LEARNING TO MAKE CHANGE
Developing Innovation & Change Competence in African Universities

Jürgen Hagmann, Paul Kibwika,
Adipala Ekwamu

LEARNING TO MAKE CHANGE
Developing Innovation & Change Competence in African Universities

Jürgen Hagmann

P

Institute for People, Innovation and Change in Organisations (PICOTEAM),
ICO Southern Africa, Postnet Suite 341, Pbag X10,, Elarduspark 0047, Pretoria /
South Africa, Jurgen.Hagmann@picoteam.o

Paul Kibwika

Institute for People, Innovation and Change in Organisations (PICOTEAM),
PICO Uganda, P.O. Box, 16485, Wandegeya, Kampala, Uganda. Paul.Kibwika@picoteam.org

Adipala Ekwamu

Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)
P.O. Box, 7062, Kampala-Uganda, eadipala@secretariat.org

Abstract

There appears to be generally a broad consensus that the multidimensional nature and complexity underlying the critical problems of Africa such as poverty, food insecurity and disease urge for integrated and holistic views and approaches to deal with the challenges successfully. Innovation systems approaches are promising, but in practice they require new mindsets and competences for systemic thinking, institutional interfaces and partnerships. Often curriculum review is seen as a solution to such new demands, but in reality, even before considering curriculum review, it is critical that universities deal with the basic elements of changing mindsets, and building a new vision and new skills for training and research amongst the academic staff. This paper is based on a 'personal mastery/soft skills experiment towards reorienting mindsets and building complementary skills among university lecturers for holistic and interactive learning; and impact oriented research and consultancy. The initiative was conducted with 26 lecturers from three agriculture related Faculties of Makerere University over a period of two years. Overall enhancement it enhanced personal and professional development profiles of the lecturers which resulted in more interactive teaching, a move towards action research, and more marketable development consultants and facilitators. Specifically, the assessment brought out the following outcomes: enhanced self-awareness and taking action to develop their full potentials; the abilities to influence change in the university system through feedback; taking initiative to work in team and promote peer-learning; facilitation skills for interactive learning and collective action processes; overcoming fear to try out new things as reflective practitioners; communication for problem solving – negotiation, conflict resolution; and thinking beyond disciplinary boundaries to influence development impact through action research and process consultancy.

1   Introduction

African universities today especially in the sub-Saharan Africa are being challenged on their relevance to solving the pervasive problems of poverty, food insecurity and disease in the region. These challenges are complex and characterised by interaction of many social, political and technological elements. African universities continue to turn out graduates every year and generate technologies and knowledge ostensibly to deal with such development, without much evident impact. One of the major problems of African universities relates to their structural set-up and orientation of their training and research programmes which does not match with the systemic nature of problems they are meant to address. We live in an essentially 'systemic world' characterised by multiple causation and complex feedback, yet the dominant educational structures are based on fragmentation rather than connection, relationship and synergy (Sterling, 2000). This is a clear reason for wanting to do things differently.

African universities suffer from lack of systemic thinking, integration of disciplines in training and research, and abilities for collective action to address multi-dimensional problems to influence development change. Because of these inabilities, the universities remain an 'ivory tower' for academicians far detached from the development process. While the academic quality of their graduates is often undoubted, application of the acquired academic knowledge to bring about development change in society is highly challenged. Thus, the relevance of the African university to the complex development challenges of the 21st century is seriously contested. Such situations call for complete reinvention of the African university to deal with the fundamentals of organisation life – thinking and interaction, roles and relationships, learning and research approaches, beliefs and values (Wood 1995). Many universities move quite rapidly towards curriculum review as a means of reforming for relevance rather than starting with reflective exploration of the range of needs of practitioners themselves (Guiton, 1999). Before considering curriculum review, it is critical that they deal with the basic elements of changing mindsets, building new skills for training and research amongst the academic staff. This is so because to respond to the learning requirements of individuals for a world society in the twenty-first century there is need for innovation in the learning process (Boyatzis et al., 1995).

This paper is about an experiment to develop systemic competence & skills among academic staff at Makerere University to be more innovative in training, research and consultancy with the goal of enhancing the university impact on development change. The experiment was conducted with 26 lecturers from three agriculture related Faculties (Agriculture, Veterinary Medicine and Forestry and Nature Conservation) over a period of two years. It emerged out of dialogue for improving the quality of agricultural graduates to champion development change among smallholder farmers in Eastern and Southern Africa.

1.1   Background to the initiative

Since the early 1990s, the Rockefeller Foundation (RF) through its programme, the Forum on Agricultural Resource Husbandry (FORUM), aimed at developing mid-level professionals with Masters degrees in agriculture related disciplines as a strategy to address the challenges of poverty and food security in five Eastern and Southern African countries (Kenya, Uganda, Malawi, Mozambique and Zimbabwe). After ten years, there was no convincing evidence that the programme would achieve its intended impact. It was assumed that the problem was the inappropriate curriculum. RF therefore convened a workshop in 2001 at Bellagio, Italy to discuss curriculum reforms to produce graduates who can champion rural transformation in Africa. The workshop was attended high level managers & deans of 17 African universities. The workshop was facilitated by the lead author of this paper in a way that the focus was on the required competence profile of the future graduates in the future market so to be able to make a difference in development. This line of thought brought the discussion a different track than focusing on the curriculum in the first place. A shared insight from the discussion was that present training in agricultural faculties emphasized only technical skills (hard skills) of agriculture and was grossly deficient of social skills (soft skills) for enhancing performance on the job (Patel, et al., 2001).

For the graduates to influence development change in societies, they would need to have much more capacity to integrate across disciplines and possess both "hard" and "soft" skills. Specifically, they have to be critical thinkers, creative and responsible to develop themselves, team players able to facilitate learning in groups and communities, and as well possess substantial management capacities

and excellent communication skills (Hagmann, 2002). It was also recognised that the university lecturers too lacked the 'soft' skills since they were largely a product and part of a system devoid of such skills. In this situation, curriculum review would not necessarily generate the desired graduates profiles, unless the lecturers were able to think and facilitate learning in a different way themselves.

It was evident that the dimension of change was not to be tackled with curriculum review alone. A competence development programme for the academic staff to target a shift towards systemic thinking that allows for broader integration of disciplines and knowledge systems and to impart skills for facilitating interactive learning as well as to change mindsets and build values that support the new ways of thinking and learning was the first step towards producing the 'new' graduates. Other changes in the system will then emerge and be dealt with, but without changing the lecturers themselves the impact would be minimal. A programme addressing this challenge therefore needed more than just developing skills. The competence required needs to be built on changing values and attitudes for a comprehensive behavioural change.

1.2 Personal Mastery as a Response

Based on the lead author's experience in facilitating systemic interventions for change particularly in research and extension organisations, an approach centred around personal mastery was deemed essential for laying the foundation for more holistic change in that situation. According to Senge (1990) personal mastery is a discipline that aims to enhance growth and personal vision in individuals as base to improve their performance in the job and their satisfaction inn life. People with high levels of personal mastery are acutely aware of their ignorance, their incompetence, and their growth areas; they are more committed to, and have a broader and deeper sense of responsibility in their work. It is also termed "soft," to flag that the notion diverges from normal social science concepts, in being based in part on unquantifiable concepts such as intuition and personal vision. Soft skills in this sense also refer to cross-cutting management skills necessary for every professional to be effective in an organizational context. These are the skills that enhance communicative, interactive and facilitative abilities to influence change in society.

The programme was then commonly referred to as the Personal Mastery/Soft Skills (PM/SS) learning programme. Such skills are grossly missing in the university system and yet they are required by graduates to facilitate participatory processes at community and other levels equally (Moyo and Hagmann, 2000). Incorporating those skills in the curriculum calls for teachers/lecturers with new ideas and competences to innovate. The Makerere experiment was designed to be a holistic change programme integrating six thematic areas, namely:

- personal development;

- team development;

- organisational development;

- communication;

- facilitation methods and techniques; and

- technical aspects such as interactive learning, action research and process consultancy.

