Productive Learning Cultures:
An African-Norwegian Collaboration
Balancing Academic Quality with Substantial Support

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Abstract

The aim of this article is to describe and critically reflect on a research and development program called *Productive Learning Cultures,* which has the following aims. Firstly to strengthen research and supervisory capacity at doctoral level and secondly to develop research based knowledge in the areas of Indigenous Knowledge Systems and Information Communication Technologies and learning. The program involves an inter-country education collaboration between one developed country (Norway) and five countries, developing or in transition, in sub-Saharan Africa. All the universities involved in the project are facing similar challenges when it comes to meeting international expectations of academic standards of excellence. Sharing knowledge through networking across the borders is one way of dealing with global changes. The discussion will pay special attention to the driving values such as trust, partnership equality, academic quality and accountability that shaped the conceptualisation, implementation and program outcomes. The paper will end by reflecting on how two design elements, namely substantial support and competence building for *all* involved affected the long term sustainability of the cooperation.

Introduction

The higher education systems in most countries call for innovative educational programs in all discipline areas that could serve the student cohort of the twenty first century (Symonds & Miller 2002). One of the many interpretations of what 'innovation' means revolves around the notion of increased quality learning and international cooperation in research and development. There are many reasons for the need for international cooperation at the level of higher education. One reason, according to Ortiz (2003), is that the reality of globalisation results in shifting of social, legal, economic, political and technological conditions that pose various challenges to university systems around the world. As such, the globalisation process shapes the scope of activities undertaken by people and organisations across geographical divides, as well as the existing power relationships. In this context, it is not surprising that international learning and international cooperation are priorities of many political agendas (Ortiz 2003). Another reason for increased international cooperation in higher education is

based on the belief that learning with and about other countries and cultures increases tolerance and leads to further human and socio-cultural appreciation and understanding among nations (Woolf 2002). A third reason, in the view of Abrahamsen (2002), is that generally - and increasingly - political and academic leaders in all countries are educated at international universities and colleges. Consequently he argues that the quality of the research and learning at such institutions will therefore affect the political and academic development of these countries, which ultimately will result in investment in nation building and national development.

The aim of this article is to describe and critically reflect on a program called *Productive Learning Cultures* which involves an inter-country education collaboration between one developed country (Norway) and five countries (developing or in transition) in sub-Saharan Africa. The discussion will pay special attention to the driving values such as trust, partnership equality, academic quality and accountability that shaped the conceptualisation, implementation and outcomes. The paper will end by reflecting on how two design elements, namely substantial support and competence building for *all* involved in the project affected the long-term sustainability of the cooperation. A holistic overview of the program will be given in the following section.

The program overview and its underpinning philosophy

The overarching aim of the *Productive Learning Cultures* program is to develop and strengthen research capability and student supervision at a doctoral level in order to enhance the quality of knowledge production in the two areas of Indigenous Knowledge Systems and the utilisation of Information Communication Technologies in learning. While the main aim has a strong research development focus, the program is holistic in nature in that it functions across all three core areas demarcated for higher education namely research, teaching-learning and community service, as will be seen as the article unfolds. The program is an African-International higher education network collaboration with the University of Bergen in Norway, acting as the international partner. The sub-Saharan partners in the education network are the Universities of Pretoria (in South Africa), Zululand (in South Africa), Namibia, Botswana, Zimbabwe and Universidad Pedagogica in Mozambique. The program is lead by two coordinators, the authors of this article, one from a developed country, the University of Bergen, and one from a developing country, University of Pretoria. The two program coordinators, together with one senior researcher at each of the other partner universities are responsible for the implementation of the various planned phases, strategic reflections and assistance with emerging initiatives, overseeing the budget and bi-annually reporting on activities, outcomes delivery and budget expenditure.

This program competed with more than 150 international projects across the globe for the prestigious NUFU funding and is one of only 66 projects that obtained funding for a four year period from 2002 - 2005. It is also one of only two projects that have a focus on education and pedagogy; whereas all the other programs are situated in fields such as medicine, finance,

mining and agriculture. NUFU is a Norwegian program of the Norwegian Council for Higher Education and the Centre for International Cooperation with an interest in academic research and educational cooperation based on equality between the partners.

