programme (ARDEP), February 2009.

²⁷ *ibid*

universities could adapt and build upon. Other experience from the region and RUFORUM members, with respect to restructuring to promote outreach, could also be analysed and publicised as an integral Outreach Project Activity²⁸.

Responsibilities of this outreach or programmes office could include:

1. Developing and promoting a school or faculty-wide understanding of outreach as an action research and learning process.
2. Developing a more comprehensive strategy for outreach, as a context for individual research projects developed by faculty staff (as and when appropriate; the intention is not to stifle individual entrepreneurship in winning projects by staff members).
3. Coordinating the activities of the different research projects of the faculty, to promote interdisciplinary action, mutual learning and benefit.
4. Reviewing and promoting changes to thesis research processes and formats, to encourage interdisciplinary and action research as a complement to the more disciplinary focussed postgraduate research currently prevalent.
5. Identifying opportunities for, and arranging undergraduate field attachments (in inter-disciplinary groups, where possible).
6. Identifying opportunities for, and arranging opportunities for postgraduate research topics (in inter-disciplinary groups, where possible).
7. Developing a process to ensure that lessons learned in outreach activities are fed back as implications for undergraduate and postgraduate curricula.
8. Initiating (or reviving) extension bulletins and other forms of user-friendly communication of research output.
9. Raising the visibility of the faculty with communities and other stakeholders (e.g. through organisation of field days in the university and communities, popular publications, radio/ television programmes, prominent web pages, organising university visits, etc).

In some cases, these functions are currently being carried out by other existing offices (Deans, HODs, task forces, etc.), and reallocation would require a functional review. Where such functional reviews are planned, the Outreach Project should present the case for a more consolidated, significant and visible outreach office. Where such functional reviews are not planned, the Outreach Project should lobby for such.

²⁸ The recent establishment by the University of Nairobi of a DVC for Research and Outreach is a case in point.

9 The Community Action Research Programme (CARP)

The Community Action Research Programme (CARP) is financed by the Bill and Melinda Gates Foundation, and implemented by RUFORUM. Under the programme, 3 projects were selected on a competitive basis: from MAK, MSAB and from BCA. The assumption is now that the CARP projects at the 3 universities will provide the outreach experience that form an integral part of the “Outreach Project”, and which is expected to feed back into the curriculum development activities foreseen under the Outreach Project.

Each of the CARP projects has financing of about USD 300,000 over 3 years. A quick glance at the budgets of these projects suggests that half or more of this finance will be dedicated to support postgraduate studies. It will be critical therefore, that these postgraduate studies are structured in a way that actually allows or promotes action research (as seen in Section 6, this is not always the case).

For this reason, CARP activities were reviewed at each university, to review the expected linkages between the two programmes, the expectations of partners in the CARP projects, and how the postgraduate research in the CARP projects might contribute to the objectives of the Outreach Project or promote EL in general. However, time available in the consultancy precluded discussions with all project staff and collaborators, the findings discussed in this section may therefore not represent the views of all involved actors (see Appendix 2 for persons contacted).

9.1 Makerere University

9.1.1 Objectives

The CARP project at MAK follows on from previous a FAO programme with the Dept. of Soil Science at MAK on integrated soil nutrient management²⁹.

The **overall objective** of the project is “to develop and operationalise partnerships between Makerere University, selected farmer communities and other critical stakeholders within the framework of action research, to enhance productivity, competitiveness, responsiveness and impact of University led research on smallholder agriculture and agricultural development in Uganda.

The **specific objectives** of the project are:

1. To pilot an experiential learning model to strengthen quality and better graduate training and engagement of Universities with farming communities, etc...
2. To develop and test the effectiveness of capacity development-information- based outreach model for disseminating university generated technologies and best practices to farmers and agribusiness communities
3. Build entrepreneurial capacity of smallholder farmers and students by strengthening legume and rice value chains in two regions of Uganda.

²⁹ Information in this section is taken from the MAK proposal to RUFORUM: “Developing an Outreach Framework for Strengthening University-Farming Community Engagement for Improved and Sustainable Livelihoods (SUFACE)”, as well as from interviews with project implementers and partners.

4. Develop an information and communication technology mechanism to enable farmers' to access information from a University information centre.

Specific hypotheses that will be tested through graduate training and research include that “The experiential learning approach will improve University engagement with rural communities resulting in better quality training of graduates”

9.1.2 Collaborators:

The collaborators listed in the project proposal are:

- MAK: Soil Science Dept (Peter Ebanyat), Agricultural Extension and Education (Prossy Isubikalu), Crop Science (Patrick Okori, also PI Outreach Project), Economics and Agribusiness (William Ekere)
- Others: NAADS (Joseph Oryokot), Uganda Oilseeds Producers Association (Peter Otim Odoch), NARO/NaCRRI, and the Women of Uganda Network WOUGNET (Janet Achora)

9.1.3 Expectations

WOUGNET is one of the main partners in the Uganda CARP. It is a networking organisation, and mainly promotes use of ICT in health, agriculture and entrepreneurship among women. Three programme areas include information sharing and networking, gender and policy analysis, and technical support. WOUGNET implements a project with some 360 women farmers in Lira, Gulu, Palissa, Apac and Ancholi districts. The project has established the Kubere Information Centre, with support from CTA (NL), which promotes access to agricultural information through radio, subject matter specialists, local centre, etc. The Centre wants to establish a question and answer service with MAK support. Previous evaluations of WOUGNET programmes in collaboration with NARO and NAADS have shown some disappointing results, due to low levels of ICT skills, problems of connectivity, etc.

As WOUGNET is not an agricultural organisation, its expectations from MAK through collaboration in CARP include access to agricultural information in a user-friendly, media accessible format), training in value chains, research services (e.g. identification of new diseases) through postgraduate studies, and recommendations for member farmers (e.g. through field attachments by students and face-to-face dialogue with farmers). WOUGNET recognises that university staff and graduates become members of “a different social strata”, develop a “superiority complex”, “loose touch with the grass roots” and “need a constructivist rather than objectivist approach”.

9.1.4 Postgraduate research

Through CARP, MAK expects to finance:

- 2 Master of Agribusiness Management (MABM) students, one on the cowpea-rice cropping system, and one on the soybean-rice cropping system. The intention is to benchmark current practices and identify gaps in the value chains, bringing actors together.
- One MSc from the Faculty of Computing and Information Technology, to develop the communication tools necessary and set up an information node at CAEC.

- One PhD on processes of engagement (with supervision from AEE Dept.).

An important institutional link for the proposed activities within MAK is the Continuing Agricultural Education Centre (CAEC), at Kabanyolo, which is expected to act as central information “node”, and provide linkages with other information centres in Uganda (see Section 8, for discussion of CAEC future role).

9.2 *Moi University*

9.2.1 Objectives

The proposed CARP activities at MSAB are located within the context of long-standing collaboration of MSAB with farmers’ umbrella organisations (community based organisations, or CBOs) in Western Kenya, previously established with NGO (“Sacred Africa”) support. The Bungoma Small-Scale Farmers Forum (BUSFFO) links 25 farmer groups in Bungoma District, having been established by the NGO “Sacred Africa”. “ACAAUN” is a similar CBO in Amagaro location, linking some 7 farmers’ groups, with about 90 members. Both these umbrella groups appear to be effective nodes, playing the role of “innovation brokers”, and linking local farmer groups (previously established through MoA programmes) with national and even international organisations (KARI, MoA, FORMAT, ICRISAT, and others).

The overall **goal** of the project is: to identify a strategy that links the needs of farmer associations and their members to the expertise and services available by Faculties of Agriculture

The **specific objectives** of the project are:

1. To examine the operations and needs of three contrasting farmer associations and explore the opportunities to expand information and marketing services to their members and between other service organizations.
2. To identify mechanisms that permit farmer associations to expand services expected by members and operate in a self-sufficient manner based upon revenues from membership dues, community fundraising and brokerage fees.
3. To assist farmer associations and their members to improve their problem identification and solving skills and develop mechanisms for farmer-to-farmer extension actions.
4. To build advanced capacity in the operations of the farmers associations at the M.Sc. and Ph.D. levels and to better orient researchers and development specialists toward the needs of farmers associations, the capacities of their officers and the skills of their members.

9.2.2 Collaborators

Collaborators in the CARP project at MSAB include:

- **Moi University:** Dr Julius Ochudoho (Dean, School of Agriculture and Biotechnology); Dr Anderson Kipkoech, Socio-Economist, School of Business and Economics); Ms Abigail Nekesa, Dept of Soil Science.
- **Outside Organisations:** Dr Paul Woolmer (Forum for Organic Resource Management and Agricultural Technologies (FORMAT); Evans Etiang (ACAAUN); Boniface Wamalwa (BUSFFO), Dick Ongai (Mwangaza Farmers Group).

9.2.3 Expectations

The BUSSFFO has some experience with action research, and is currently co-facilitating a process (in collaboration with Sacred Africa) to understand and improve marketing of local produce. This process included selection of 10 farmer groups, workshops with these groups to establish what produce is marketed and how, with follow-up workshops to discuss results and set priorities. The plan is to now select 4 farmer groups for more intensive training of farmers on enterprise selection and marketing procedures by the MoA Agribusiness Department. BUSSFFO has also organised demonstrations of maize-legume intercropping and *rhizobium* inoculation of soybeans with support from the Tropical Soil Biology and Fertility (TSBF) programme, the University of Nairobi and Wageningen University. BUSSFFO recognises the need for Moi University and local communities to learn from each other.

ACAAUN similarly has experience with action research processes, in collaboration with local NGOs. Both CBOs appear to expect MSAB to act as a source of new ideas and technologies, and understand the concept of “outreach” as the delivery of information and technology, as well as diagnostic services (pest and disease identification, soil testing). The Chairman of BUSSFFO also indicated that MSAB should organise training of “master farmers” To a large extent, these demands reflect the inability (limited manpower) of the MoA to meet the varied needs and expectations of the farmer groups.

9.2.4 Thesis research plans

Although they have not yet been finalised, the CARP proposal from MSAB includes plans for 1 PhD and 4 MSc theses:

- The PhD student will survey of farmer associations, but it is unclear if such quantitative methods will answer some of the more qualitative organisational issues.
- Two MSc students are expected to introduce and test crop technology and assist in the acquisition of needed farm inputs, whereas the other two are expected to address issues of technology dissemination, input supply and marketing strategies. Again, it appears that one of the main research methods used will be based on surveys to obtain data from which economic returns are calculated.

BUSSFFO and ACAAUN have had previous experience – both positive and negative - with MSc students from MSAB. On the one hand, some students “*have come to our farmers...and when they get their degrees they never come back to say thank you*” (or give feedback). On the other hand, soil analysis carried out by MSAB proved useful for identifying better soil fertility management practice in Bungoma and Teso, and a previous thesis research in 2002 helped Teso farmers understand the propagation and control of the striga parasitic weed. These measures led to increasing crop production and improved livelihoods, according to ACAAUN.

9.3 Bunda College of Agriculture

9.3.1 Objectives

The **overall objective**³⁰ of this project is “to increase fish production for food security and to increase rural income in Southern Africa through the dissemination of improved Tilapia strains among small and medium scale aquaculture producers and by the application of “best practice” aquaculture techniques developed throughout the fish farming value chain”.

The **specific objectives** of the project are:

1. To consolidate breeding nuclei for improved strain at Bunda College and link it with multiplier fish farmers.
2. To determine and adapt Best Bet technologies for production of improved *Oreochromis shiranus*.
3. To understand the socio-economic and institutional factors affecting adoption and marketing of improved fish strain of *Oreochromis shiranus*.
4. To identify critical success factors for successful grass root farmer organizations.
5. To determine critical success factors and impact of microfinance institutions on rural livelihoods.
6. To determine key determinant factors for successful innovations within the Malawian fish farming systems.

CARP activities at BCA are being organised through the NEPAD Regional Fish Node- SANBio (Southern Africa Network on Biosciences), which has close links to the Aquaculture and Fisheries Science Dept. The outreach activities themselves will be centred at 2 sites in Dowa and Mchinji Districts, with 4 “clusters” or farmer groups, each of about 15 farmers, in each district³¹.

9.3.2 Collaborators

The CARP envisages a partnership between a number of interested stakeholders in aquaculture development:

- Bunda College of Agriculture, NEPAD Regional Fish Node-SANBio (Prof. Emmanuel Kaunda, Dept. Aquaculture and Fisheries (PI); Prof. D. Ngongola, Dept. Agriculture and Applied Economics).
- Farmers Union of Malawi - FUM (Prince Kapondamgaga).
- Research Into Use Programme (Nobel Moyo)
- Initiative for Development and Equity in African Agriculture - IDEAA (Sydney Khando)
- Trustees of Agricultural Promotion Programme - TAPP (Prof. James Banda)
- World Fish Centre - WFC (Dr Daniel Jamu).