Facilitation and **feedback** were centre stage and crosscutting elements integrated across themes.
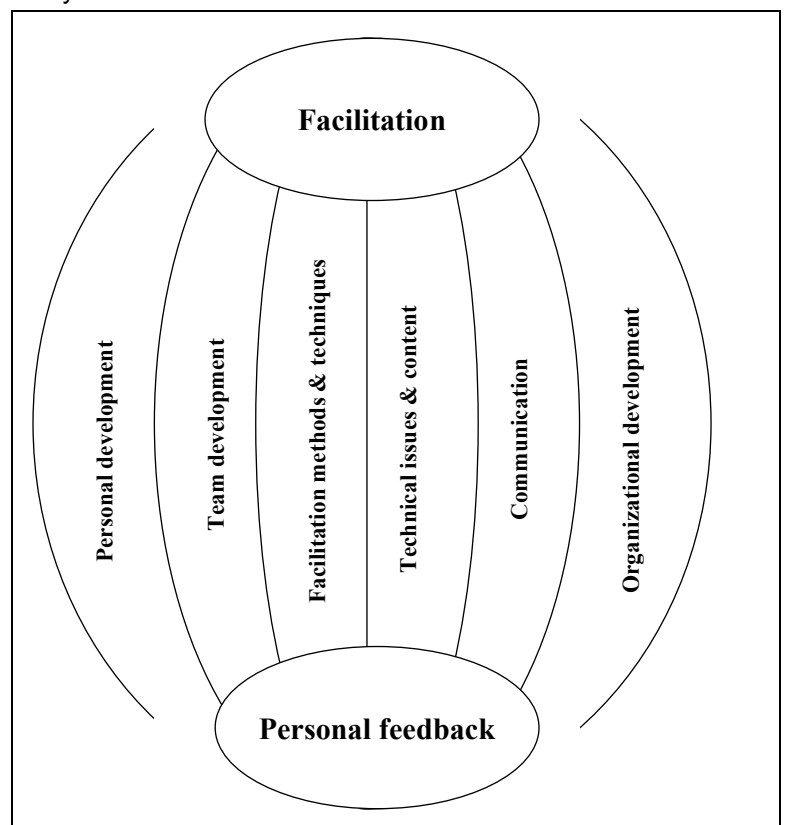
- **Personal development** sought to focus on individual social aspects such as emotional intelligence as an internal driver for enhanced performance and productivity. Jaeger (2003) found a strong relationship between emotional intelligence and academic performance. And as Bernett (1994) argues, the university has become less a place of broad educational and personal development, via an interactive process deemed valuable in itself, and more a place in which knowledge is viewed as a commodity, picked up by those who pass through seeking the latest technical competences and analytical capacities. Personal development therefore provides a wide range of soft skills to increase one's performance in personal and professional engagement.

- **Team development** aimed to develop individual characteristics to enable effective teamwork, understand team dynamics and help manage teams for improved organisational performance.

- **Facilitation methods and techniques** focused on building skills for facilitating learning and other collective action processes. The prime role of the staff developer is to encourage staff to be at ease with the notion of mixing approaches from across the continuum (Orsmond and Stiles, 2002). Facilitation methods and techniques were intended to provide alternative approaches to the conventional lecture method of teaching.

- **Communication** was viewed as part of a set of personal attributes. Knowledge about teaching is primarily communicative rather than instrumental, i.e. it is about understanding ourselves, others, and the norms of the organisation, community, and society in which we live (Cranton and King, 2003). Emphasis was placed on application of communication tools for problem solving. Negotiation skills and conflict resolution are examples of such communicative capacities.

- **Organisational development** focused on understanding organisations as social systems. Inducing and managing change and developing adaptive capacity for organisations to cope with dynamic environments were key components. The peculiarity of continuing professional development (CPD) in universities is that while universities are major providers of CPD for other professions, this activity has had little influence on the rhythms of its own institutional life (Clegg, 2003). Blandy et al., (1985 quoted by Clegg) assert that innovation, flexibility and adaptability to change require attention not only to the people in the organisation but also to the social system within which they work. Organisational development therefore gives a broader view of change management.

- **Technical issues and content** targeted the building of technical skills in facilitating and managing interactive learning processes, designing and conducting impact oriented research (action research), and improved consultancy skills.

The design of the personal mastery / sot skills programme around those components provided a solid foundation for change in mindsets, thinking and new competences for facilitating change and innovations. However, the motivation for lecturers to improve their teaching is generally low. Thus, a good strategy to motivate lecturers to engage in the programme was required.

The incentive for lecturers to improve their teaching skills is low as university promotions are largely based on publication in peer-refereed journals and teaching by itself counts less. Research and consultancy form the major part the staff livelihood and were therefore used as the "carrot" to sustain motivation for engagement in the learning to change. Ultimately most of the lecturers want to supplement their meagre salaries with consultancies. A major motivation therefore is to become better consultants who are more marketable and are able do things which are in demand. The other source of income and freedom in the system for lecturers are research projects. So, becoming better in doing relevant research which is easier to be funded is another motivator. Fortunately for both, facilitation and process skills are essential, but these need to be practised in a 'safe' space where blunders do not destroy the market. The classroom provides such a safe space. So, the motivation to improve teaching comes out of the motivation to practice facilitation with which a better livelihood can be created. This 'motivation system' worked extremely well as it created a win win situation for the lecturers, for the students who enjoyed better training and for the university as the relevance and impact increases.

2 Design of the intervention

Designing a learning programme that aims at holistic change in terms of mindsets, values and practice is comparable to the reconstruction of the whole person. With this picture of reconstruction, the PM/SS learning was modelled in the frame of constructing a house – the personal mastery house (Figure 1). Basically the house had three major parts: foundation, pillars and roof. The foundation of the house is the shared vision, values and commitment of the stakeholders, i.e. learners, managers, funders and facilitators. The vision to which all stakeholders were committed is to enable Makerere University influence development through training, research and service to community. The pillars are four complementary learning approaches: learning workshops, practice, peer-learning/coaching groups and self-learning. A sequence of four learning workshops were intermitted with practice though peer learning and self-learning.

Workshops are for engaging in conceptual issues, skills building, reflection and synthesis of lessons learnt and joint planning for continued learning. The learning workshops were conducted during semester break and facilitated by two external facilitators (Jürgen Hagmann and Ulrike Breitschuh) over a period of 1½ years. The first workshop lasted 10 days to build cohesion and team spirit while the other workshops lasted 5-7 days each. Skills introduced in the workshops were practiced during the semester, the classroom providing a 'safe' environment that allows for making mistakes without risk of losing face (cf. Hagmann and Almekinders et al., 2003). Peer-learning/coaching groups deepen learning in specific areas of interest. Four peer-learning groups were formed to further learning in areas of: enhancing undergraduate training, enhancing graduate training and research, facilitating community learning initiatives, and facilitating institutional change processes. For each period of practice, a general meeting was convened for sharing experiences across peer-learning groups. Self-learning is for individual exploration by sourcing and reading more about the concepts discussed in the learning workshops. The roof represents anticipated outcomes of the learning process, which include better teaching/training approaches, facilitation skills, advisory skills and personal development.
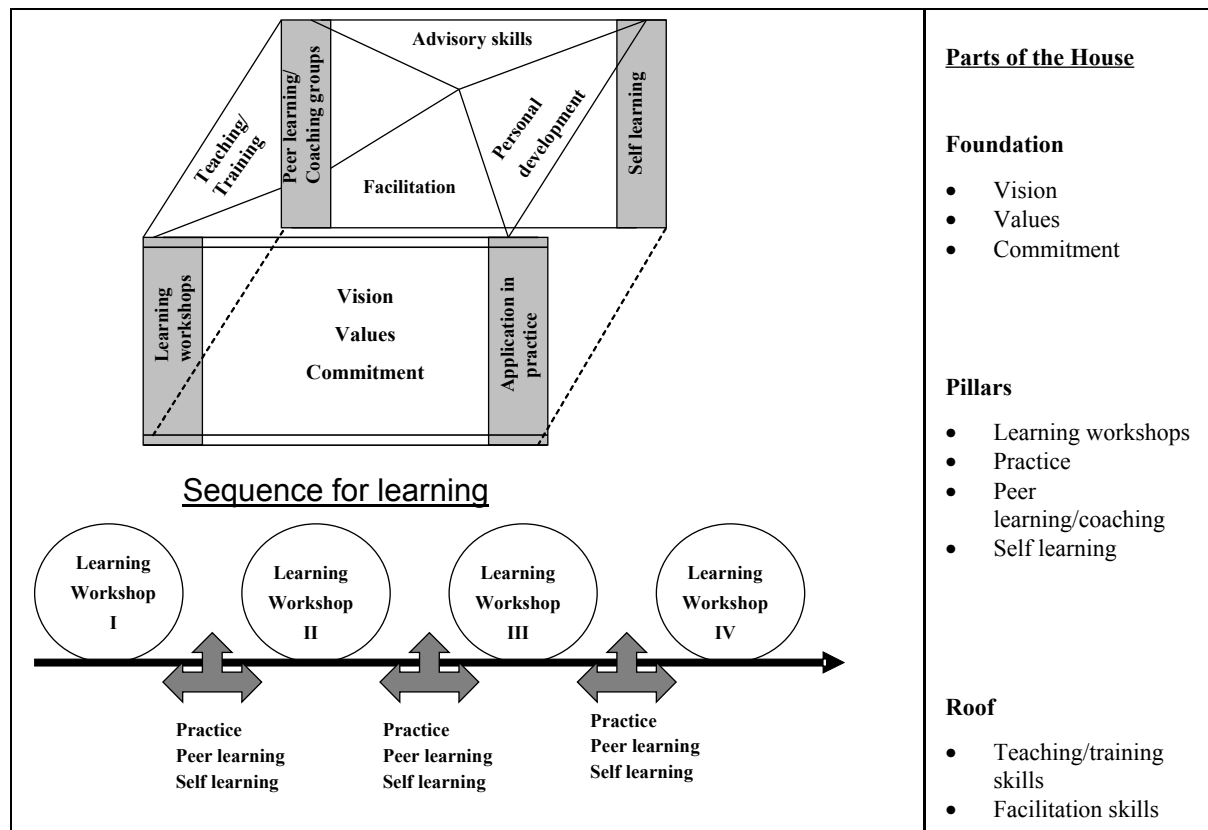
Figure 1: The PM/SS / innovation competence learning model (Hagmann 2002)