The NUFU philosophy promotes the fact that trust is the cornerstone of any cooperation between institutions in the North and South and operates from the realisation that it takes time to build up mutual trust. Based on trust, the value of equality between all the partner institutions had to be built into all the dimensions of prospective proposals. Moreover, the NUFU philosophy is rooted in well established findings of change literature which have taught us that changes must come from within and that without ownership no genuine engagement and long term sustainability is realistically possible. Therefore, the responsibility for defining the challenges and how to respond to them lie with the Southern partners as they are the ones who will be living with the results of their efforts (Strand 2002). With a philosophy based on values such as trust, equality and ownership the donors allow for freedom and flexibility in conceptualising, designing and implementing the program where the partner institutions act as guarantors both for the academic quality and implementation of the programs.

Productive Learning Cultures: Designed around three pillars

Within a flexible framework defined by values rather than prescriptive checklists of criteria, the Productive Learning Cultures program was conceptualised and broadly designed by all the partners at a workshop in Bergen two years prior to composing the final program proposal. The challenge during the conceptualisation phase was to design a program broad enough in scope to accommodate partners from six different countries with their common, but differently natured educational needs and interests (Lillejord 2002). Needs and interests which could be researched through common theoretical perspectives and methodological approaches were given priority consideration in the design. The challenge of deciding which research priorities to include was addressed by creating space for work based on three pillars, namely:

1) An African-International PhD program.
2) A comparative research project on indigenous knowledge systems, disseminating research through its own established academic peer-reviewed journal called INDILINGA: African Journal of Indigenous Knowledge Systems.
3) A research project focusing on the production of knowledge on the pedagogical implications of flexible learning, especially as it pertains to e-learning environments through information communication technologies (ICT).

From this broad program description it will be noticed that the program was not intentionally designed to have a science education focus. The focus on science education became prominent when the PhD candidates together with their supervisors designed the individual PhD research projects around the foci of the last two pillars, namely indigenous

knowledge systems and e-learning. The detail of the research projects will be discussed in a later section in this paper.

An African-International PhD program: A rationale and overview

The *rationale* for the focus on a doctoral program stems from the increasing global thrust to subsidize research endeavours and innovative knowledge production. The backbone-business of the research task of universities rests in the quality of doctoral programs being offered and the number of doctoral students who finish successfully in the minimum prescribed period of time. Quality doctoral programs attract quality researchers and are *crucial* for the existence and survival of institutions such as universities. Quality doctoral programs also provide legitimacy and bring status and prestige to a university - making it the preferred place of learning for future aspiring brainpower.

In this program one senior researcher per partner university, who was part of the initial conceptualisation of the program, was primarily responsible for the research supervision of doctoral candidates at his or her own university. The two project coordinators also acted as supervisors for doctoral students at their respective universities. Seven PhD candidates were involved in the program and they were assessed and certified at their own institutions.

The senior researchers, as well as the doctoral students, aligned their research questions to fall within the research foci presented within the other two pillars, namely indigenous knowledge systems and flexible e-learning. One of the additional strengths of the doctoral program is that although one supervisor is directly responsible for a doctoral candidate's progress, a doctoral candidate also benefits from the research expertise of a team of seven supervisors from the seven institutions. In other words, the doctoral research endeavour is viewed as a *team effort* consisting of the PhD students, all the supervisors, the project coordinators and other research experts. These benefits are made available to doctoral candidates through three mechanisms, which have been built into the doctoral program.

Firstly, annual workshops are held once or twice a year in one of the partner countries for a week of scholarly engagement and training in problematic areas identified by the students and supervisors. All the supervisors, students and invited experts in fields that may add value to the quality of the research, usually at the level of sharpening research methodology, attend this workshop. All PhD candidates and their supervisors are held accountable for their performance. At the workshops the students present their research progress to the team of supervisors in a mutual trusting environment in an attempt to raise the scholarly bar for all involved in the research and supervision process. Through deliberations, the doctoral students receive advice and feedback from their peers and the rest of the team. Possibly the most important function of these workshops is to stimulate scholarly debate around the quality of the research questions, theoretical frameworks, research design and research methods. This process not only enhances the academic rigour of a candidate's research, it also supports the *supervisor* in his/her enormous responsibility of ensuring the intellectual quality of his/her candidate's research. In brief, this approach allows students and supervisors alike to learn from one another (Meerkotter et al. 2001), to support one another from a

diverse pool of expertise, and to ultimately take their insights back to build capacity in their own institutions. The team's exposure to a variety of education backgrounds, schools of thought, methodological paradigms that scholars from different countries and backgrounds bring, are extremely enriching and allow true critical thinking and knowledge production to emerge. This team gives meaning to the concept of self-directedness and is transformational in so far as they take responsibility for their own quality of intellectual and professional development. This last point, however, deals with ownership which is not only a driving value of the broader NUFU philosophy, but which is pivotal for ensuring sustainability beyond the actual program period.