³⁰ Information on project objectives is taken from the project proposal to RUFORUM

³¹ Information as understood from persons interviewed: the project proposal refers to eight clusters of 20 fish farmers each in 4 districts: Dowa, Ntchisi, Lilongwe and Mchinji districts.

- National Commission for Science & Technology - NCST (Dr Alfred Maluwa)
- National Aquaculture Centre - NAC (Brino Chirwa).
- KAWJO Foundation (Mrs Telita Chitsulo).

9.3.3 Thesis research plans

CARP in BCA expects to fund four postgraduate theses:

- MSc in Agricultural Economics, focussing on innovation, group dynamics and organisational development (factors affecting adoption of improved fish strains; estimation of the impact of policy changes).
- 2 MSc in Aquaculture and Fisheries, focussing on pond rearing technology and adoption.
- PhD in Agricultural Economics, focussing on marketing of pond fish (estimation of marketing efficiency, identification and facilitation of collective marketing practices for the fish farmers).

9.4 *Comments and suggestions*

9.4.1 Institutional constraints to AR

The prevailing research paradigm in the 3 universities is one of conventional research, particularly in the case of postgraduate research, which is constrained by thesis formats and emphasis on quantitative studies leading to new scientific and disciplinary knowledge (see Section 6). And postgraduate research forms the majority of the CARP project budgets.

The CARP project proposals place emphasis on “action research” as an overall methodology, but at the same time projects still refer to the main activities as “studies” (Uganda, Malawi proposals), which implies that the output is information, rather than change in behaviour. Student activities are referred to as “data collection”, which implies an extractive, rather than participatory mode of working. While qualitative methods (focus groups, key informant interviews) are included in the methodology, there is still a heavy emphasis on formal surveys (no doubt to allow the quantitative analyses regarded as fundamental for postgraduate research, as in adoption studies). Researcher interaction with farmers is still couched in terms of “training” or field days, rather than mutual learning.

The project proposals all lay out in detail activities and budgets over the 3-year life of the projects, and student thesis proposals presumably also need to include detailed plans: it is not clear that such fixed plans are easily compatible with the flexible and iterative “learning cycles” of joint planning – action – observation – reflection – re-planning described in Section 2.

In summary, the intention to conduct action research is undoubtedly present, and “key developmental research questions” (e.g. as identified in the Kenya CARP proposal – which mostly relate to organisational issues and relationships between stakeholders) are in most cases relevant. What is less clear is whether the prevailing institutional setting of universities and postgraduate research are conducive to action research, and whether the methods both proposed and encouraged in postgraduate research will answer the developmental research questions formulated. Undoubtedly, the change towards an action research approach requires a “paradigm shift” in the university

thinking and culture, which may require a change process longer than the life of the immediate CARP project – but measures to improve postgraduate research (as outlined in Section 6) should be implemented as an “entry point” for such a longer-term and deeper organisational change.

9.4.2 Facilitation of the AR process

Each of the CARP projects has identified a good selection of partners to address the respective developmental challenges. The projects have not yet started (pending release of finance – which should be effected as soon as possible), and each project has planned inception meetings with stakeholders to validate objectives, adapt the strategy, agree on activities, etc. It will be important at these planning meetings to agree how their interaction will be facilitated, and who will adopt the role of facilitating the joint learning expected. It is not clear that all the university staff members involved are in a position to do this, as there is a range of understandings of the staff concerning concepts of action research and outreach in general among staff and students contacted. Facilitating joint reflection sessions that are the key element to action research and experiential learning requires significant skill, as well as a degree of neutrality to the issues of concern to stakeholders (who will quite probably hold conflicting perspectives and interests). For the universities to develop skills in action research, it is desirable that they take on this role. But it will probably be necessary to separate (in different individuals) this “facilitation of learning” role from the other roles where university staff and students have a stake (i.e. technology promotion and conventional research). Alternatively, expertise in facilitation that exists in CARP project partners should be utilised and where possible further developed.

9.4.3 Understanding of innovations systems

All three CARP projects seek to understand and manage identified “innovation systems”. Again, there is (perhaps inevitably) a range of understanding concerning the concept on an “innovation system”, among staff and especially among students (expertise/exposure appears to be stronger in MAK and BCA, than it does in Moi). Statements such as ...“central to this will be the incorporation of [the] Innovation System Approach which involves use, adoption, uptake, or commercialization of existing knowledge”... (CARP proposal, Malawi) indicates that the transfer of technology paradigm is still predominant.

The postgraduate programmes of the students met who are proposing to conduct their research in the context of the CARP projects include little in the way of innovation systems concepts, study methods or facilitation skills. Where possible, a course in innovation systems should be included in the programmes of all postgraduate students (and staff) involved the CARP programme, (staff are available for this in MAK, BCA; if the expertise is not available in MSAB, collaboration with Egerton University could be explored). Another means of introducing innovation systems concepts (and linking RUFORUM projects) would be to explore the placements of ARIS PhD students in the CARP project areas (e.g. especially in Western Kenya, which is relatively accessible from Egerton University where the ARIS programme is located).

To reflect CARP project goals in terms of understanding and managing innovation systems, theses funded under CARP should include an analysis of the innovation system as an integral component (chapter) of the thesis, to locate any research done and technology development within the appropriate and broader context. To promote

uptake of technology developed, these theses should also include a summary of implications for the main project partners – in the local language where appropriate (see also Section 6, for discussion of modifications to thesis reports).

9.4.4 Use of field attachments

The CARP proposals all place emphasis in activities and budgets on postgraduate research. However, undergraduate field attachments offer a structured experiential learning experience (see Section 5), and offer a relatively inexpensive way of additional engagement of the university in the communities. The opportunities afforded by field attachments should be explored by the CARP projects (currently, these opportunities do not appear to be reflected in CARP project budgets; if it is not possible to include in existing CARP budgets, additional/matching funding may need to be sourced). Inter-disciplinary groups of students could undertake community assessments, livelihood systems analysis, diagnostic services, documentation of outreach processes etc., which would greatly complement the more focussed, disciplinary studies of postgraduate students. These activities ought to be included in CARP project budgets.

9.4.5 Linking lessons learned to curricular change

The lessons learned through the experience gained in the CARP projects are expected to influence curricula in the 3 universities. At the moment, it is not clear exactly how this will happen – as recognised by several persons interviewed.

An additional problem here is that the CARP projects represent only a minor part of the overall outreach efforts at each university (see previous section). Hence it would be unreasonable – for the purposes of the Outreach Project - to expect curricula to be adapted on the basis of the CARP projects alone. A more comprehensive and sustainable strategy would be to develop an overall mechanism that incorporates feedback from most or all outreach projects being implemented by the university. The Outreach Project should focus on developing such a mechanism, which in turn will require a more coordinated and organised overall outreach strategy at each university (see Section 8). Meanwhile, and the need to promote a broader review of thesis formats and intents notwithstanding, the postgraduate studies under the CARP programme could make a useful contribution in this direction by including implications for curricula as an integral section in theses funded under the CARP projects (see Section 6).

10 Linkages with other projects

There are a number of other projects being implemented by RUFORUM, MAK, Moi and BCA that have similar or overlapping objectives to the Outreach Project. These projects are briefly reviewed in this section, and areas are identified where activities could be usefully coordinated.

10.1 *Innovations Project*³²

10.1.1 Overview

Full name of the action: Building the capacity of African university graduates to foster change through agricultural innovation (also known as the “GO4IT” project)

Financing: EUR 1,175,352 (total) – including EUR 999,050 from ACP Science and Technology Programme

Duration: 36 months (2010-2012)

Partner Organisations: RUFORUM (Coordinator; Uganda); Egerton University (Kenya); Makerere University, (Uganda); University of Malawi, Bunda College of Agriculture (Malawi); KIT (Netherlands).

Associate Partners: Forum for Agricultural Research in Africa (FARA), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA); Southern Africa Development Community (SADC) and Technical Centre for Agriculture and Rural Cooperation (CTA)

10.1.2 Objectives & actions

Overall objective: Contribute towards poverty reduction in rural areas through strengthening of national and regional capacities to contribute to and facilitate innovation processes for rural development in Eastern and Southern Africa.

Specific objectives:

1. Enhance partnerships for effective networking & institutional change management;
2. Establish and implement a part-time mid-career professional training course on the facilitation of agricultural innovation processes;
3. Strengthen innovation capacity of university graduates for IAR4D;
4. Build cross-disciplinary networks of expertise on the role of agricultural research in facilitating rural innovation; and,
5. Share lessons learnt on the mid-career professional training course and innovation curricula.

Expected results:

1. Partnerships for effective networking & institutional change management enhanced;

³² Information taken from the project proposal to the EU-ACP Secretariat. Information also available at: <http://ruforuminnovationsproject.blogspot.com/>

2. Courses on innovation approaches developed and integrated in graduate training of participating universities;
3. A part-time mid-career training course on agricultural innovation processes tested and running independently of project financing;
4. An international network of experts in the field of agricultural innovation facilitation created and expanding;
5. Experiences with the facilitation of innovation for rural development documented and analysed
6. A strategy for mentoring agricultural innovation facilitators developed, tested and refined.

Main activities:

1. Hold inception planning meeting;
2. Design and implement M&E learning framework;
3. Assess stakeholder demands and expertise for innovation systems approach;
4. Develop and run a graduate course on innovation systems;
5. Develop and run the mid-career course on facilitation of innovation;
6. Conduct action research into innovation dynamics; and,
7. Develop communication products.

10.1.3 Potential synergy with Outreach Project

The focus of this project on innovation systems approaches complements well the objectives of the “outreach to innovation project”. Two of the 3 university partners in the Outreach Project (MAK, BCA) are also partners of the innovations project.

This report concludes that knowledge of innovation systems concepts, and skills in analysing and facilitating such innovation systems is a key “gap” limiting the effective implementation of action research in particular and the effectiveness of outreach activities at the partner universities in the Outreach Project. It is therefore suggested that the two projects collaborate closely, and also seek ways of introducing innovation systems courses to the MSAB, which is a partner in the Outreach Project, but not in the Innovations Project (e.g. through engagement of KIT and/or Egerton University where possible to support the introduction of innovation systems courses at Moi).

10.2 Catalysing Change (CCAU)³³

10.2.1 Overview

Full name of the action: Catalysing Change in African Universities: Strengthening leadership, management and crosscutting professional skills of east and southern African universities (CCAU).

³³ Information taken from: <http://ccauproject.blogspot.com/> and <http://www.ruforum.org/drupal/sites/default/files/Brochure%20CCAU.pdf>

Financing: EUR 573,280 (total) – including EUR 487,290 from ACP Edulink Programme

Duration: 36 months (2010-2012)

Partner Organisations: RUFORUM (Coordinator; Uganda); Sokoine University of Agriculture (Tanzania); Makerere University, (Uganda); University of Malawi, Bunda College of Agriculture (Malawi); University of Greenwich (UK).

Associate Partners: Forum for Agricultural Research in Africa (FARA), and Technical Centre for Agriculture and Rural Cooperation (CTA) Association of African Universities (AAU); Inter-University Council of East Africa (IUCEA)

10.2.2 Objectives & actions

Overall objective: to develop leadership, management and crosscutting professional competencies of university managers and lecturers. This would enable beneficiaries gain key skills in facilitation, management, team building, communication, and develop competencies to innovate and master themselves better in a changing environment.

Result areas:

1. *Establishment of regional and internal partnerships and knowledge Networks.* All partners, associate partners and other higher education stakeholders will together create these networks to encourage peer learning, ensure following up of the training impacts, and create a climate for increased implementation and scaling up. Formal partnerships will be developed through MoUs while e-platforms will be designed for learning, sharing and social networking. A variety of knowledge and communication products will also be developed.
2. *Strengthening leadership and management capacities of senior university managers.* The partners are working together to enhance the capacity of senior university managers in leading, managing and implementing the strategies for revitalization of universities in order to accelerate the visibility of universities. Training plans will be done for enhancing senior managers' understanding of and capacity for leadership, management and implementation of balanced university development.
3. *Strengthening personal mastery and soft skills (PM/SS) of lecturers and junior university staff.* Scaling up of pilot work at Makerere University on PM/SS for lecturers, postgraduate students and junior university management staff. This entails the development of learning resources, curriculum and modules to meet the PM/SS capacity needs for university leadership and management, and academic staff.
4. *Identification and piloting of international good practice approaches for efficient and effective management of university programmes.* University of Greenwich is leading the generation, documentation and piloting of international good practices for L&M in the region. It is hoped that this will improve the internal efficiency of the universities and ultimately their visibility in the regional and global socio-economic development arena.