2.1 Setting up an intervention and methodology

On behalf of all Ruforum member universities, Makerere University was selected to pilot the programme with a view of scaling out to other universities later. At the time in 2002, Makerere

University was undertaking several other reforms to make itself relevant to changed development contexts resulting from policies particularly decentralisation, privatisation and liberalisation of service delivery. A study commissioned by the university (Asiimwe et al., 2001) had already pointed out glaring gaps between university training and the job competences required by employers, especially the District Local Governments (DLGs). On this basis, the 'I@mak.com' project was initiated in the effort to realign university training and ensure that research would be more relevant to national development needs, particularly the DLGs. The PM/SS programme was therefore perceived as complementary to on-going efforts, but with an emphasis on staff development. The programme was set-up along the design principles and values of an organisational change pilot project, owned and driven by the mangers of the University as their own experiment to improve performance of the University. It was also designed as a rigorous action research project where the learning was fed back into the process with very short feedback loops. The design process comprised the following 6 steps:

2.1.1 Step 1: Consultations with university managers and selection of participants

Aware that success of such a programme largely depends on the support from management, consultations were conducted with the Deans and Heads of Departments (HoD) to enhance curiosity and local ownership of the programme at Makerere University. The overall objective of the consultations was to enhance ownership of the programme by Deans to pursue it as their experiment, and not just another donor driven programme. Specifically, the consultations aimed at: 1) explaining the background, purpose and rationale of the programme to a wider group of leaders and potential participants, 2) establishing the relevance of the programme, 3) discussing how such a programme would be set up to fit into the broader institutional context, 4) developing criteria for selection of participants, and 5) agreeing on how the programme would be monitored, evaluated and institutionalized. Among those consulted were: Deans, HoD, and selected academic staff members in the targeted faculties, the academic registrar, managers of other innovative projects in the university, university planners, and other stakeholders outside the university system.

The consultations expanded the shared vision beyond the few people who attended the Bellagio meeting. In these consultations, the Deans and HoD committed themselves and undertook to select the participants for the programme, monitor its implementation and participate in its evaluation. With the understanding that the learning programme would extend over a period of 1½ years, commitment to go through the entire learning cycle was agreed to be criterion for participants' selection. The target was 25 participants in total, with representation of all the departments in the three core participating faculties. The Deans, in consultation with their HoD, nominated the participants to the programme (Table 1). Since the programme aimed at improving learning in the university, the Faculty of Education was also invited to nominate a maximum of two participants.

On realising the fundamental change that the programme had initiated in their personal lives and professional careers, the participants coined the identity 'Win26'. Win – standing for Windsor hotel where the learning workshops took place and 26 signifying the pioneer members of the programme. Thereafter, they were commonly referred to as 'Win26', or simply 'Winners'.

2.1.2 Step 2: Sustaining ownership with report back and learning groups

As a strategy for sustaining ownership and accountability, programme participants conducted regular feedback to management and Faculties. At the end of every learning workshop, the managers in the participating faculties and top executives, including the Vice-Chancellor, were invited to a half-day session (gallery exposure) where the programme participants demonstrated and explained the relevance of what had been learnt to invited guests. This was arranged in form of a gallery using visual materials with key messages from the learning. The platform provided a mechanism through which the managers could monitor and update themselves with the processes and outcomes of the programme throughout its implementation.

To create awareness beyond the managers, learning groups from each faculty organized feedback to their faculty colleagues to share some aspects of the PM/SS programme they found to be critical to improvement of the system. In essence, this was a mechanism for ongoing sharing with other staff and at the same time provided accountability to the organisation. They also practiced feedback with their managers and colleagues to influence the way things are done in their faculties. The inspiration from these activities challenged the managers to support the programme more. For example, the

Faculties of Agriculture and Forestry and Nature Conservation sponsored 2-3 day workshops for in-depth exposure of other staff to PM/SS.

2.1.3   Step 3: Synthesis and self-evaluation

As an action learning programme, reflections to draw lessons learnt were a key feature of the programme. In peer-learning groups and as individuals, participants reflected on their learning and collectively synthesized the lessons learnt. Synthesis brought out key characteristics or qualities of teams and individuals as regards towards the desired behavioural change.

2.1.4   Step 4: Report back to Managers and assessment process

Since it was agreed in the beginning that the programme is owned by the Deans as their experiment, the responsibility to evaluate the programme was brought back to them at the end of the learning programme. The managers were consulted on how to evaluate the programme "objectively". Through these consultations, they agreed to create an "independent" assessment team (comprising of staff who were not part of the programme) to give the perspective of an "outsider".

The consultations extended beyond the participating faculties to include the Faculty of Social Science, the School of Graduate Studies and the Academic Registrar. Through this process, the managers nominated an independent assessment team of 12 members, comprising of two members from each of the consulted units except the Faculty of Social Science and School of Graduate Studies which presented one member each. In a facilitated process, the team developed assessment criteria based on the vision of the programme, did the assessment through field interviews and reported their findings to the managers.

2.1.5   Step 5: Developing assessment criteria and conducting the assessment

In a two-day facilitated workshop, criteria for assessing the programme were developed within the context of the vision of the programme. Reference points were the profile of the preferred graduates – with the Bellagio outline (Box 1), purpose and content of the programme, and current and future university competence challenges.

Box 1: Additional qualities required of agricultural graduates

Beyond the technical knowledge and skills in agriculture, the preferred graduate should:

- Display ethical conduct based on fairness, honesty and responsibility as core values
- Display entrepreneurial skills and innovativeness in pursuance of personal and professional goals
- Communicate effectively with different categories of people including superiors, peers, subordinates and clients
- Possess sound management and leadership competence to promote efficient resource utilization
- Think critically and in a systemic perspective
- Build and facilitate high performing teams to promote collective action and achievement of common goals

The team developed the assessment criteria and sought to find evidence for the following:
- Development of personal skills and confidence
- Establishment of a feedback culture with students and among colleagues
- Innovations in teaching, research and consultancy
- Interdisciplinary engagement in research, training and consultancy
- Teamwork and networking
- Enhancement in management qualities
- Being exemplary or role models in professional conduct
- Pro-activeness in responding to opportunities and expectations of stakeholders

In addition to the above, the assessment team also explored issues for scaling up the programme within the university. Emphasis was placed on finding evidence of improvement as opposed to external judgements.

The team split into three small groups of about four members, each group conducting the assessment in one faculty. To encourage exposure of the team members to other faculties, the groups were formed and allocated to the respective faculties in a way that would prevent them from conducting assessment in their own faculty. In each faculty they interviewed programme participants, some of their peers who did not participate in the learning programme, and managers (Deans and HoD), and held group discussion with some students taught by the programme participants. The exercise took an average of three days (not full time). Outcomes of the assessment were reported to the Deans and programme participants as input for planning scaling up.

It is also noted here that aside from self-assessment and assessment by the independent team, the programme was also rigorously assessed as an action research process right from the start. The learning programme was monitored and assessed as part of a PhD research by Paul Kibwika. He applied participant/process observation, individual interviews of the programme participants and feedback as data collection tools.

2.1.6 Step 6: Planning the scaling up and institutionalisation

The independent assessment team reported its findings to Deans, HoD together with the programme participants. Based on reported results, options for repackaging the PM/SS programme to involve specific categories of staff i.e. lecturers, managers and support staff were also suggested. Targeting all these categories however required support of the top-level management.

To solicit top level support, a two-day exposure workshop on the application of some elements of the PM/SS was organized for the top executive managers (i.e. Vice-Chancellor, Deputy Vice-Chancellors, University Planner, University Secretary, Academic Registrar and some Deans of Faculties). By engaging them in practicing some tools such as giving and receiving feedback to enhance staff performance, team building, and use of emotional intelligence, they appreciated more how the PM/SS type of programme could enhance their management capabilities. With this and previous exposures, a verbal commitment was made to anchor PM/SS the newly created Human Resource Department (HRD) to allow for institutionalisation and targeting of the programme to various categories of staff.

3 Outcomes and impacts of the PM/SS programme

Based on the three different assessment approaches discussed above (i.e. self-assessment, independent team assessment, and as an action research process), the major outcomes and impacts of the programme include:
1. self-awareness and taking action to develop their full potentials;
2. abilities to influence change in the university system through feedback;
3. taking initiative to work in team and promote peer-learning;
4. facilitation skills for interactive learning and collective action;
5. overcoming fear to try out new things as reflective practitioners;
6. communication for problem solving; and
7. thinking beyond disciplinary boundaries to influence development impact through action research and process consultancy.

These are expounded below.

3.1 Self-awareness and discovery of hidden potentials

At the end of the programme, participants had a better self-understanding of personality and behaviour and how these influence interaction with others, including students. Self-awareness challenged individuals to critically analyze how their personalities influenced the way they do things and helped them appreciate why other people do things differently. This was the basis for conscious and opening up to constructive feedback from peers for self-improvement in personal and professional performance. For example, a participant explained:

> "I now appreciate differences among people. These days when I pose a question in class, I allow students to explain different perspectives based on how they understand the question. I do not immediately dismiss any answers as wrong but I allow a bit of discussion around the issue and eventually we agree on possibilities in that context".

Self-awareness and appreciation of others' personalities and abilities is the foundation for seeking complementarity through teamwork, hence paving the way for integration of different bodies of knowledge to deal with complex situations. It is also, arguably, the "glue" for social relationships based on trust and empathy as stressed by the independent assessment team.

The trigger for this rise in self-awareness was largely the exposure to personal development concepts and tools related to emotional intelligence, the use of the Johari window technique, and feedback. Elements of emotional intelligence, i.e. self-awareness, self-regulation, motivation, empathy and social skills focus on understanding personal characteristics for enhancing individual and team performance in an organisational set-up. Social life (as argued by Emile Durkheim and many others following his lead, cf. Bellah [2005]) is intrinsically performative; every human being aspires to be recognised as a performer in whatever they do. Emotional intelligence then induces self-reflection on the extent to which personal characteristics are oriented towards effective performance. The Johari window and feedback are tools that one can use to increase emotional intelligence.

What made a difference here is the way these concepts were applied to reflect on personal characteristics. It was not about lecturing these elements, but about engaging people to explore themselves and relate it all to their environment. The facilitation of the learning programme was continuously interconnecting the issues and deepening in a systemic manner rather than working on modules. This 'systemic capacity development' made the difference:

> "This was not my first time to hear about Johari window but the way it was introduced and applied here made me understand why I do things in certain ways and why other people also do things differently. It challenged me to understand myself more."

The underlying message behind self-awareness is that "if you want to change others, you must first change yourself." Training, research and development are all about influencing social and technical change – implying that those engaged in such processes need to reflect on their values and their thinking to change themselves in order to influence others to change. We cannot critically reflect on an assumption until we are aware of it, we cannot engage in discourse on something we have not identified, and we cannot change a habit of mind without thinking about it in some way (Cranton (2002). Reflection is a key competence for influencing learning and development that is often taken for granted. It is always assumed that everybody can reflect, but doing so for purposes of life-long learning requires some guiding principles that have to be learnt.

3.2   Influencing change from within through feedback

Giving personal feedback that is intended to enhance personal growth and improvement of systems is a quality that was developed through the programme. Personal feedback created a new pathway for enhancing mutual capacities, so that the group could build on the strengths of each person to achieve a common goal. This was found relevant in all spheres of life; opening up to improve trust and relationships among colleagues, building a non-threatening relationship with students for interactive learning in teaching, and building a more effective and transparent system where the subordinates and superiors interact in an interdependent manner in management. This is a shift from the common thinking that portrays feedback as being negative, demoralizing and provocative. Illustrating this shift, one of the participants commented:

> "All along, I have known feedback as negative, but now I know it is something positive and rewarding to the person receiving it". Another one too said: "Before, I did not know how to give feedback without hurting the person receiving it. But now I can give feedback that is motivating and encouraging to the person receiving it".

In relation to learning and change, feedback is important to challenge the hierarchical and power dominated cultures that suppress the freedom to explore and question conventional thinking. Learning is about exercising freedom and gaining space to explore and to challenge common knowledge. But most African cultures and systems are so power and hierarchy dominated that this freedom is suppressed right from the family level and extended to the education system. One participant emphatically put it like this:

> "Feedback is not part of our culture. The families we grew in and the schools we went to are so hierarchical and do not encourage free interaction, especially with superiors, to be able to provide feedback. We do not even do it with our wives and children. We have to start building this culture now".

In African societies, children are not expected to challenge their elders as this is interpreted as mischief or being disrespectful. Similarly, subordinates are not expected to challenge their leaders. This results in a culture based on chieftaincy leadership, which stands in the way of honest and realistic feedback to the leadership. The same scenario exists in the education system, where normally students have no freedom to challenge their teachers. In the university context, feedback provides space for lecturers and students to interact more freely to exchange knowledge and information and in general co-creates an environment for better learning. The independent assessment team observed an emergence of a feedback culture among the programme participants. They proactively sought the opinions of students and colleagues for the purpose of improving their teaching methods. At the institutional level, feedback is an internal mechanism for influencing organizational change for performance. Box 2 presents an example of how this happens.

Box 2: Inducing change through feedback

A group of participants analyzed the challenges of their Faculty and made an appointment to meet and discuss with their Dean. They started by giving feedback to their Dean recognizing the positive things that he had done and also highlighting the challenges that the Faculty faced. They suggested what they could do to support him to deal with those challenges. In this experience, the Dean felt overwhelmed that since he became Dean several years ago nobody had ever come to his office to appreciate his efforts and offer themselves to help in dealing with the problems that there were. "He said, everybody who comes to my office comes with a problem for me to solve and nobody comes with solutions to any problem". He committed some funds for this group to organize and facilitate a meeting with other members of staff including all heads of departments to brainstorm on the challenges and possible ways of dealing with them. A one-day meeting was organized and facilitated by the group. The key outcome of the meeting was shared responsibility for the challenges, and commitment collectively to deal with the challenges. This impressed the Dean so much that he was challenged to commit funds for a 3-day workshop to expose more staff in the Faculty to the important aspects of the PM/SS programme.

3.3   Taking initiative to work in teams and promote peer learning

Appreciation of the value of teamwork is the core foundation for multidisciplinary approaches to work. It promotes co-operative inquiry –to develop creativity to look at things differently and increase one's performance (Heron and Reason, 2001). The programme enhanced teamwork across disciplines/faculties among lecturers as exemplified in the statement below.

> "Before we came to this learning programme, we worked as individuals but now we work together, even in writing proposals and supervision of students".

Consequently those lecturers also encouraged teamwork and peer learning among students through group assignments. This mode of learning widened student interaction with other disciplines as they searched for learning materials from other faculties. As such it represents the beginning of a more holistic type of learning that builds linkages across disciplines.