10.2.3 Potential synergy with Outreach Project

The “Catalysing Change” (CCA) project also includes 2 of the 3 African university partners in common with the Outreach Project (i.e. MAK and BCA). It focuses on strengthening leadership and management of these universities, as well as the development of personal mastery and soft skills of lecturers, postgraduate students and junior university management staff. This consultancy fully endorses the premises of the CCA project in terms of the importance of these skills in general, and for the promotion and management of experiential learning, action research and outreach in particular.

Particular areas where the 2 projects could combine efforts include attention to outreach policy and strategy (as detailed in Section 8), to alleviate gaps in organisational capacity for AR. Where possible therefore, key staff and postgraduate students from the CARP projects should be included in the courses on personal mastery and soft skills. At the same time, the Outreach Project and/or CARP projects should seek ways of including staff and students from Moi University in these programmes.

10.3 *Agricultural and Rural Innovations Studies (ARIS)*

10.3.1 Overview

Full name: “Strengthening Agricultural and Rural Innovation Systems in Eastern, Central and Southern Africa: A Regional PhD Programme” (ARIS)

Financing: Support from ACP Edulink Programme.

Regional Implementing Partners: Makerere University (Coordinator, Uganda), Egerton University (Kenya), Sokoine University of Agriculture (Tanzania).

Collaborating Partners: Wageningen University (The Netherlands) and Montpellier SupAgro (France)

Associate Partners: RUFORUM, Institute for People, Innovations and Change in Organisations (Picoteam); Forum for Agricultural Research in Africa (FARA); Inter-University Council for East Africa (IUCEA)

10.3.2 Objectives & actions

The **goal** is to enhance application of science and technology in improving rural livelihood and economic growth in the East, Central and Southern Africa region.

The **specific objective** of the project is to strengthen the capacity of a consortium of three universities in Eastern Africa to train PhD level professionals in ARI.

Expected results

1. Functional partnerships among ECSA universities and European universities to upscale and agricultural and rural innovation in training, research and outreach.
2. A PhD programme in Agricultural and Rural Innovation Studies (ARIS) developed and implemented
3. Academic staff to implement the ARIS programme retooled in innovative approaches to interdisciplinary training, research and development.

Main activities

The main activity of the project is to establish a PhD programme in Agricultural and Rural Innovation Studies – this programme is described in more detail in Section 11.

10.3.3 Potential synergy with Outreach Project

As reported above (Section 10.1), understanding of “innovation systems” concepts and analytical approaches is a key “gap” in the capacity of staff to achieve the goals of the Outreach Project. Only one of the partners in the Outreach Project – MAK- is an implementing partner for the ARIS programme. However, where possible, the teaching materials developed for the ARIS programme should be made available to the other partners in the Outreach Project (Moi, BCA) to help them to include courses or special workshops in innovation systems for postgraduate students in general, and the CARP financed students in particular.

There is also overlap here with the “Innovations Project” (see Section 10.1).

10.4 Enhancing Research Capacity and Skills (ERESA)³⁴

10.4.1 Overview

Full name of the action: Enhancing Research Capacity and Skills in Eastern and Southern Africa (ERESA)

Financing: EUR 583,418.00 (total) – including EUR 495,905.00 from ACP Edulink Programme EU

Duration: 36 Months beginning December 2008

Partner Organisations: RUFORUM (Coordinator; Uganda); Makerere University, (Uganda); Jomo Kenyatta University of Agriculture and Technology, JKUAT (Kenya); University of Malawi, Bunda College of Agriculture (Malawi); University of Zambia (Zambia); Reading University, Statistical Service Centre (UK)

Associate Partners: Technical Centre for Agriculture and Rural Cooperation (CTA)

10.4.2 Objectives & actions

Overall objective: to enhance the capacity of universities in ESA to contribute effectively to development and socioeconomic transformation of society by building, sustaining and strengthening regional capacity for impact oriented research for development.

Result areas:

1. *Partnerships and institutional arrangements* to support quality training established, developed and strengthened through: (1) short courses to enhance research skills of academic staff and scientists in national agriculture research and extension organisations (NARES); and (2) increased inter-institutional networking. The activities are led by RUFORUM

³⁴ Information taken from: <http://eresaproject.blogspot.com/> and <http://www.ruforum.org/drupal/sites/default/files/Brochure%20ERESA.pdf>

2. *Modules, approaches and tools for capacity development, in the area of research methodology* developed, tested, verified and shared in order to: (1) strengthen the capacity of universities to deliver market-oriented programmes and deliver market demanded courses to enhance research skills of practitioners; and (2) produce research scientists with a solid foundation in research. The activities are lead by Reading University.
3. *Regional and national capacities for enhancing research quality* developed, strengthened and institutionalised by: (1) launching a postgraduate training programme in Research Methodology at JKUAT built on a strong foundation of theoretical and practical norms and standards geared towards meeting the current developmental concerns; and (2) conducting a series of Research Methodology short courses and mentoring to university lecturers and NARES scientists, and selected graduate students. The activities are lead by JKUAT.
4. *Knowledge management and communication systems for joint learning, sharing and scaling up* established, developed and promoted to enhance post graduate student training and teacher exchange. Activities will include: a) holding learning platforms to share lessons and experiences; b) production of communication products; c) outcome/impact assessment; and d) planning for a follow-up phase. The activities are lead by RUFORUM.

10.4.3 Potential synergy with Outreach Project

The Enhancing Research Capacity and Skills in Eastern and Southern Africa (ERESA) Project, also has important areas of overlap with the “Outreach Project”. In particular, the focus on research skills – if this includes qualitative methods for research on stakeholder interaction/organisation - will fill a key gap in methods and skills more appropriate to action research and experiential learning than the “conventional” approach on quantitative methods. Again, 2 of the 3 university partners (MAK and BCA) of the “Outreach Project” are included in the ERESA project, so it will be important to see how to include staff of Moi in any activities designed to upgrade staff and postgraduate research skills in methods more suitable to analyse and facilitate stakeholder interaction and development.

10.5 Quality Assurance Management (QAM)³⁵

10.5.1 Overview

Full name of the action: The Quality Assurance Management Project (QAM)

Financing: EUR 587,900.80 (total) – including EUR 499,715.68 from ACP Edulink Programme EU

Duration: 36 Months beginning 2009

Partner Organisations: RUFORUM (Coordinator; Uganda); Makerere University, (Uganda); Egerton University, EU (Kenya); University of Malawi, Bunda College of Agriculture (Malawi); University of Zambia (Zambia); Montpellier SupAgro (France)

Associate Partners: Forum for Agricultural Research in Africa (FARA); Inter-University Council of East Africa (IUCEA); Network of European Agricultural

³⁵ Taken from: <http://qamproject.blogspot.com/>

Universities and Scientific Complexes Related with Agricultural Development (NATURA).

10.5.2 Objectives & actions

Overall objective: to enhance capacities of universities in ECSA to conduct high quality and relevant graduate training, especially at PhD level. The purpose of this action is to strengthen capacity for shared training, quality assurance and knowledge management for lesson up-scaling. The critical auxiliary problems include issues related to training such as credits transfer systems, quality assurance mechanisms, resource mobilization, competitiveness of the graduate training programmes and need for new teaching delivery and management methods that emphasise facilitation and team building.

Result areas:

1. *Quality assurance mechanism in ECSA HEIs strengthened.* A quality assurance system is to be developed to assure high quality of the graduates as well as their relevance to the region. The system will be developed in a step-wise manner with lessons captured for up-scaling within the participating institutions and out-scaling to other RUFORUM member universities.
2. *Capacities and competencies of human resources involved in the implementation of training programmes strengthened.* This aims at enhancing specific competencies of the university staff and the PhD students to effectively and efficiently implement and or engage in the training programmes. Competence development are being implemented using identified short courses conducted at regional level using a synchronised and distinct process that provides for lesson capture and up-scaling within the region.
3. *Regional and international partnerships for efficient and effect graduate training in the ECSA HEIs enhanced.* A partnership arrangement with universities in the north (Europe) and non-RUFORUM member universities in the region has been developed to tap into the global knowledge for training of the staff and students.

10.5.3 Potential synergy with Outreach Project

The Quality Assurance Management (QAM) project also includes two of the 2 university partners common to the Outreach Project (MAK and BCA). One of the stated objectives of the QAM is to “*to strengthen the capacity of ECSA universities to train high quality PhD graduates, by mounting short regional courses in critical cross-cutting areas to broaden analytical skills and development perspectives of graduate students*”³⁶. Clearly, there is scope here for collaborating with the Outreach Project, as well as the Innovations and the ERESA projects, to improve the “cross-cutting areas” or gaps noted in this report (innovation systems concepts/analysis; qualitative research methods for analysing stakeholder interaction; soft skills for the facilitation of interdisciplinary teams and stakeholders, etc).

³⁶ Ibid.

10.6 Strengthening University Processes (SUCAPRI)

10.6.1 Overview

Full name: Strengthening of university capacity for promoting, facilitating and teaching rural innovation processes (SUCAPRI) .

Financing: EUR 717,108 (total) – including EUR 495,905.00 from ACP Edulink Programme, EU

Duration: 36 Months beginning December 2008 (extended to August 2011)

Partner Organisations: Makerere University (Uganda; Coordinating Organisation); University of Nairobi (Kenya); Egerton University (Kenya); Kenyatta University (Kenya); Jomo Kenyatta University of Agriculture and Technology, JKUAT (Kenya), the International Centre for development oriented Research in Agriculture, ICRA (The Netherlands). Associate partners include the National Agri

Associate Partners: National Agricultural Research Organisation, NARO and the National Agricultural Advisory Services, NAADS (Uganda); Kenya Agricultural Research Institute, KARI; Kenya National Federation of Agricultural Producers, KENFAP; Ministry of Agriculture, MoA (Kenya); Ministry of Livestock Development, MoLD (Kenya).

10.6.2 Objectives & actions

Overall objective: To strengthen the capacity of East African universities to prepare professionals with the competencies needed to promote agricultural and rural innovation processes and participate in decentralised national agricultural research systems.

Specific objective: To form "communities of practice" of teaching and managerial staff in 5 universities that actively improve teaching practice, facilitate rural innovation processes and develop teaching programmes in rural innovation.

Expected Results

1. Five participating universities in Uganda and Kenya with a shared vision of ways to improve professional capacity for rural innovation;
2. Core groups (of 5-8 persons) in each of 5 participating universities capable of designing and implementing future professional development programmes for colleagues in their respective universities as well as for professionals in national agricultural R&D systems;
3. Eight pilot "rural innovation groups" (comprising at least 48 R&D professionals from universities, research organisations, service providers, local government and farmer organisations) with improved capacity for rural innovation and improvement of rural livelihoods;
4. New academic programmes (modules, courses, teaching practices) offered in presential and distance learning formats at the 5 universities;
5. A package of shared multi-media learning resources in rural innovation;
6. Regional awareness of best teaching practice in rural innovation.

Main activities

1. Initial planning workshop (month 1) to refine the action plan, select key participants and resource persons; followed by 6-monthly steering group meetings.
2. University-based “learning cycle” in Kenya (five workshops of 5-7 days each and associated skills implementation during months 3-18) to form "core teaching innovation groups" within 4 participating Kenyan universities.
3. Multi-stakeholder (learning) programmes (series of integrated workshops and associated mentoring of "innovation groups" from priority national R&D programmes (months 20-34).
4. Analysis/review of agricultural curricula and design of new/modified and accredited agricultural degree programmes and associated staff management/incentive systems (months 18-36)
5. Development of learning resources (months 18-36)
6. International workshop to exchange and diffuse experiences, and finalize continuing institutional action plans by each participating university (month 36)

10.6.3 Potential synergy with Outreach Project

The SUCAPRI project has very similar objectives to the “Outreach Project”, as well having significant overlap with other RUFORUM projects described (Innovations Project, ERESA). However, only one of the project partners – MAK – is also a partner in the Outreach Project.

The main strategy for the SUCAPRI project has been to develop staff skills and review/adapt curricula in participating universities through 2 types of “learning cycle”: a) a “university-based learning cycle” (to develop social skills and core inter-departmental groups, based on the previous experience of the “personal mastery” programme at MAK), and a “multi-stakeholder learning cycle” (to develop staff skills in multi-stakeholder facilitation).

A weakness of SUCAPRI has been the lack of a defined mechanism to feed back lessons learned into curricula at the participating universities. As noted, this is a potential weakness also of the Outreach Project. SUCAPRI is also in the final year of operation: one of the main activities yet to be completed are workshops on curriculum and learning materials development, and lessons learned in general. It would improve the effectiveness of SUCAPRI, the Outreach Project, the Innovations Project and ERESA to combine forces to hold a joint workshop in this area of mutual interest. In particular, efforts should be made to coordinate activities between the two projects (Outreach to Engagement and SUCAPRI) within MAK.

10.7 SA Collective Innovation³⁷

10.7.1 Overview

Full name of the action: Capacity strengthening in teaching and facilitated experiential collective innovation at three previously disadvantaged universities (

Financing: EUR 1,599,919 Euros from Nuffic (Netherlands), plus in-kind from SA partner universities.

Duration: 36 Months beginning June 2010

South African Partner Organisations: University of Limpopo (lead); University of Fort Hare,; University of Venda (South Africa); Impetus Consulting and Skills Development (Impetus) South Africa,

Netherlands Partner Organisations: The International Centre for development-oriented Research in Agriculture (ICRA); the Centre for Development Innovation, Wageningen University and Research Centre (CDI-WUR), the Maastricht School of Management (MSM).

10.7.2 Objectives & actions

The **aim** of the proposed project is to strengthen the capacity of three historically disadvantaged universities (HDUs - i.e., the Universities of Limpopo, Fort Hare and Venda) to deliver graduates with relevant knowledge and skills to support inclusive (pro-poor) economic development and transformation.

The **specific objective** of the project is for the three HDUs, and the agricultural schools in particular, to integrate the teaching, action-research and community engagement. In addition, and in line with the project outline, the project proposes to add a second specific objective, which entails the establishment of a dedicated support framework in support of collective innovation in the historically disadvantaged rural regions

The **expected results** are:

1. Action-research capacity developed and embedded in strategy of the agricultural schools of the HDUs.
2. Curriculum development capacity developed at the agricultural schools of the HDUs.
3. Brokering and leadership capacity developed at the agricultural schools of the HDUs, to sustain action-research and curriculum development capacity.
4. Functional national-level collective innovation network, bringing together relevant expertise for policy advocacy, peer review and quality control, and providing guidance to collective innovation projects and education and training programmes.

Entry points for change result 1 include enabling students, for instance to integrate (specific) courses from other departments; new courses that foster competencies in experiential and interactive learning in rural and agricultural innovation; and their

³⁷ Information taken from ICRA's project proposal to Nuffic.

accreditation and integration in existing programs; and innovative teaching and learning methods (and modules) in existing courses (no need for accreditation).

10.7.3 Potential synergy with Outreach Project

The “SA Collective Innovation” Project does not involve the same universities as the other projects described in this section, and neither are the 3 SA universities members of RUFORUM. However, the objectives of the project are very similar to the “Outreach to Engagement” Project, and also overlap with other projects noted above (Innovations Project; CCAU). Sharing of information between these projects would therefore be mutually beneficial.

10.8 Conclusions and suggestions

There is considerable overlap between the objectives and activities of a number of projects being implemented by RUFORUM and or one of the 3 African University partners in the Outreach Project. These “complementary” projects include: The “Innovations Project”, “Catalysing Change (CCAU), Agricultural and Rural Innovations Management (ARIS), Enhancing Research Capacity and Skills (ERESA), Quality Assurance Management (QAM), and Strengthening University Capacity in Rural Innovation Processes (SUCAPRI). All of these projects are being supported by the European Union (either through the Science and Technology Programme, or through the Edulink facility).

The MAK Faculty of Agriculture MAK is a partner in all of the projects, except the SA Collective Innovation Project. However, even where MAK is a partner in the different projects, it is not necessarily the same Dept. or staff involved. BCA is also a partner in most of these projects (although not in SUCAPRI, ARIS or SA Collective Innovation). Moi School of Agriculture and Biotechnology is not involved in any of the projects, other than the Outreach Project, and therefore efforts need to be made to share experience and materials from MAK and BCA with MSAB.

Particular areas where other projects can support the Outreach Project are in:

- Developing courses in innovations systems (Innovations, ARIS Projects);
- Courses and workshops to develop personal (“soft”) skills, (ERESA);
- Courses in (qualitative) research approaches, methods and skills that support AR to balance the current bias towards “conventional” or “empirical” research approaches (ERESA);
- Workshops for senior managers to review policies, management structures and mechanisms that limit or support EL, AR and outreach in general (Innovations, QAM)
- Workshops for staff and managers to review the linkage between outreach and curricula (SUCAPRI)
- Development of learning materials in AR related themes (SUCAPRI, RUFORUM e-learning project and other).

11 Review of experience with experiential learning

There have been many efforts around the world to incorporate or increase the degree experiential learning into academic programmes in agriculture. Some of these cases have been described or reviewed elsewhere (e.g. Fincham et al, 2004; Muir-Leresche, 2004; World Bank, 2007; Chakeredza et al, 2008; Leresche, 2010). A comprehensive review of the different experiences is beyond the scope of this consultancy. However, a limited number of case studies are described here to illustrate the range of ways in which curricula and learning activities have been designed to support experiential learning, as well as derive lessons for the Outreach Project.

11.1 University of Western Sydney at Hawkesbury³⁸

11.1.1 Context

One of the most radical and widely reported academic programmes exemplifying experiential learning is that of the University of Western Sydney at Hawkesbury (formerly Hawkesbury Agricultural College) in Richmond, New South Wales, Australia). From 1980 to 1995, the university pioneered an innovative undergraduate degree in systems agriculture based on experiential education, systems thinking, and adult learning theory.

The process was led by a new Dean of the (then) College, hired in 1977, who brought with him an existential philosophy, international experience, and a commitment to “praxis” (intersection of theory and practice). With a PhD in animal science, the Dean had subject matter credibility with his faculty while being committed to the larger issues of educational leadership and curriculum reform. Through his persuasive charisma and power, the Dean convinced the faculty to help him develop a revolutionary new curriculum, and the innovative bachelor’s degree in Systems Agriculture was introduced in 1984, after being College Advanced Education Academic Board and the New South Wales Board of Higher Education.

By interviewing employers of past graduates, the faculty focused on three core competencies:

- *Autonomous learning.* This was based on employers’ need for quick learners – given the fast changing world, they would train graduates in the specific skills and knowledge needed for their particular positions.
- *Effective communication.* Employers wanted graduates who were able to listen, communicate effectively both orally and in writing.
- *Systems thinking.* Employers wanted graduates who could deal with complexity and ambiguity, so the faculty concentrated on both “hard” systems thinking (e.g. using mathematical or computer-based systems approaches to improve farm production), as well as “soft” systems thinking (e.g. using learning theory, systems thinking, discussion and debate among the affected parties to reduce agricultural phosphorous discharge in a watershed district).

³⁸ Information summarised from: Thomas F. Patterson Jr., 2007. “The rise and fall of innovative education: An Australian university case study”. *Innovation in Higher Education* vol. 32, pp 71–84. The views repeated here therefore reflect the opinions of that author, who was spent 2 sabbaticals at Hawkesbury, in 1989/90 and 2003/04.

11.1.2 Programme structure

The new programme dropped all classes in favour of student demonstration of competencies developed through experiential learning projects. “Classes” were only organised when students took the initiative and asked faculty to organise a class on a subject relevant to their projects.

First year students were often given the assignment to visit and study the

Hawkesbury campus dairy farms, develop a holistic systems viewpoint, identify the problem situation and develop recommendations. Gradually, during the first year, faculty designed learning projects gave way to projects developed by groups of first-year students.

The second year, called the “farms phase” or “off campus experience” (OCE), was dominated by a student’s 4-month internship placement on a farm or other rural agribusiness enterprise (payment to the student was discouraged as it was feared that this practice would lead to an employer–employee relationship rather than the desired co-learning relationship). Mid-course regional meetings were organised by faculty staff for students to reflect on their experiences and to share these with their fellow students; OCE hosts were also invited to participate on the second day of the 2-day meetings. After they returned to campus, student reflection documents provided a clear indication of the progress each student had made toward the three competencies. The reflection documents included a “situation improvement” report on their farm experience that was also given to the host farmer.

The third year of the program was totally devoted to student-designed learning projects, many developed from the student’s OCE experience in the second year. Faculty were engaged by the students as facilitators, as subject matter experts, and as co-learners. The final student reflection document and presentation were the culminating event for the student’s entire three-year program.

During each of these phases, students were required to demonstrate, through oral presentation and written documentation, growth and a higher level of proficiency in each of the three competencies. Evaluations were periodically scheduled in which students demonstrated improved competence before rotating panels of faculty. The panel for a student’s final evaluation before graduation would often contain a representative of the industry upon which the student had based his or her final learning project. Successful demonstration meant progress to graduation. Unsuccessful demonstration of any phase meant either conditional progression, permission to repeat the phase, or expulsion for a period of 3 years.

11.1.3 Strengths, weaknesses and implications

The “Hawkesbury experience” was extensively publicised through a number of publications and conference presentations, and attracted world-wide attention. From an EL perspective, the strengths of the programme can be summarised as:

- The study of systems and subsystems involved in agriculture, not of separate subjects or disciplines;
- The use of systems and problem-solving approaches to learning based on real-world cases, not reductionist science and pedagogical instruction;

- The application of learner-centred and not teacher-centred teaching strategies (faculty staff acted as learning facilitators, not “lecturers” or instructors; students progressively accepted more responsibility for their own learning);
- Competencies of students based on their own reflection, and on feedback from partners in practical projects.
- The development of organizational flexibility in the school, not adherence to traditional discipline-based departments (agriculture was seen as a complex human activity system, not a collection of disciplinary-specific technical areas);
- The adaptation of the school as a learning centre subsystem integrated into the national agricultural system, not as a discrete and restrictive post-secondary institution.

In spite of many accolades from outside, the programme eventually reverted back to a more traditional teacher-directed approach. A small cadre of “non-believers” in the faculty never fully adopted nor approved of the experiential approach. The systems approach relied less on the faculty’s subject matter disciplinary training, expertise or professional passions, and more on their “soft” skills to brainstorm, facilitate, communicate, work with people, and improve real-world problem situations. While some faculty adapted to and grew in this new environment, others felt devalued or betrayed. Some faculty felt that the change to experiential learning and systems thinking eroded their traditional disciplinary prestige - something they had worked hard to achieve. The high drop out rates of students in the programme was attributed to them feeling lost in the program, under the unwavering commitment to experiential education by the paradigm believers and program leadership.

In 1995 a core of traditional teacher-directed courses was reintroduced and grades were required for all courses. These changes were justified by the need - according to the “unbelievers” - to bring back a standard educational model in line with mounting University requirements and expectations, reduce the high student attrition rate, and stabilize the declining numbers of Systems Agriculture undergraduates. The Dean of the Faculty of Agriculture and Rural Development, who had provided the extraordinary visionary leadership for the Systems Agriculture paradigm, resigned as Dean and eventually left the country to accept an appointment at a major U.S. land-grant institution. Other faculty members who formed the “core of believers” also moved on. By 2004, the systems agricultural program at the University of Western Sydney Hawkesbury campus was in serious trouble.

In retrospect, the problems included:

- *Limited skills of faculty staff* to adapt to the new paradigm. Faculty staff members were constantly challenged by new situations and problems from the student projects, and needed “problem solving skills” rather than disciplinary knowledge. They also needed to be “facilitators” of experiential learning, rather than instructors.
- *The expense/effort of continual supervision.* Teams of faculty spent weeks travelling throughout New South Wales, interviewing host families and assessing students on farm placements. The programme experiential learning records required extensive administrative support to keep track of student progression.

- *Student dissatisfaction.* A number of students withdraw from the course each year on the grounds of their dislike of the process, which made difficult demands of them.
- *Changing student profile.* Nowadays, the vast majority of students on the Hawkesbury campus come from an urban background, with little background and/or interest in agriculture. Most Hawkesbury students live at home, commute to campus, and many hold part-time jobs. The second year off campus experience is now called service learning, and is mostly organised within the greater Sydney area, to accommodate those students who commute and hold jobs.

Patterson concludes by saying that, while the Hawkesbury Systems Agriculture programme provides valuable lessons for those wishing to incorporate more innovative education into higher education, *“the traditional didactic model of teacher-directed higher education—courses, books, lectures, exams, papers and final grades—is not in danger of being supplanted by the Hawkesbury innovative paradigm anytime soon. Recently, there have been experiential inroads made into higher education at large, most notably through internships and service learning; but these areas remain on the edge of mainstream college education”*.

11.2 EARTH University “Licenciatura” Programme³⁹

11.2.1 Context

The EARTH University (in Spanish the *“Escuela de Agricultura de la Región Tropical Húmeda”*) is located in the humid tropics of Costa Rica. It was established as a partnership between the private sectors in Costa Rica and an initial endowment grant from USAID. The university also has US supporters who raise additional funds through a private foundation.

Inaugurated in 1990, it is a private, international, non-profit university dedicated to education in the agricultural sciences and natural resources in order to “build a future in which the humid tropics and its communities achieve social, economic and environmental well being”. Its mission is to “prepare leaders with ethical values to contribute to the sustainable development of the humid tropics and to construct a prosperous and just society”.