3.4   Facilitation skills for interactive learning and collective action processes

The PM/SS was built around an assumption that facilitation skills are the key to new forms of interaction with people. Through facilitative teaching, the lecturers started to engage with students as co-learners and not as the sole authority of knowledge. Mezirow (1997) emphasizes the educator functions as a facilitator and provocateur rather than as an absolute authority. Experience from this type of engagement led to conceptualisation of an operational framework for interactive learning. The framework is presented as a learning wheel (Figure 2), a methodology to conceptualise experience based knowledge (Hagmann, 2005). In the context of Makerere University, the 'cornerstones' around the wheel represent a checklist of success factors which are being used for self-reflection and evaluation as well as for design of interventions and next actions in the process.
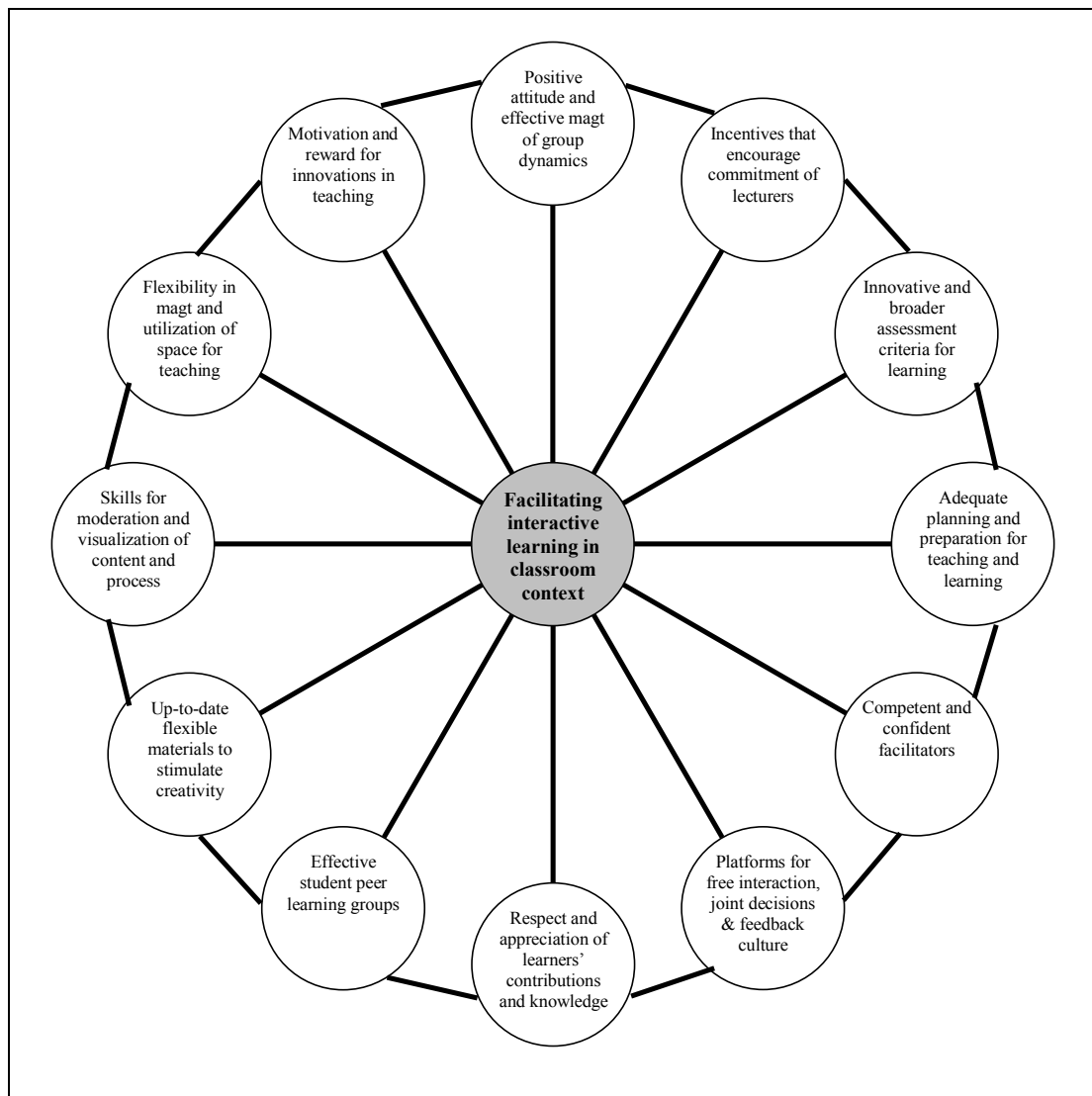
Facilitating interactive learning in classroom context

- Positive attitude and effective magt of group dynamics
- Incentives that encourage commitment of lecturers
- Motivation and reward for innovations in teaching
- Flexibility in magt and utilization of space for teaching
- Innovative and broader assessment criteria for learning
- Adequate planning and preparation for teaching and learning
- Skills for moderation and visualization of content and process
- Competent and confident facilitators
- Up-to-date flexible materials to stimulate creativity
- Platforms for free interaction, joint decisions & feedback culture
- Effective student peer learning groups
- Respect and appreciation of learners' contributions and knowledge

Figure 2: Operational framework for interactive learning

The success/failure factors for interactive learning include:

- A positive attitude towards interactive learning and an ability to effectively manage group dynamics. A positive attitude is needed both from lecturers and the students.
- Incentives that encourage commitment of lecturers. Interactive learning takes more time in preparation and to continue doing so requires a relatively high level of job satisfaction. This takes into account staff remuneration and welfare.
- Innovative and broader assessment of the learning. For the learners to be appropriately rewarded from interactive learning, the assessment has to go beyond memorisation of knowledge to the analytical and application levels. Also a variety of tools and methods of assessment is required including peer assessment. Without these, it becomes irrelevant in terms of its contribution to academic achievement.
- Adequate planning and preparation for teaching and learning. Effective interactive learning within the limited time allocation for a course, demands good planning and preparation for both the lecturers and students.
- Competent and confident facilitators. Competence here refers to both a sufficient grasp of the subject matter and adequate process management. The facilitator must also be confident enough to deal with unanticipated issues without getting disoriented.
- Platforms for free interaction, joint decision making and conducive to a feedback culture. Dialogue and feedback between students and lecturers set the benchmarks for interactive learning.

- Respect and appreciation of learners' contributions and knowledge. Recognition that learners are a resource of their own learning creates the space and confidence to share experiences and knowledge.
- Effective student peer learning groups. These have to be initiated and nurtured as platforms for peer exchanges. Group work is necessary as it advances communication skills, reinforces the importance of citizen participation, creates meaningful learning situations for students, utilises the interests, creativity and curiosity of students. In diverse groups, it also triggers intra-group dissonance which can become a source of conceptual change (Wals, et al., 2004).
- Up-to-date and flexible learning materials that stimulate creativity. Availability and access to materials in different forms that can be shared for self-learning, peer-learning as well as instructional learning.
- Skills for moderation, synthesis and visualisation of process and content. Ability to bring things together with clear linkages and relationships is extremely important. This is aided by good visualisation to create a mental picture of how things are connected.
- Flexibility in management and utilisation of space for learning. Flexible sitting arrangements that allow interaction amongst students create an ideal environment for interactive learning. Similarly, the class size has to be manageable for effective learning.
- Motivation and reward for innovation in teaching. If the lecturers are to invest their time and creativity in interactive learning, it has to contribute significantly to their career advancement. At the moment, publications are the single most important factor for promotion. Objective indicators of the impact of publications – e.g. citations on Google scholar – seem easier to devise than objective indicators of teaching impact and excellence. This creates a disincentive for improving teaching.

Beyond teaching, many of the lecturers have taken on facilitation and documentation of workshops, seminars and other collective action initiatives as a new direction of professional to supplement their meagre income from the university.

3.5 Overcoming fear to try out new things as reflective practitioners

The concept of life-long learning is based on the ability to reflect and learn from our actions. Fear of failure is a major hindrance to progress in pursuing our personal and organizational goals. This fear is sometimes overwhelming among academics because of their "expert" mental models, which limits their space for exploration in complex and unpredictable situations. Overcoming fear is a precondition for developing the adaptive capacity that drives innovations and entrepreneurship. Fear of failure is very much reduced when lecturers put themselves in position of reflective practitioners who continuously learn from whatever they do.

The positive attitude towards learning from experience and social support for reflective practice increased the confidence and courage to dare to try out new things. Social support here means a group of people willing to help each other to learn from their experiences, including their failures, without feeling embarrassed. With a reasonable level of self-positioning (a concept we worked on intensively), they developed a sense of security to take on challenging tasks, such as providing leadership in strategic planning and managing contentious meetings in and outside their units.