EARTH bases its educational model on four pillars:

- *Ethical and human values*, which translate into personal and professional integrity. Graduates have the ability to work as part of a team to resolve problems, by fostering dialogue, peace and understanding among individuals, governments and nations
- *Entrepreneurial spirit and management skills.* Students have the opportunity to form their own businesses, testing the economic, social and environmental viability of their enterprises.
- *Social and environmental awareness.* Every part of EARTH's academic program includes a community outreach component. The Community

³⁹ Information taken from the EARTH website: <http://www.earth.ac.cr/ing/index.php> as well as from Zaglul, J., Sherrard, D. and Juma, C. 2006. “Higher Education in Economic Transformation” International Journal of Technology and Globalisation, Vol. 2, pp. 241–251.

Development Program coordinates weekly visits through which students are able to share their newly acquired knowledge, learn from the experiences of local farmers, and jointly seek innovative solutions to the challenges of the community.

- *Technical and scientific knowledge.* The educational process at EARTH allows students to develop technical and scientific knowledge that, once understood in the classroom, is applied in the field and laboratory to validate and strengthen the learning process.

EARTH's educational system is designed to develop in the individual the capacity to think critically, be creative, accept and fulfil responsibilities, work effectively in teams, reason, analyze and propose options for the resolution of problems, and to become lifelong learners. The University's participatory learning methodology is intended to provide a sound education while cultivating creative, innovative, critical and disciplined professionals able to work as part of a team and pursue a strategic, development-oriented vision. Rather than providing knowledge and transmitting information to their students, EARTH professors strive to be facilitators of a high-quality and holistic learning process. The student is also an active participant, learning through real-life experiences.

11.2.2 Programme Structure

EARTH University admits about 110 students a year and has a total student population of about 400 from 24 countries (mainly in Latin America and the Caribbean) and faculty from 22 countries. Students graduate as Agronomists, earning a *Licenciatura* degree, (between a B.S. and a M.S.) in the Agricultural Sciences. The four-year program is broken down into three 15-week trimesters each year, totalling 197 credit units.

The curriculum includes five elements that are especially based on experiential learning. These are:

- **Work Experience** (total of 16 credit units). Each semester during the first 3 years includes a “work experience” course (10 hours per week).
 - In the 1st year, students work in crop, animal and forestry production modules on EARTH University's 3,300-hectare farm, gaining basic skills, work habits and general knowledge and familiarity with production.
 - In the 2nd year, the focus changes to management strategies for these same activities.
 - In the 3rd year, students work on an individual basis with small, local producers on their farms. They also come together in small groups under the Community Outreach program that is integral to the learning system. Community outreach is used to develop critical professional skills in students, while at the same time helping to improve the quality of life in nearby rural communities.
- **Professional experience (3 credit units).** In the 4th year, work experience is replaced with “professional experience” courses, where students identify work sites or activities on campus, which correspond with their career goals. The student is responsible for contacting the supervisors of the campus operations, requesting an interview, and soliciting “employment”. Upon agreement, they

develop a joint work plan which the student implements, dedicating a minimum of ten hours per week to the “job”.

- **Student Entrepreneurial Projects** (14 credit units). This series of courses, during years 1-3, provides students the opportunity to develop a business venture. Small groups of 4-6 students from different countries decide on a relevant business activity. They conduct feasibility studies (including financial, social and environmental criteria), borrow money from the university and implement the venture. This includes marketing and selling the final product. After repaying their loan, with interest, the group shares the profits.
- **Internships** (16 credit units). The 3rd semester of the 3rd year consists of a 15-week internship, with a farm, firm or community. It gives students an opportunity to put into practice all they have learned during their first three years of study. For many, it is also a chance to make connections that may lead to employment after graduation. The international character of the institution allows many students the opportunity to follow their interests, even when they lead to internship destinations other than in their home country.
- **Graduation project** (7 credit units). During the 4th year, the student plans and develops a project, demonstrating the ability to analyze and synthesize information, and effectively communicate the results. The work must fit within the framework of the institutional priorities, in such a way that it is oriented towards agriculture and the sustainable management of natural resources, business management, and community projects.

In addition to these experiential learning activities, EARTH's programmes are also distinguished by the practical nature of most “technical” courses, which normally include more hours in the laboratory or field than in the class.

11.2.3 Strengths, weaknesses and implications

The overall **strengths** of the EARTH programme are:

- **Holistic approach.** The courses in the programme all emphasise the linkages between technical, social, environmental and economic outcomes. As well as the more disciplinary and technically oriented subjects, the programme includes 3 courses on personal (physical and mental) health and development, as well as others on “Latin American reality”, “ethics and critical thinking”, “fundamentals of ecology for natural resources management”, “applied ecology”, “sustainable agricultural systems”, “English” (language) etc.
- **An innovative, learner-centred and experiential** academic program. Its educational process stresses the development of attitudes necessary for graduates to become effective agents of change. They learn to lead, identify with the community, and care for the environment. They are committed to life-long learning.
- **Entrepreneurial emphasis.** About 17% of EARTH's 1,100 graduates run their own businesses. Graduates are intended to be employers, not employees; managers, not technicians; people who know how, not just know of. The university manages its own profitable agribusiness, which has resulted in strong relationships with the private sector.

Because of these strengths, EARTH has been promoted as a good model for African universities to follow⁴⁰. EARTH has also shared its experiences through a series of workshops on Sustainability, Education and the Management of Change in the Tropics (SEMICT) funded by the WK Kellogg Foundation and the Norwegian Agency for Development Cooperation (NORAD).

11.3 The PAU PhD programme, Wageningen University⁴¹

11.3.1 Context

In 2000, the Technology and Agrarian Development (TAD) group at the Social Sciences Dept. of Wageningen University⁴² obtained funds from the Rockefeller Foundation for a special PhD programme – “participatory approaches in agricultural technology development and their up-scaling”, or PAU. Under this programme, 4 cohorts, of 6 students each, were accepted during the period 2002 – 2004. The majority of these students had a natural science background, worked at national and international agricultural research organisations or universities in E. and S. Africa, and therefore already had significant professional experience with participatory approaches.

The Rockefeller Foundation was interested in which participatory approaches worked best, and how they could be scaled up to reach more farmers with the benefits of agricultural research. The TAD group was interested in the intersection of science, technology and development.

The general objective of the programme was to pilot competence development that emphasised human interaction, communication and collaboration as part of the curriculum. “Knowing how” as well as “knowing what”. Key competences therefore included those related to interpersonal interaction in research (emotional intelligence, communication, team dynamics, facilitation, conflict management) as well as the application of new concepts (process and systems thinking, action research, interdisciplinary action, management and organisational development).

11.3.2 Programme Structure

The programme had a “sandwich” structure: 10 months of coursework and preparation in Wageningen, leading to 2 years of fieldwork, followed by a final 10 months of writing up back in Wageningen.

⁴⁰ See, for example, “Food security, agriculture and economic growth: opportunities for cooperation between the United States and Sub-Saharan Africa”, 2007. Testimony to the House Committee on Foreign Affairs Subcommittee on Africa and Global Health United States House of Representatives., by Calestous Juma, Professor of the Practice of International Development, Kennedy School of Government, Harvard University. Available at: http://belfercenter.ksg.harvard.edu/files/juma_testimony_july_18_2007.pdf

⁴¹ Information taken from: Almekinders, C., J. Proos and J. Hagmann (2009) “Preparing scientists for society – A PhD training programme at Wageningen University, the Netherlands”. In: Almekinders, C., L. Beukema and C. Tromp (eds.) Research in action – theories and practices for innovation and social change. Wageningen Academic Publishers, The Netherlands, pp 85-106.

⁴² Wageningen University consists of only one “faculty” (agriculture). The Social Science “Dept” therefore is similar to “faculties” at other universities considered in this report, and the TAG “group” similar to a department.

During the initial phase in Wageningen, students could pick and choose between existing international postgraduate courses, seminars and workshops available during the period. However, the university did not have regular programmes in some of the relevant themes such as participatory research, and so additional workshops and courses (e.g. in “action learning”) were therefore developed and tailored to the specific needs of the students.

The preparatory phase also included a special, off-campus “learning workshop”, where participants reflected on the aims of PhD research, their participation in the programme, and to what extent their research would or could lead to societal change. They were also encouraged to reflect on the importance of human behaviour in term work, institutional change, collaborating with communities, and their own behaviour in these situations. An external consultant facilitated these workshops, and methods used included group work, plenary brainstorming, role-plays, etc. The first of these workshops was timed so that both the 1st and 2nd cohort could participate, and lasted 9 days, which the organisers considered necessary to practice the skills. Subsequent workshops for the 3rd and 4th cohorts however, were about 5 days – partly because of limited financial resources, and partly because supervisors of the participating students felt that 9 days was taking too much time out of the students programme for activities such as literature study and proposal writing. Some university staff saw such “competence training” as relevant, but something that should stay outside of the academic curriculum. Nevertheless, participants much appreciated these workshops and the 3rd of the workshops was summarised through posters, which were subsequently presented to supervisors and staff and which somewhat alleviated conflicts within the university about the programme and its methods.

Another source of conflict between staff and participants was the social science content of the programme. Participants in the 1st and 2nd cohorts felt that academics did not “know the reality on the ground”, and felt somewhat reluctant to freely engage in discussions. They wondered about the relevance of some of social science theory to the problems of the African farmer. They feared that “action research” and their field work might not be acceptable to their supervisors. However, these tensions were less in the 3rd and 4th cohorts, partly because these intakes included some social scientists, partly because the programme coordinator was better prepared adjusted the curricula, and partly because other staff had become more accepting of the programme.

In addition to the 3 “learning workshops” in the Netherlands, 2 “in-country workshops” were also organised (in Kenya, Uganda) where participants conducting fieldwork could exchange experience and discuss issues arising. After returning to Wageningen to write up, students struggled to sort out their information, interpret findings and write thesis chapters. Taking a critical stance and developing a style of writing where empirical data formed the basis of conclusions appeared difficult to many students who were more adept at writing progress reports for donors. At this stage, appreciation for theory and the literature grew, as students realised it was the only way they could make sense of their findings.

11.3.3 Strengths, weaknesses and implications

The **strengths** of the PAU programme can be summarised as:

- *The integration of personal/social skills* (“soft skills”); through specialised workshops. Although organisers concluded that more could have been done to

integrate skills workshops with academic coursework, they recognised that not all students have equal need for such skills, and therefore optional workshops remain the pragmatic approach. However, the development of these skills is not easily recognised in the thesis-based assessment of the students.

- *The development and integration of participants own learning expectations;* mainly through the learning workshops, but also through flexibility of tailor-made coursework during the initial phase in Wageningen, as well as the freedom to develop their own research projects.
- *The integration of social science into action research processes* and practical development oriented research, through analysis of social and organisational processes as part of student research projects.

The **weaknesses** of the programme perhaps included:

- *Specialised funding* that provided the “protected environment” for the programme allowed space to try out new things. It is not clear that the University will be able to continue the programme once external funding ceases.
- *Resistance of some faculty staff* to the programme in general, and to the skills development component in particular. This conflict however appears to have subsided as the staff learned more about the programme, and the experience of students.
- *Participants’ own expectations.* Many participants came from a natural science background and organisations where social sciences were regarded as having little relevance to practical development issues. They were also used to static, instructor-led academic programmes. The flexibility of the programme, and using social science theory and methods for empirical research did not come easily to some students, causing delays in completing the programme in some instances.

The organisers of the programme conclude that it is still early to gauge the effectiveness of the PhD programme. However, the experience of the programme reaffirms that the ability to relate and communicate is crucial in the application of scientific research tools such as interviewing, facilitation of group discussions, etc. Moreover, these competencies are also critical in the formulation of interdisciplinary research questions, planning of a research process with others, and communicating findings to other audiences. The reflexive researcher needs to integrate it all: personal and social skills, disciplinary knowledge and skills, and the application of these to interdisciplinary research.

11.4 The ARIS PhD programme, Egerton University⁴³

11.4.1 Context

Under the umbrella of (RUFORUM), the universities of Makerere (Uganda), Egerton (Kenya) and Sokoine (Tanzania), in partnership with Wageningen University in the Netherlands and Montpellier SupAgro in France, developed a regional PhD programme in Agriculture and Rural Innovation Studies (ARIS). This initiative has so far been developed with support from the ACP-EDULINK for Higher Education programme through a project entitled “Strengthening Agricultural and Rural Innovation Systems in Eastern, Central and Southern Africa: A Regional PhD Programme”.

The purpose of the programme is to produce top-level skilled professionals with interdisciplinary orientation to guide logical development of institutions and structures for sustainable utilization of knowledge and technologies in agricultural and rural development in an integrated way. The programme is said to be unique (in the region) in terms of its transformative nature by combining theoretical grounding and practice. It seeks to advance transformative learning through research and action to catalyze change as well as improving trans-disciplinary research to create deeper and holistic understanding of the complexities in agricultural and rural development in Africa. Graduates of the ARIS programme are intended to be “a new breed of professional”, capable of facilitating multi-stakeholder processes, provide leadership in agricultural development (both technical and policy dimensions).

The curriculum was developed through a 2-stage consultative and participatory process. In the first stage, a wide range of relevant stakeholders attended 2-day national workshops in each of Uganda, Kenya, and Tanzania. Stakeholders consulted included academia, private sector, government ministries, NGOs and other agencies such as the National Councils for Higher Education. In the second stage, the findings of the national workshops were consolidated at a regional workshop, attended by stakeholder representatives, European partners, representatives of regional training and development agencies and other resource persons. At this regional workshop, the vision, curriculum content; implementation modalities, quality assurance mechanisms, institutionalisation processes and resource mobilisation strategy were considered.

Following this consultation process, a task force comprising of two faculty members from each of the partner universities and one representative from RUFORUM synthesized the outputs of the national and regional workshops and prepared a draft curriculum. This draft curriculum was then circulated to a wide range of stakeholders including international agencies and reknown resource persons with expertise and experience in the various curriculum themes for their input and comments. The input obtained was used to improve the curriculum content and implementation modalities.

The three East African universities (consortia) are now in the process of getting the programme approved⁴⁴. Consultations have been made with the European partner

⁴³ Information taken from various planning documents from project partners, including detailed description as provided in “Programme for the Degree Doctor of Philosophy in Agricultural and Rural Innovation (ARI)”, Department of Agricultural Extension and Education, Makerere University, March 2010.

⁴⁴ The consultant understands the programme had been approved by Egerton University, at least, by the time of writing this report.

universities on the development on the improvement of the curriculum and development of training materials. Resource persons have been identified from Europe and Africa to develop training materials for specific modules.

11.4.2 Programme Structure

The programme includes both course work (1 year) and research (at least 2 years). Each of the three participating universities will admit up to ten students each year, who will undertake course work in a central place in one of the three universities for purposes of sharing capacity and quality assurance. The European partner universities will initially provide lead resource persons, paired with African partners as a capacity development strategy. Resource persons for course work and research supervision will also be drawn from competent organisations in and outside Africa working alongside counterparts from among the three universities. For purposes of relevance to national development, students will undertake research in their respective countries in compliance with the rules and regulations of the admitting/awarding universities.

Core Courses

Year 1, Semester 1

- Participatory Methods and Action Research for Innovation in Livelihoods and Agricultural Systems (ARI 9101; 4 Credit Units)
- Innovations for Agricultural and Rural Development (ARI 9102; 4 CU)
- Quantitative Research and Statistical Applications (ARI 9103; 4 CU)
- Qualitative Research (ARI 9104; 4 CU)
- Agricultural and Rural Development in Africa (ARI 9105; 4 CU)

Year 1, Semester 2

- Knowledge Management and Communication (ARI 9201; 4 CU)
- Organisational and Institutional Development for Rural Transformation (ARI 9202; 4 CU)
- Application of Innovation Systems in Agricultural and Rural Development (ARI 9203; 4 CU)
- Agricultural Services Delivery and Social Entrepreneurship (ARI 9204; 4 CU)

Seminar Series:

- Personal Mastery and Soft Skills (ARI 9205; 3 CU)
- Scientific Writing and Publishing (ARI 9206; 3 CU)
- Peer Learning and Mentorship (ARI 9207; 3 CU)

Teaching methods

Courses will include a mixture of faculty lectures, guest lectures, case studies, individual and group assignments, quizzes and exams. Field based group assignments are significant components of ARI 9101, ARI 9103. ARI 9201 includes an individual assignment that is expected to lead to a professional paper. Courses will be assessed on the basis of individual and group assignments (20-70%), presentations (up to 30%); tests (10-20%) and exams (up to 60%).

Seminars (personal skills, scientific writing and peer learning) are undertaken through a series of “lecturettes”, practicals, group exercises and discussions. Assessment will be on a pass/fail basis, based on attendance, engagement and completion of assignments.

Thesis research:

Students will be expected to conduct research anchored within the development process. Research will be linked to ongoing initiatives of public and private agricultural and rural development organisations, aimed at poverty reduction, food security, and improved rural livelihoods. During the research period students will come together as a cohort for up to two weeks to share their experiences and preliminary findings and also to undertake programmed seminars specifically for personal development and technical writing skills which are compulsory. This also provides a platform for students to interact with each other and other people who might be resourceful to their research undertakings. .

The doctoral committee, established for each candidate, will include specialists from the major field of study, other experts from “minor field” deemed helpful in the pursuit of the study in question, and one external member who is not a member of the research team and out of the university. The thesis will count for 60 credit units (with 93 being the minimum required for graduation).

11.4.3 Strengths, weaknesses and implications

The strengths of the ARIS programme include the emphasis on:

- Systems theory and approaches;
- Multi-stakeholder processes and management;
- Action-research processes, and inclusion of qualitative and quantitative research methods;
- Personal skills development;
- Peer learning and mentorship
- Availability of learning materials on MUELE the Makerere e-learning environment.

Many of the courses developed – especially those on systems approaches, qualitative research methods, organisational development, personal skills development – are identified as key gaps in staff competencies in this report. The ARIS programme therefore represents an important pilot for these courses, which hopefully can be adapted as optional (or even core) courses for a broader range of programmes within the region.

At this stage (before implementation of the programme), it is too early to assess weaknesses of the programme.

11.5 The MDRI programme, Wageningen University⁴⁵

11.5.1 Context

The MSc in Development and Rural Innovation (MDRI) Programme⁴⁶ at Wageningen University is specially designed for students with a technical science, a life science or management background. It focuses on developing an ability to choose the appropriate academic view in each specific situation, challenging students to combine technical expertise with anthropology, sociology and communication science. The focus lies on developing a very flexible, integrated and contextual mode of thinking. Graduates from the MDRI programme are expected to be able to tackle a wide range of complex development problems.

11.5.2 Programme Structure

The academic year at Wageningen University is divided into six periods. The total 2-year master programme contains 120 credit units. The first year of coursework is intended to immerse students in the social sciences and allow them to build up a theoretical framework for the thesis. The second year consists of 2 main activities: a scientific research (thesis); and either an internship within a real programme or project or “minor thesis” (based on prior working experience and education, exemption for the internship is possible).

Core Courses (42 Credit Units):

- Introduction to Communication and Innovation Studies (COM-22804; 4 CU)
- Introduction to the Sociology of Knowledge and Agriculture (RDS-21804; 4 CU)
- Introduction to Technology, Agro-ecology and Development (TAD-20804; 4 CU)
- Research Design & Research Methods (YRM-20806; 6 CU)
- Facilitating Interactive Processes (COM-603066; 6 CU)
- Methods, Techniques and Data Analysis for Field Research (RDS-33306; 6 CU)
- Thesis Development Path (YSS-31306; over whole year 6 CU)
- “Cutting Edge Issues in Agro-ecological Development” (YSS-60806; 6 CU)

Elective courses (18 Credit Units):

One from:

- Management of Change: Inter-Human Processes and Communication (COM-31306; 6 CU)
- Governance, Livelihoods and Resources (RDS-30806; 6 CU)

⁴⁵ Information from the WUR website: <http://www.mdr.wur.nl/UK/The+Program+2/Courses/>, and additional course descriptions supplied by WUR staff.

⁴⁶ Formerly known as/ developed from the MAKS course – Management of Agricultural Knowledge Systems

- Technography, Researching Technology and Development (TAD-30806; 6 CU)

Plus

- 2 “free choice” courses (available in the University; 6 CU each)

Internships/ Minor Thesis (24 CU):

One from:

- Internship Communication and Innovation Studies (COM-70424)
- Internship Rural Development Sociology (RDS-70424)
- Internship Technology and Agrarian Development (TAD-70424)

Thesis (30 Credit Units):

One from:

- Thesis Communication and Innovation Studies (COM-80430)
- Thesis Rural Development Sociology (RDS-80430)
- Thesis Technology and Agrarian Development (TAD-80430)

Teaching methods

Four courses, in particular, illustrate innovative learning approaches:

- The *Thesis Development Path* course is designed to develop skills required in the social sciences. In the sociology and anthropology, for example, it is common to work with large amounts of long articles. Therefore developing reading skills and reading strategies are key skills in the MSc Development and Rural Innovation programme.
- The *Cutting Edge Issues in Agro-ecological Development*” course offers students the opportunity to develop, over 6 months, a research and/or design an assignment in newly emerging issues and processes. The course is tailor-made in the sense that it offers students the opportunity to deepen their knowledge on the themes treated in previous courses or on any topic of their interest that has not been fully covered. The course is based on group work; information literacy; student presentations (theatre, poster, PowerPoint, etc.) and any other activity participants deem required to achieve and share their learning. The group work normally involves a relevant assignment commissioned by an outside agency, as well as a multiple day excursion. The student group defines the content and methodology of the assignment. Assessment is based on peer review (30%) and quality of the end product as determined by the external commissioners.
- The *Methods, Techniques and Data Analysis of Field Research* course is broader than just simply “methods”. It focuses on critical thinking and design of the research process, use of a wide range of qualitative and quantitative research methodologies and techniques, learning to work in multidisciplinary teams, learning to look at problems from different perspectives, the practical problems of doing research in a situation outside one’s own society, and communicating results. It uses a mixture of lectures (based on notes previously available), group assignments and discussions, individual assignments on research techniques and analyses, as well as study of the literature.

- The *Facilitating Interactive Processes* course explores facilitation activities within different circumstances, such as innovation, conflict resolution and collective action. Students identify their core facilitation qualities and formulate personal learning objectives for the course. They then divide themselves in small groups to prepare a plenary reflection and self-generated trial of different methodologies including: rapid appraisal of (agricultural) knowledge systems (RAAKS); open space technology or world café; Socrates dialogue or value game; consensus conference or citizen jury, future search or appreciative inquiry, and institutional development & organisational strengthening (IDOS). The trials provide students the opportunity to practice methods as well as personal facilitation skills. They learn to simultaneously deal with group dynamics and learning processes. After each session, group members provide feedback on the demonstrated facilitation skills and the effect on the group and collective learning process. Through observation and feedback, students start to recognise facilitation skills, and critically reflect upon strong and weak points of the tried methodology. The course is evaluated through participation in group-work (50%) and personal observation/critical analysis (50%).

11.5.3 Strengths, weaknesses and implications

The strengths of the MDRI programme, from the perspective of this report, are:

- Integration of technical knowledge with social theory and processes;
- A more rounded appreciation of research methods, including social science approaches and ethnography;
- Development of skills in the facilitation of interactive processes
- Pathways in which the student can focus on issues of particular interest (through elective courses, and tailor-made courses designed to deepen understanding of issues touched on in “normal” courses).

11.6 ICRA’s Post Academic ARD Programme⁴⁷

11.6.1 Context

The International Centre for development oriented Research in Agriculture (ICRA) does not offer formal academic programmes; specialising in “post-academic courses”. European members of the Consultative Group on International Agricultural Research (CGIAR) originally established the Centre in 1981, as the International Course for development oriented Research in Agriculture. The original specification was to establish a training programme “to provide a cadre of agricultural scientists able to apply their specialised knowledge to the development problems of agriculture in developing countries”.

From 1983 – 2004, the main 6-7 month course in “Agricultural Research for Development” (ARD) was offered by ICRA on an annual basis. Each year 20-25 participants from around the world were selected on the basis of their qualifications (MSc or PhD minimum), work experience (at least 2 years, to allow reflection of new

⁴⁷ Information from the author’s own experience: views expressed here do not necessarily represent those of the Centre.

knowledge in a professional context), discipline (to allow interdisciplinary discussion and analysis) and organisational context (to ensure relevance to change processes at organisational level). Since 2005, the course has been progressively shortened to 14 weeks, and has focused on building the capacity of core teams in selected “partner” countries.

11.6.2 Programme Structure

The ARD course (1983-2004) consisted of 3 main phases: an initial 3-month phase of workshops in The Netherlands, followed by a 3-month phase of fieldwork in the South carried out by interdisciplinary teams of 5-6 participants, and a final 3-week review phase back in the Netherlands where the different teams could exchange experience and consolidate lessons learned.