3.6 Enhancing communication for problem solving

The programme focused on enhancing aspects of communication related to conflict management, negotiation and consensus building. Besides the better awareness for their own communication patterns, active listening as a basic element in communication for problem solving has been a major impact area. Unfortunately listening is often taken for granted. There is no public incentive for active listening and yet it is critical in learning and problem solving and interactive learning. Lecturers are taught to 'lecture' ideas and provide little space for the students' ideas to be heard. Operationalising interactive learning, providing feedback and conducting action research requires that lecturers learn to listen actively. This was seen as a major impact of the programme in terms of communication.

Listening is also a way of controlling our power to provide space for others to participate. When we listen, we are also giving a chance to others to contribute. By virtue of their position, lecturers (or teachers) have more power in the lecturer-student relationship. If the lecturers have to learn from this relationship, they have to learn to listen and give space to students.

3.7 Thinking "out of the box" to influence development impact through action research and process consultancy

The imaginary disciplinary boundaries emphasized in university tend to limit our view of the world within the confines of our disciplines. In the university, even departments within the same faculty tend to exist as "silos" with little to share functionally. Coming from this background of disciplinary independence, exposure to systems thinking and social change phenomena opened a window to for the lecturers to look at the world in a new light. One way of integrating disciplines in a systems perspective is through action research and process consultancy. It became clear that influencing change in society either through research or service delivery required a new form of engagement. In this new world view, the lecturers developed an operational framework for action research (Figure 3) to increase the relevance and impact of university research.
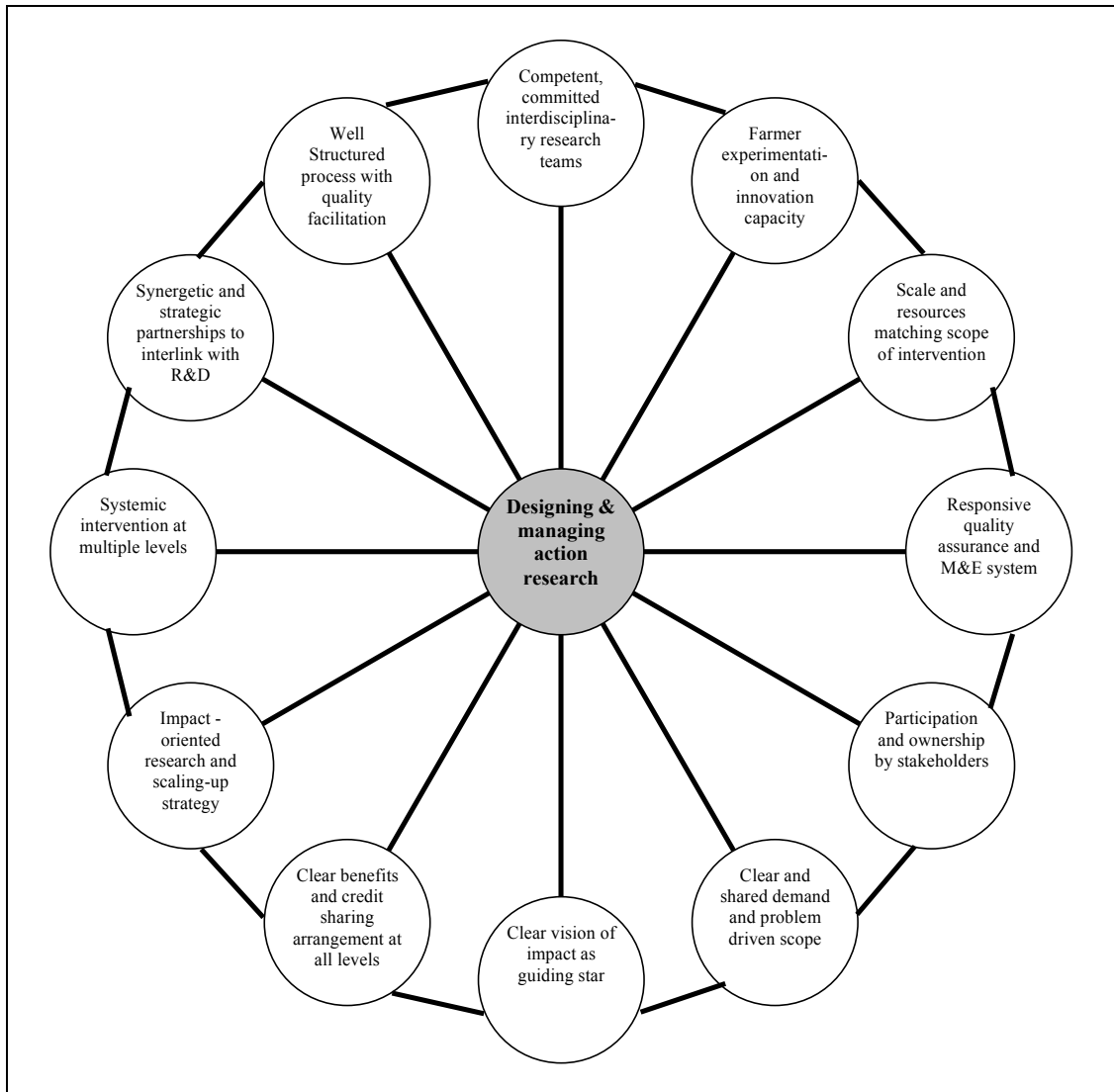

Figure 3: Framework for putting action research into practice

Teams across faculties came together and developed proposals using this framework as guide. The division between agriculture, veterinary and forestry / NRM faculties in the group vanished gradually in the process. At the beginning, the three groups always sat together and it was hard to make them talk to each other. Later in the process they called upon each other to help in their own faculties. The joint vision of a new university and the personal and professional relationships overplayed institutional divisions – a major impact of the process.

A similar LearningWheel was developed for process consultancy and the group practised the main components and tools. Another LearningWheel concept was developed on '***overcoming the jealousy***

and suspicion culture' in the University - one of the major blockages for performance and growth of individuals in the system.

3.8   Developing a culture of commitment and integrity

Evaluation of programme showed indications of higher commitment, elevated passion for work and an increased desire to build a legacy of integrity. This seems to be an outcome of the interaction of many factors, but responses suggested two main ones: First there is the development of empathetic feelings resulting from challenging own values and practices. Empathy challenged the lecturers to give the best of their services because they could put themselves in the shoes of their students and other people they serve. A second explanation can be found in the challenge to be exemplary, and to live by example. Peer pressure to uphold the impression of being exemplary inspired commitment, passion for work and a desire to build a legacy of integrity. Unconsciously, this also demonstrated leadership qualities which, indeed, some have very well used to propel themselves into leadership positions. Within the period of 1½ years, four participants acquired administrative positions – successes that they strongly associate with personalities and skills gained from the programme. These represent a 'new breed' of leaders with a different view (from the conventional) of how to improve teaching and research in the university. In the meantime, about 10 of the 26 group members were promoted to major leadership positions. The danger of having highly committed people emerging is that they are being overloaded. One dean explained that if you want to get results and get things done, you task the members of the PMSS group. As a result, they feel honoured and get overwhelmed with work – which risks to render them ineffective again. These patterns were processed in the learning groups and one way out was to engage others more actively – which partly worked. A new drive towards performance was created.

3.9   Self-assessment of the changes at individual level

In the process, criteria for behaviours of someone who would be mastering innovation competence were developed with the group. These were used to assess progress. Using appropriate scales, participants then scored themselves and their peers / teams for each quality criteria as part of the on-going self-assessment to enhance self-awareness and motivate learning. Figure 2 for example illustrates an outcome of self-assessment on the impact PM/SS based on a composite profile synthesized from experience of the learning programme.
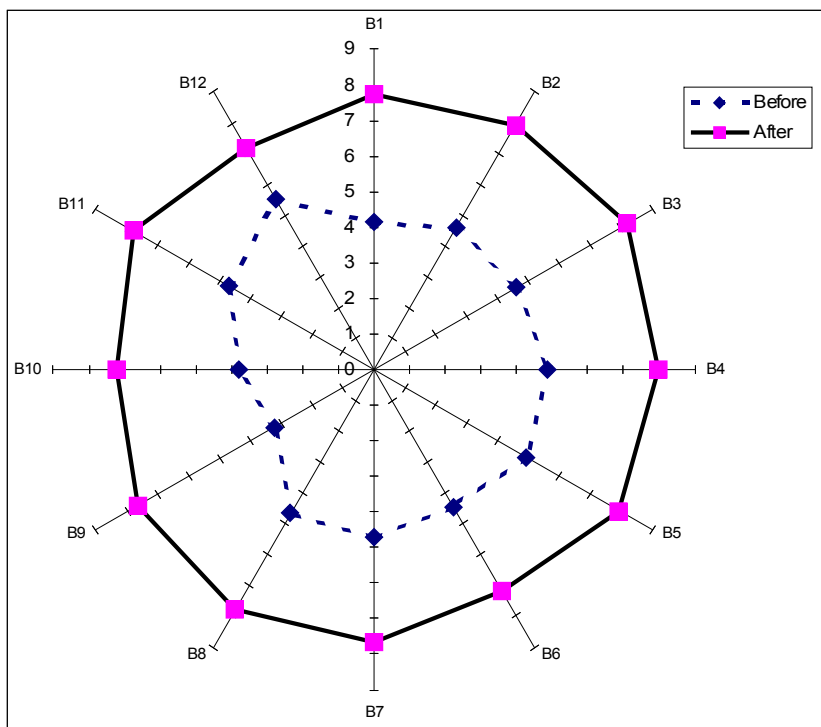

Figure 2:   **Profile ratings before and after the PM/SS programme**

<div style="border:1px solid black; padding:10px;">

Key quality criteria for someone who masters innovation competence (shortened version)

B1 =Uses professional networks and alliances for exchange of information and experiences and to pursue common interest.

B2 = Promotes team development and consensus building in teams

B3 = Initiates and facilitates group processes of joint reflection, strategy and vision development and decision making

B4 = Manages and minimizes conflicts

B5 = Actively seeks to develop him/herself professionally and personally

B6 = Tries out new things with courage and without fear of failure

B7 = Deals with unforeseen situations in a positive, pro-active and solution oriented way

B8 = Shares information in a free, transparent and accountable manner

B9 = Gives and receives feedback as a tool to develop him/herself and others personally

B10 = Develops and pursues clear vision and values in his/her professional environment

B11 = Assumes leadership roles (formal and informal) to enhance individual, team and organizational performance.

B12 = Pursues a balanced lifestyle

</div>

Where are we now in 2007?

The PM/SS programme started in 2003. By late 2004 the sequence of four learning workshops was completed and in 2005 a workshop to develop the training capacities was held. Right afterwards, the new trainers with some backstopping support took another group of 35 lecturers through the process (the group called themselves the 'EAGLES'). That process was just completed recently and other universities in the region have articulated their interest to bring PMSS on board. So in total there are now 60 staff in Makerere who underwent this process and who are practising a different way of teaching, research and consultancy. This is quite a critical mass to move with. A concept for scaling up beyond just training new staff has been developed since 2005 and new ideas are emerging continuously. However, we have not yet managed to source funding and implement the next 'leap' which is a more systemic change process at different levels of Makerere University in order to create a service system which is a negotiated balance between the interests of the public, the students, the lecturers and the management and some checks and balances with it. The ultimate success of the initiative can not be sustained by individual competence development alone.

4 Lessons learnt

From the experiment to develop innovation competence at Makerere University, some key lessons can be drawn:

The dimension and effort to create change. Developing innovation competence of lecturers in a university is not only about building new skills and attitudes, it is a systemic change process that requires a broader approach addressing both personal and organizational interests. Designing such a process has to take into account the time of engagement and targeting the right triggers for change. From this experience 1½ to 2 years is just about the minimum period necessary for substantial personal change. A one time training and exposure to certain aspects like team development etc. would have had very little impact if any at all.

The motivation and incentives for change. Without an overall readiness to engage in change by the university management, PMSS would have been much more difficult. To generate commitment and motivation to learn for change, the management must feel a pressure or discomfort. If there is no pressure to change, it is unlikely that management will commit themselves to a change process. In the particular case there was tremendous pressure from the local governments and other employers of Makerere University graduates to reform for relevance in view of the changed political and economic context. The university was already undertaking several initiatives to towards relevance in training and research to suit the new needs of decentralized local governments and a growing private sector. The innovation competence programme therefore fitted well among other initiatives towards relevance.

At personal level, enhancing research and consultancy skills as a direct personal benefit were key motivators for learning and change. From a range of similar processes we have learnt that it is extremely important in such long term engagements which require extra effort to get the incentive system right. Unless people realise that this will support them in their own personal career, they see it simply as an extra unpaid effort and motivation is rather low. However, this requires a vision for their own personal development and career first of all – which is being awakened and developed in such processes.

Facilitation of the learning. Facilitating a learning process aimed at wider organizational change requires high quality facilitation to contextualize the learning and focus on emerging issues of interest rather than teaching pre-conceived modules. It was the flexible dealing with emerging issues of concern and linking them to the topics which captured the attention of participants and motivated them to engage fully. The neutrality of the facilitators from the disciplinary rivalries that prevail in university is another major success factor. Two external facilitators of the experiment provided a neutral ground to bring together different disciplines to focus on a common goal.

Institutionalisation of a change process like this one starts with the design of the programme. Getting the management to own the process is very critical but at the same time is not an easy one. Mechanisms must be built in the design for continuous involvement and update of management. In this case, management made critical decisions in the design and selection of participants, and evaluation of the programme to determine its value and relevance. They were involved throughout implementation through gallery exposures and feedback to the faculties. To attain this level of involvement, there must be a champion to deal with the organizational politics and to buy-in management to get exposed in order to appreciate the value of the programme.

Scaling up: For wider system change, there has to be a critical mass of people with the new orientation, hence scaling up the programme. However scaling up requires commitment of management in addition to having the capacity to scale-up. Not all those who go through the programme can automatically facilitate scaling up. Those interested in being trainers need additional training and coaching to be able to design and implement a change process. In this case, a training of trainers (ToT) was conducted for the lecturers who were interested to become trainers. Quality assurance becomes a critical issue in the scaling up, otherwise the process can potentially degenerate into a mere training programme rather than a change programme. Those undertaking the task of trainers need coaching and technical backup as well as a process continuous reflection and learning as a community of practice.

Feedback and learning culture. One of the key success factors was the emerging feedback culture. To overcome the dividing and fearful 'either you are with me or against me' culture through a 'third way' which is the constructive engagement in finding solutions together and linked to it the personal growth oriented feedback has really made the biggest change. It needed a great effort to make feedback a culture by rigorously practicing it in all situations, working on modalities on how to integrate it in private and professional life, role plays etc. over the whole period of 2 years. Without this opening up by having a new tool and linked to an increased culture of working as peer teams and using each others networks of influence, many changes in the faculties would not have been possible. It helped to reduce the culture of suspicion to a certain degree. Once a manager expressed it as: '*I no longer need a spy system, people now come to me and tell me what they like and what I can do better and how'*. However, it has to be proven how far this culture of feedback has been internalised in the long run.

Changes in the pattern of interaction. One major trigger for change in the faculties was the fact that more and more meetings were being facilitated instead of run by a chairperson. The fact that this capacity is now available inside the organisation and has shown to bring out much better results has made it easy to spread that rather simple change. Due to the participatory way and joint problem solving the engagement of staff has changed and many hidden potentials emerged. We came to the conclusion that this single factor created a substantial difference in the way issues are handled in the faculties. Thus, the training of internal change facilitators and creating arrangements in which they can be utilised effectively has a high potential.

Future challenges: One of the biggest challenges with regard to the staff competence is the quality assurance / management during the scaling up process. Without a rigorous system to nurture and coach the trainers with new ideas and sharing of experiences between practice and training, the

dilution of the quality will be inevitable. Presently we see Communities of practice among practitioners and trainers as one way as well as nurturing workshops very year where new ideas and tools are brought in. However, it is evident that we can not leave the process knowledge only with the lecturing staff and depending on their goodwill alone. We need to find other ways to make this knowledge available to students directly so that they can demand a different teaching style and topics around change.