The 3 months of “coursework”, or “knowledge acquisition”, included skills development (teamwork, planning, rural appraisal methods) as well as new/evolving systems concepts and approaches: “Farming Systems Research”, “Farmer Participatory Research”, “Rapid Appraisal of Agricultural Knowledge Systems” and the “Sustainable Livelihoods Approach”, among others. Typically, workshops consisted of presentations by resource persons (about 30%), small group discussions, exercises or analysis of case studies (30%), and plenary discussion (30%).

The 3 months of fieldwork consisted of a “field study” or consultancy carried out for, and in partnership with, research or development organisations in Africa, Asia or Latin America. This fieldwork typically involved key informant, focus group and community interviews and/or more formal surveys to allow an interdisciplinary analysis of a particular development issue. This analysis was expected to lead to research and development (extension, policy) recommendations for the partner organisation(s).

During most of the period described, ICRA did not formally and academically assess participants or the team reports. At the end of the programme, participants were awarded “certificates of attendance”. To some extent, the need to assess individuals was seen as incompatible with team output. Nevertheless, participants were encouraged to give feedback to fellow team members, using a variety of tools and facilitated sessions. In the early 2000s, the Centre introduced a more formal assessment procedure and awarded “diplomas” to those whose performance was deemed satisfactory. Forty percent of the overall assessment procedure was based on the workshop phase (12% on multiple choice tests; 12% on individual assignments; 16% on the coordinator’s assessment of overall contribution). Sixty percent was based on the field phase (20% a team grade, allocated by an external reviewer; 10% an individual grade, allocated by the reviewer; and 30% an individual grade, given by peer assessment from team colleagues).

11.6.3 Strengths, weaknesses and implications

The **strengths** of the ICRA programme can be summarised as:

- *Holistic systems approach.* Given that participants already had MSc/PhD qualifications, the programme did not focus in any particular discipline. Rather, it emphasised “meta-disciplines” that integrate disciplinary knowledge (stakeholder analysis, analysis of farm and innovation systems, planning, etc).

- *Interdisciplinary interaction and team work*, as carried out both in group exercises in the classroom, but especially during the team field assignment (allowing practice of skills in communication, teamwork and facilitation). The (later) use of peer assessment by fellow team members emphasised the value placed by the programme on teamwork.
- *Basis in real-world challenges*: allowing theory to be applied to the real world, where stakeholders are not neutral observers, passive beneficiaries or even analysts, but actors with roles to play and interests to defend. Participants gained practical experience in working with stakeholders, and facilitating stakeholder interaction.
- *Action research-learning cycles*: the design and flexibility of the fieldwork allowed practice in planning – implementation – observation – reflection.

Participants in the programme were considered by many organisations to have improved “vision” and management skills. Many participants referred to the field study as a key period to learn about themselves, about working with and leading teams, and about the realities of smallholder farming in general.

The **weaknesses** of the programme were mainly in terms of:

- *Cost*. The advertised cost of the programme in 2004 was EUR 29,500 per person, including travel/ accommodation of EUR 13,500; tuition costs of EUR 11,000 and costs of field study (mainly accommodation, transport) of EUR 5,000 (not including subsidies from the partner organisation).
- *Length*. Many of the mid-career professionals, at whom the programme was targeted, found it difficult to be absent from their home country and work place for 6 months – especially as the programme did not provide formal academic qualifications.
- *Organisational impact*. Until 2005, the ICRA programme only accepted one or two persons from any one country in any one year. While they were “mid-career”, participants often complained that they were not (immediately) able to influence their organisations. It was typically 5-10 years later that many participants found themselves as managers, where they could more influence organisational policies and management.

11.7 Implications for the Outreach Project

The 6 case studies described illustrate a number of strategies and features of programmes that can be described as “good practice” for academic programmes organised around experiential learning principles:

- *Integration of learning with ongoing development projects*. This requires the development of partnerships with suitable organisations (government, NGOs, private sector). The “real world” context allows analysis of complex problems and integration of the perspectives, actions of different stakeholders, as well as the opportunity for students to practice skills of interaction and facilitation.
- *Autonomous learning*. This requires the inclusion of more elective courses, tailor-made courses that can provide flexible pathways to allow learners to focus on areas of particular professional relevance or interest to them, or emerging issues as they arise in the context of development projects.

- *The development of social and facilitation skills.* This requires specialised, innovative courses, seminars or special workshops where group work, exercises and role plays allow practice of skill, with feedback from colleagues and personal reflection of abilities.
- *Interdisciplinary group work.* This allows the analysis of complex development problems from different disciplines, both technical and social. Group work also promotes the social and teamwork skills required for interactive learning.
- *Innovative assessment methods.* The abilities of students to work with colleagues and stakeholders can best be assessed by peers and collaborators, rather than by academic supervisors. Personal assessment also encourages reflection on learning processes.
- *Supportive institutional context.* The innovativeness of the above features of EL academic programmes inevitably challenges well-established policies or practices in many academic organisations. Development of linkages with the demand sector (i.e. graduates and employers of graduates, policy makers, etc), “champions” to push the boundaries within organisations, and specific events to explain new programmes and share experiences with colleagues, are all necessary to develop and maintain support.

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Appendix 1 Terms of Reference “Gap Analysis”

Background

The shift in focus from simple agro-production to value chains requires a complete shift in graduates’ knowledge and skills. Traditionally, universities have concentrated on training graduates in field production. Yet the recent trends of globalization, urbanization, ICTs, liberalisation, privatization, energy challenges, among others, demand that graduates are also skillful in post-field production activities such as agro-processing, marketing and negotiations. Moreover, the development of agro-processing and marketing has not received the level of research support it deserves. This has resulted in weak linkages between researchers and farmers and a mismatch between what the farmers want and actually obtain. Yet for farmers to benefit, agriculture should incorporate relevant and innovative aspects of agro-processing, and marketing that are practical to resource poor farmers in Sub-Saharan Africa (SSA). Agricultural practitioners thus require a different skills set for supporting smallholder farmers towards commercializing of their farming ventures. For universities to deliver such ‘problem solvers’ requires new approaches for inculcating the requisite skills in graduates to support farmer-led agriculture in a new World. What remains unclear is the current ability of university based staff to train in these approaches. The approach requires that students and faculty work closely with farmers, agro-entrepreneurs, policy makers and others on problems affecting agriculture and rural livelihoods.

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) invites suitably qualified individuals or firms to undertake an assessment of the current gaps in staff competence to support capacity building using an experiential learning approach. The assessment should provide information on the current gaps and strengths at selected African universities. These assessments will provide the base material for input into a series of experiential learning workshops to develop new curriculum to integrate such skills. The Consultant would also be expected to work with partners of the Outreach EC project, particularly Wageningen University and Agricultural Center, Netherlands to undertake a comparative analysis of good practice in integrating experiential learning into Agricultural curriculum. Specifically the team or individual will carry out the following:

Work in consultation with teams in participating institutions and ‘think-tanks’ to;

1. Source relevant information and undertake literature review of RUFORUM background and project related documents, particularly the Outreach ACP S&T project documents;
2. Develop a methodology and tools for implementing the assignment;
3. Throughout the assignment liaise with WUR;
4. Consult with selected partners RUFORUM universities including Moi University (Kenya), Bunda College of Agriculture (Malawi) and Makerere University (Uganda);
5. Review literature and describe the concept of experiential learning, key principles that guide experiential learning in a university context and the conditions that enhance or impede its application;
6. Consult with faculty and staff (of Faculties/Colleges of agriculture) at the targeted universities and key stakeholders on their understanding and

utilization of experiential learning approaches in agricultural training programmes. Faculty staff involved in the RUFORUM Community Action Research Programme in the selected universities should be included;

7. Assess current teaching and learning approaches being used in the Faculties/colleges of agriculture in the targeted Universities with respect to their effectiveness/relevance, strengths and limitations. Describe the conditions (including institutional issues) that promote the learning approaches currently being used and how these conditions may support or impede use of experiential learning. Given those conditions, what can be done to enable a shift towards more experiential learning in the targeted universities?
8. Identify and describe best practices of experiential learning and how such practices could be adopted and/or scaled up in African universities. Describe the methods and tools that have been successfully applied;
9. Identify the critical competence gap areas of faculty staff for them to fully apply experiential learning approaches as their normal way of training, and identify areas where current curricula limit experiential learning.
10. Identify and describe initiatives that attempt to address improvement of teaching/learning transaction with a view of moving towards experiential learning. What has worked and what has not worked so far; thus what lessons do we draw from those initiatives?
11. Make practical recommendations on how to initiate and promote experiential learning approaches in the Faculties/Colleges of agriculture in the targeted universities;
12. Make own arrangements for logistics including accommodation, local transport, stationery, computer services and any other as detailed in the contract;
13. Advise RUFORUM on issues related to the assignment in a timely manner.
14. Ensure confidentiality / proprietary issues; and,
15. Revise report based on comments from the Project Management Committee and/or RUFORUM management;

The following deliverables are expected:

16. Inception report including methodologies and tools that will be used in undertaking the assignment
17. Submit final report that includes among other things:
 - a. The concept and principles of experiential learning and conditions that enhance or impede its application
 - b. Current understanding and application of experiential learning in the Faculties/Colleges of agriculture in the targeted universities
 - c. Current teaching/learning approaches used and their characteristics
 - d. Conditions that may enhance or impede application of experiential learning approaches in the targeted universities
 - e. Best practices for application of experiential learning approaches in a university context

- f. Competence gaps for staff to fully engage in experiential learning
- g. Lessons learnt from other initiatives aimed at improving the teaching/learning approaches in universities
- h. Recommendations for initiation and promotion of experiential learning approaches in the targeted universities.

18. Present the draft report to RUFORUM Secretariat, Project management team and other stakeholders before submitting the final report.

Plan of Work / Duration

19. This assignment is expected to take a duration of 24 working days.

Appendix 2 Persons contacted

A 2.1 Persons Contacted, Makerere University (4-6 August 2010)	
Achileo Kaaya, Ph.D	Deputy Dean, Undergraduate Training, and Dept of Food Science and Technology.
Margaret Najjingo Mangheni, Ph.D	Deputy Dean: Research and Graduate Training, abd Agricultural Extension Education Dept
Francis Matsiko Biryabaho, Ph.D	Head, Agricultural Extension Education Department
Monica Karuhanga Beraho, Ph.D	Agricultural Extension Education Department
Kibwika Paul, Ph.D	Agricultural Extension Education Department
Florence Kyazze, Ph.D	Agricultural Extension Education Department
Isubikalu Prossy, Ph.D	Agricultural Extension Education Department
Bernard Bashaasha, Ph.D	Agricultural Economics and Agribusiness Department
Elizabeth Balirwa, Ph.D,	Agricultural Economics and Agribusiness Department
William Ekere, Ph.D	Agricultural Economics and Agribusiness Department
Denis Mpairwe, Ph.D	Head Animal Science Department
Fred Kabi, Ph.D	Animal Science Dept., and Director, Continuing Agricultural Education Centre (CAEC)
Charles Muyanja, PhD	Food Science and Technology Department
Peter Ebanyat, PhD	Soil Science Department, Principal Investigator, CARP
Moses Tenywa, PhD	Soil Science Department, and Director of Makerere University Agriculture Institute Kabanyoro (MUARIK)
Dr Samuel Oketch	Department of Veterinary Surgery and Reproduction, Faculty of Veterinary Medicine
Gillian Kasirye, PhD	Department of Curriculum, Teaching And Media, School Of Education
Cyamweshi Rusananwa Athanase	MSc Student, Soil Science
Uwizerwa Mathilde	MSc Student, Soil Science
Abwate Marthe	MSc Student, Soil Science
Francis Oggwang	Technician
Silvia Namazi	MSc Student, Crop Science
Geofrey Gabiri	BSc Student
Janet Achora	Senior Programme Officer, Women of Uganda Network (WOUGNET)
Claire Akun Ntwali	Programme Assistant, Networking, Advocacy and Grants Unit, RUFORUM

A 2.2 Persons Contacted, Moi University (9-11 August, 2011)	
Julius O. Ochuodho, PhD	Dept of Seed, Crops and Horticultural Sciences, and Dean, School of Agriculture and Biotechnology
John Robert Okalebo, PhD	Soil Science Dept., PI (RUFORUM) Outreach Project
Wilson Ng'etich, PhD	Soil Science Dept.
Anderson Kipkoetch PhD	Dept of Agricultural Economics (School of Business and Economics)
Peter Kisinyo, PhD	Acting HOD, Soil Science
Elizabeth Omami, PhD	Dept of Family and Consumer Science
Florence Wakhu-Wamungu, PhD	Dept of Family and Consumer Science
Violet Kadenyeka Mugalavai, PhD	Dept of Family and Consumer Science
Harold Anindo Rachuonyo, PhD	Dept of Animal Science
Peris Mong'are	PhD Student, Soil Science (CARP)
Mary Njeri Koech	Dphil Student, Soil Science
Boniface Wamalwa, Francis Murunga, Julius Manyama, David Rupau	Chairman, Vice-Chairman, Member, and Youth Leader (respectively), Bungoma Small-Scale Farmers Forum
Jairus Kadil, Ham Emese, Evans Etiang, Charles Etiang, Fanice Deke Omaset	"Acaun" (Teso farmers's organisation)
Peter Omaset	N2 Africa.
Esther Muthioni, Egas Jeremiah Nhamucho, Violet Omenyo, Janet Ogega, Joel Kiplagat, Joyce Mbingo, Margaret Osundwa, Josephine Marasa and Allan Shivachi	MSc and M. Phil students in Community Nutrition, Soil Science, Plant Breeding.
Esther Arunga, Felix Rolich, Wilkister Momita	D. Phil students in Plant Breeding and Biotech, Horticulture and Seed Science, respectively