5   Conclusion

That universities need to transform to be more innovative and relevant is not contested, but rather the challenge is how such transformation can be effected in reality. The meta-challenge of the African university of the 21st century is to build its own competence for innovations. Universities are expected to turn out graduates capable of influencing development change in society in complex situations characterized by fused multidimensional problems such as poverty. Undoubtedly universities need to redesign their curricula, but before that they need to build their own competence to deal with problems of the contemporary society. University lecturers must come down from the 'pulpit' for lecturing and begin to influence learning for development. This demands a shift in attitudes, mindsets, values and responsibility. For this, a comprehensive competence development programme is desired. Competence has been treated as the capability to learn and influence learning. Innovation has been viewed as an adaptation and translation of learning into options for solving real-life problems in a complex and dynamic environment. Learning to a large extent is a social phenomenon, meaning that universities need social skills as part of a package of innovation competence.

The PM/SS experiment has shown that the starting point is to challenge some entrenched values and beliefs, in order to awaken consciousness and desire for personal change towards a preferred future. The key competence outcomes of the PM/SS experiment include: developing relationships that enhance learning and change for individuals and for collective action; inducing and managing change in social systems, development of and access to tools (such as facilitation and communication) for making change; achieving solution-oriented thinking and practice as in action research and process consultancy; and attaining a culture of authenticity (commitment, accountability and integrity). Success of the programme is highly associated with its design as a change management process, high quality facilitation, generating and sustaining support from management and availability of a champion.

Implications for the innovation systems domain and participatory development
We all talk about the need for change in universities and colleges in order to integrate the new challenges in agricultural and rural development etc. In most cases this is interpreted as change in curricula and offering new courses on marketing, innovation systems, NRM and other new technical fields, mainly by the same people / lecturers who are reading a few new books and 'train' students. Eventually some 'institutional reforms' take place with departments merged or changed into new 'schools'. The structure is then different, but again it is the same people who have their entrenched way of working. So, the output to be expected is not radically different from what we had before the reform.

We rarely challenge the HOW people are being trained and their professionalism developed in these institutions of 'higher learning' as they are called. There are some very interesting cases, but in general the mode of many African Universities is not yet in the 21st century. A senior manager of a reputable University in East Africa recently explained it in a simple way: '*In the colonial time, the Whites were the managerial class, the Asians were in the trade and the Africans were meant to be office clerks. So, African universities were set up to produce office clerks. And this is what we are still doing, we produce office clerks. Unfortunately there is very little demand for office clerks and that is why we mainly produce unemployed office clerks…*' This shouts for the need for changes at the personal level of both, the lecturers and the students to become entrepreneurial in their own right, to challenge things and the system and to become brave to try out alternatives – in other words to get out of the conventional, rather domesticated mind frame. It is not about teaching 'change', it is about engaging in the reality of the context and making the system work rather than analysing it to the point of collective paralysis. This is where action research and entrepreneurial and creative spirit is required to identify the systemic blockages and deal with them one by one with the highest determination and commitment to success.

If we are serious in moving towards innovation systems and change in the existing systems, we need to articulate boldly that this is not a task to be mastered with the present mindsets and cultures of hierarchical dominance. These systems who say they want to develop peoples capacity actually often suppress the potential and space of younger people with energy and ideas and try to make them as bureaucratic and compliant as the system itself is – which is one of the major causes of their ineffectiveness and inefficiency. We need transformation, starting from the personal level, built into peer networks who understand change, who are ready to drive change and have the capacity to strategise for change and influence, rather than waiting for the 'good leader' to come from above. It is this spirit which the case in Uganda tried to develop and to a certain degree has achieved and can provide some practical ways of doing it. These insights are not only applicable to universities. The same applies to most of the other public service provider institutions (e.g. in research and extension etc) we have worked with and where we used similar processes. The mega question we ask ourselves often, wondering if we are simply naiv, is: how compatible are bureaucracies and entrepreneurship really? Development to succeed needs entrepreneurial minds but unfortunately the bureaucratic minds are supposed to train them…

6   References

Asiimwe, D., Ezati, E., Mugisha, F, Muhangi, D., Onweg, T., Nnsabagasani. (2001) "Decentralisation and Human Resources Demand Assessment from the Perspective of the Districts", Makerere University.

Bellah, R. (2005) "Durkheim and ritual", In J. C. Alexander & P. Smith, eds., *The Cambridge Companion to Durkheim*, Cambridge: Cambridge University Press.

Boyatzis, E.R., Cowen, S.S., Kolb, A.D. (1995) "Introduction: Taking the Path Toward Learning", in Boyatzis, E.R., Cowen, S.S., Kolb, A.D. and Associates, eds., *Innovation in Professional Education: Steps on a Journey from Teaching to Learning*, Jossy-Bass Publishers, pp. 1-11.

Cranton, P. (2002) "Teaching for Transformation", *New Directions for Adult and Continuing Education* 93: 63-71, Wiley Periodicals, Inc.

Guiton, P. (1999) "Professional Reflective Practice and Lifelong Learning", in Harry, K., ed., *Higher Education Through Open and Distance Learning: World Review of Distance Education and Open Learning,* Volume 1, Routledge, pp. 48-56.

Hagmann, J. (1999): Learning Together for Change. Facilitating Innovation in Natural Resource Management through Learning Process Approaches in Rural Livelihoods in Zimbabwe. Kommunikation und Beratung No. 29, 310 pp, Margraf, Weikersheim

Hagmann, J. (2002) "Competence Development in Soft Skills/Personal Mastery", Report on a Consultancy Mission to Design a Learning Programme at Makerere University, Uganda. Rockefeller Foundation (Unpublished).

Hagmann, J. (2005) "LearningWheel - Creating Common Frameworks for Joint Learning, Action and Knowledge Management: AGREN Newsletter No 52, July 2005, http://www.odi.org.uk/agren

Hagmann, J., Almekinders, C., with Bukenya, C., Guevara, F., Hailemichael, A., Isubikalu, P., Kamau, G., Kamanga, B., Kibwika, P., Limnarankul, B., Matiri, F., Mutimukuru, T., Ngwenya, H., Opondo, C., Zhang, L., Breitschuh, U. (2003) "Developing 'Soft Skill' in Higher Education", *PLA Notes*, No. 48, pp 21-25.

Hagmann, J., Moyo, E., Chuma, E., Murwira, K., Ramaru, J., Ficarelli, P., (2004): Learning about developing competence to facilitate rural extension processes. Published as a book chapter in: http://www.iirr.org/PTD/Cases/Moyo.htm

Heron, J., Reason, P. (2001) "The Practice or Co-operative Inquiry: Research 'with' Rather than 'on' People", in Reason, P., Bradbury, H., eds., *Handbook of Action Research: Participative Inquiry and Practice*, Sage Publications, pp. 179-188.

Kibiwka, P. (2006): Learning to make Change. Developing innovation competence for recreating the African university of the 21st century. Wageningen Academic Publishers, 208 pages,

Mezirow, J. (1997) "Transformative Learning: Theory to Practice", *New Directions for Adult and Continuing Education* 74: 5-12, Jossy-Bass Publishers.

Moyo, E., Hagmann, J. (2000) 'Facilitating Competence Development to put Learning Process Approaches into Practice in Rural Extension, in FAO: *Human Resources in Agricultural and Rural Development*, Rome: FAO, pp. 143-157, online at http://www.fao.org/DOCREP/X003/X7925M/X7925M14.htm

Patel, K.B., Maina, M., Hagmann, J., Woomer, P.L. (2001) "Curriculum Development and Transformation in Rural Development and Natural Resource Management" Documentation of a Strategy Workshop Conducted at the Rockefeller Foundation's Bellagio Center in Italy, 12-16 November, 2001 (Unpublished).

Senge, P.M. (1990) *The fifth discipline: The Art and Practice of the Learning Organization,* Bantam New York: Doubleday Dell Publishing Inc.

Sterling, S. (2001) *Sustainable Education: Re-visioning and Change*. Schumacher Briefing No. 6. Green Books Ltd.

Wals, A.E.J., Caporali, F., Pace, P., Slee, B., Sriskandarajah, N., Warren, M. (2004) "Education for Integrated Rural Development: Transformative Learning in a Complex and Uncertain World", *The Journal of Agricultural Education and Extension* 10(2): 89-100.

Webb, G. (1996) *Understanding Staff Development,* Society for Research into Higher Education & Open University Press.

Wood, H.J. (1995) "Restructuring Education: Designing Tomorrow's Workplace", in Chawla, S., Renesch, J., eds., *Learning Organizations: Developing Cultures for Tomorrow's Workplace,* Portland: Productivity Press, pp. 403-416.