A 2.3 Persons Contacted, Bunda College of Agriculture (12-17 August, 2010)	
Moses Kwapata, PhD	Principal
James Banda, PhD	Programmes Coordinator
Emmanuel Kaunda, PhD	Technical Coordinator, NEPAD Regional Fish Node-SANBio
George Kanyama-Phiri, PhD	PI, (RUFORUM) Outreach Project
William Mfitilodze, PhD	Dean Agriculture Faculty
Stanley Khaila, PhD	Dean, Faculty of Development Studies
Lisungu Banda	Programme Assistant NEPAD Regional Fish Node-SANBio
Msekiwa Matsimbe	Senior Programme Assistant NEPAD Regional Fish Node-SANBio
Priscilla Longwe	NEPAD Regional Fish Node-SANBio
Yolice Tembo	Crop Science Dept.
Jeremiah Kang'ombe, PhD	Head, Aquaculture and Fisheries Science Dept.
Alexander Kalimbira, PhD	Dean Postgraduate Studies, and Dept. Home Economics and Nutrition
James Sitima, PhD	Head, Dept of Agricultural Education and Development Communication
Fanuel Kapute, Joshua Valeta	PhD students, Aquaculture and Fisheries Science
Ellen Rakewaeh, Brian Mulenga, Blackson Jeke, Denis Kathabwahka	MSc students (Animal Science, Agricultural Economics, Horticulture)
Alice Chalemba	Programme Secretary, Programmes Coordination Office
Grace Malindi, PhD	Director of Agricultural Extension Services, MoAFS.
Jeffrey Luhanga, PhD	Controller of Agricultural Extension and Technical Services, MOAFS
Nodumo Dhlamini	Programme Manager, ICT, RUFORUM (Uganda)
Thengezi Kajiwa and Flora Mwase	Farmers, Dowa District

Appendix 3 Structure of the 3 university units visited

A 3.1 Makerere University⁴⁸

Makerere University (MAK) was established in 1922 as technical school, became the Centre for Higher Education in East Africa in 1935, was affiliated to the University College of London in 1949, and became an independent national university in 1970. It currently has about 30,000 undergraduate students, and 3,000 postgraduate students.

The University now consists of:

- 9 Faculties (Agriculture, Arts, Computing and Information Technology, Economics and Management, Forestry and Nature Conservation, Law, Science, Social Sciences, Technology and Veterinary Medicine);
- 6 Institutes (Adult and Continuing Education, East African Institute for Higher Education Studies and Development, Environment and Natural Resources, Social Research, Statistics and Applied Economics, Psychology);
- 5 Schools (Business, Education, Industrial and Fine Arts, Library and Information Science, Graduate Studies);
- 2 Centres (Child Health and Development, Human Rights and Peace);
- 1 College (Health Sciences)

The mission of the Faculty of Agriculture is “To provide innovative teaching, learning, research and services responsive to national and global needs”.

The mission of the graduate school of MAK is to:

- Oversee, coordinate and provide an enabling environment for quality graduate training, innovative research and communication of the research outputs.
- To foster and manage graduate training and research in the university units by promoting quality and development impact-oriented research, publication and services to meet the changing needs of society and for sustainable development.

Departments within the Faculty of Agriculture, Makerere University include:

- Crop Science (18 academic staff)
- Soil Science
- Food Science & Technology⁴⁹ (17)
- Animal Science (11)
- Agricultural Engineering (16)
- Agricultural Economics & Agribusiness (27)
- Agricultural Extension Education (14)

In addition to the above disciplinary departments, the Faculty also includes 2 operational departments:

- Makerere University Agricultural Research Institute (MUARIK)⁵⁰

⁴⁸ Information taken from <http://mak.ac.ug> and subpages; not all of which have been recently updated.

⁴⁹ Current plans are for the Department of Food Science and Technology to become a separate Faculty.

⁵⁰ Current plans are for MUARIK to be restructured, to include the 3 units of production, research and outreach.

- Continuing Agricultural Education Centre (CAEC)

The Faculty of Agriculture offers the following academic programmes:

- BSc. Agriculture, with five options: Animal Science, Agricultural Economics, Agricultural Extension and Education, Crop Science and Soil Science.
- B.Sc. Agricultural Engineering
- B.Sc. Food Science and Technology
- B.Sc Land Use and Management
- B. Agricultural and Rural Innovations
- B.Sc. Agribusiness Management
- B.Sc. Horticulture
- MSc Agribusiness Management
- MSc Agricultural Economics
- MSc Agricultural Engineering
- MSc Agricultural Extension Education
- MSc Applied Human Nutrition
- MSc Animal Science
- MSc Crop Science
- MSc Food Science and Technology
- MSc Soil Science

In addition, all Departments offer a PhD programme.

It should also be noted that the School of Education in MAK includes 3 Departments with relevant interests/experience in teaching methods:

- Curriculum, Teaching & Media
- Social Science and Arts Education
- Science and Technical Education

A 3.2 Moi School of Agriculture and Biotechnology⁵¹

Moi University was established in 1984. The university now has two 2 constituent colleges, (Kabianga and Narok) and eight (8) Satellite Campuses, (Nairobi, Kitale, Kericho, Southern Nyanza, Central Kenya, Odera Akang'o, Coast and Northern Kenya campus). It comprises Schools Aerospace Science, Agriculture and Biotechnology, Education, Business and Economics, Education, Engineering, Environmental Studies, Dentistry, Human Resource and Development, Information Sciences, Law, Medicine, Natural Resource Management, Public Health, and Science. Current students number about 19,000 undergraduates, and 3,000 postgraduates, with these numbers expected to rise to 42,000 by 2014/15.

The mission of the University is “To preserve, create, and disseminate knowledge, conserve and develop scientific, technological and cultural heritage through quality teaching and research; to create conducive work and learning environment; and to work with stakeholders for the betterment of society.”

The School of Agriculture and Biotechnology at Chepkoilel Campus in Eldoret was established in 1992 as a graduate school, and now has some 50 academic staff and about 700 students (of which about 100 are postgraduates) in 5 departments:

- Department of Seed, Crops and Horticultural Sciences
- Department of Soil Science
- Department of Biotechnology
- Department of Family and Consumer Sciences
- Department of Animal Science

The School of Agriculture offers the following programmes⁵²:

- BSc Agriculture
- BSc Horticultural Science and Management
- BSc Seed Science and Technology
- BSc Soils and Land Use Management
- BSc Agriculture Biotechnology
- BSc Apparel and Fashion Technology
- BSc Food Science and Nutrition
- BSc Food Service Technology
- BSc Animal Science
- BSc in Agricultural Extension Education⁵³
- MSc Seed Science and Technology
- MSc Agronomy
- MSc Plant Protection
- MSc Plant Breeding & Biotechnology
- MSc Horticulture
- MSc Soil Science
- MSc Home Science Education
- MSc Community Nutrition
- MSc Apparel and Fashion Design

⁵¹ Information taken from <http://www.mu.ac.ke/academic/schools/agriculture/>, and the current (2010) prospectus of the School.

⁵² Bachelor programmes are 4-year, MSC are 2-year programmes.

⁵³ New programme, developed with the University of Oklahoma

- MSc Animal Nutrition
- MSC Animal Production
- MSc Dairy Production
- MSc Meat Production
- PhD Agricultural Entomology
- PhD Seed Science
- PhD Plant Breeding
- PhD Crop Ecophysiology
- PhD Plant Pathology
- PhD Weed Science
- PhD Soil Science

The School of Agriculture and Biotechnology also offers a number of short courses, as well as diplomas in Organic Agriculture, Agriculture and Horticulture, Sustainable Agriculture, Community Development and Food Science and Nutrition at has an extensive diploma programme, offered at the different and decentralised campuses of the University.

Note: The Moi University School of Education includes Departments of Technology of Education, Educational Psychology, Educational Management and Policy Studies, and Curriculum, Instruction and Educational Media.

A 3.3 Bunda College of Agriculture

Bunda College of Agriculture (BCA) is one of the five constituent Colleges of the University of Malawi (UNIMA). The other Colleges are Chancellor College, The College of Medicine, Kamuzu College of Nursing, and the Malawi Polytechnic.

BCA was established in 1967 as a multi-disciplinary University College to produce middle-level personnel for the agricultural industry. The focus then was to train Ordinary level (O-level) school leavers in basic crop and livestock production and extension methods in order to reach the smallholder farmers who produce an estimated 80% of food in Malawi. The objective was to improve food production, food security and nutrition of the people⁵⁴.

The mission of BCA is currently: to advance and promote knowledge, skills, self-reliance and sound character for: sustainable food production and utilization; improving income, food security and nutrition; and conservation and management of biodiversity, the environment and natural resources, through the provision of information services, teaching and training, research, outreach, consultancy and sound management in response to national needs⁵⁵

Current plans are for BCA to merge with the Natural Resources College, Chitedze Research Station, and the Agricultural Research and Extension Trust (ARET) to form the Lilongwe University of Agriculture and Natural Resources (LUANR).

BCA has 3 faculties with 12 Departments:

- Faculty of Agriculture:
 - Agricultural Engineering Dept. (13 Academic Staff⁵⁶)
 - Animal Science Dept. (12)
 - Basic Sciences Dept. (7)
 - Crop science Dept. (16)
 - Home Economics & Human Nutrition Dept. (14)
- Faculty of Development Studies
 - Agriculture and Applied Economics Dept. (11 academic staff)
 - Agriculture Extension Dept. (8)
 - Agri-business Dept. (7)
 - Language Development and Communication Dept. (9)
- Faculty of Environmental Sciences
 - Aquaculture & Fisheries Science Dept. (13 academic staff)
 - Forestry & Horticulture Dept. (11)
 - Natural Resources Management Dept. (11)

And the Centre for Agricultural Research and Development (8 academic staff)

⁵⁴ Taken from http://www.bunda.unima.mw/about_us.htm

⁵⁵ Taken from <http://www.bunda.unima.mw/index.htm>

⁵⁶ Information on staff numbers taken from the BCA website, last updated 2008.

In addition to the Deans and Deputy Deans of each Faculty, there are Deans for Student Affairs; Postgraduate Studies and Research, as well as the Programmes Coordinator. The Principal leads the College.

BCA offers the following academic programmes:

- Diploma in Gender and Social Development
- BSc. in Agribusiness Management
- BSc. in Agriculture (with options in: Agricultural Economics; Agricultural Engineering; Agricultural Extension; Animal Science; Crop Science; Family Science; Nutrition and Food Science)
- BSc. in Aquaculture and Fisheries Sciences
- BSc. in Environmental Sciences
- BSc. in Forestry
- BSc. in Horticulture
- BSc. in Irrigation Engineering
- BSc. in Natural Resources Management
- MSc. in Agribusiness Management
- MSc. in Agricultural & Applied Economics (with options in: Agricultural Marketing & Trade; Agricultural Policy & Development; and non-thesis)
- MSc. in Agricultural Extension & Rural Development
- MSc. in Agroforestry
- MSc. in Agronomy (options in: Agronomy; Plant Breeding)
- MSc. in Animal Science
- MSc. in Aquaculture & Fisheries Science
- MSc. in Crop Protection (options in: Entomology; Pathology; Weed Science)
- MSc. in Horticulture (Biotechnology)
- MSc. in Nutrition & Food Science (options in: Food Science; Human Nutrition)
- MSc. in Social Forestry
- MSc. in Soil Science
- PhD in Agricultural & Resource Economics
- PhD in Agriculture & Applied Economics
- PhD in Animal Science
- PhD in Aquaculture & Fisheries Science
- PhD in Biotechnology
- PhD in Rural Development (Agricultural Economics or Agricultural Extension Option)
- Postgraduate Diploma in Horticulture
- Postgraduate Diploma in Seed Technology

Note: the Chancellor College of UNIMA includes a Faculty of Education, which in turn includes a Dept of Curriculum and Teaching Studies, as well as Faculties on Social Science and Humanities.