Secondly, an electronic web-based platform has been created through which the academic discourse, support and training are continued *virtually* in order to ensure sustainability and internalisation of learning that has occurred at the workshops. Luvit is a learning management system that is used for this purpose and it is similar in function to the learning environment management tool called Web-CT, which is familiar to African academics. All participants received training during the workshops on how to use the electronic platform for communication purposes. Interaction on the web-based platform takes place in various modes and at different levels. The team of supervisors post assignments and readings that are beneficial to all the doctoral students, which 'force' them to interact with one another and the supervisors. In this way the productive academic debates that are stimulated during workshops are continued across the geographical divides of the partner universities.

Thirdly, an interactive, web-based version of a module on qualitative research methods has been developed by experts in the program. The overarching research paradigm for all the PhD projects falls within constructivism or interpretivism, which draws on qualitative methods for data gathering, analysis and interpretation. PhD candidates not only receive rigorous training in research methodology at the annual workshops, they may continue studying at their own pace under the guidance of their supervisors at their own institutions. Through this module, competence building in research methodology is not a once-off event, but is sustained throughout the program. Furthermore, sustainability in building research competence beyond the project period is made possible in that the web-based module is available to all the partner institutions for use in any post-graduate program of their choice.

Comparative research on Indigenous Knowledge Systems

The *rationale* for developing research foci around indigenous knowledge systems is a reaction to the concern that globalisation has the potential to converge all nations into a homogenous mould. While some nations appear unconcerned about losing their cultural distinctiveness as they conform to one way of thinking and doing things, others feel more strongly about retaining and regenerating their local characteristics (Samli 2004). The re-emergence of the African perspective is reflected in the slogan "The African Renaissance". The rationale is also based on the assumption that the recognition of African local knowledge will have an empowering effect on the people of Africa. When people are perceived and

acknowledged as competent and knowledgeable, they will act with more confidence and take responsibility for their own lives.

Many of the doctoral studies are investigating indigenous knowledge systems in the fields of science and mathematics education. In both South Africa and Mozambique indigenous knowledge systems have been included in the compulsory school science curricula. The Revised National Curriculum Statement for the Natural Sciences in South Africa, for example, expects learners to acquire scientific and indigenous knowledge which will enable them to: (1) solve practical problems within and outside the science classroom and (2) "demonstrate an understanding of the relationship between science and technology, society and the environment" (Department of Education 2002, p.10). This new curriculum intention poses huge challenges to teacher development. One of the PhD studies investigates the challenge of preparing and equipping prospective and practising science teachers with knowledge and skills for integrating scientific and indigenous knowledge systems. Another research project investigated how real life indigenous problem scenarios may be used to design problem-based learning environments and how high school science learners performed and experienced the problem-based approach to science teaching (Van Loggerenberg-Hattingh 2003; Hattingh & Killen 2003).

In Mozambique and Zimbabwe, there are prominent lines of inquiry into ethno-mathematics (Breen, Vithal, Mtetwa, & Setati, 2003). Studies are investigating teaching strategies of how mathematical principles for series and sequences can be taught through using traditional hat, basket and fishing net weaving techniques. Teaching strategies for teaching the complex concepts of chance and probability to high school and university students are also being developed based on the principles and rules embedded in indigenous games being played in the northern provinces of Mozambique (Gerdes 1994) or in the Limpopo and North West Provinces of South Africa (Mosimege 2003).

The overwhelming need for research and dissemination of scholarly work on indigenous knowledge systems resulted in this program establishing a Unit for Research on Indigenous Knowledge Systems at the University of Zululand. Through this centre partners from the Universities of Zululand and Zimbabwe are offering professional development seminars to science and mathematics teachers. This pillar of the program also established its own academic, peer-reviewed journal called INDILINGA: African Journal of Indigenous Knowledge Systems. The merit of this scholarly initiative was further acknowledged when the National Research Foundation in South Africa secured substantial funding for allowing bi-annual publication of the journal. Success bred success and the University of Bergen funded the establishment of an electronic version of the journal. The initiatives in the form of a research unit and a journal emerging from this pillar are already well-established with a functional infrastructure and will be sustained after the project which terminates by the end of 2005.

Research on the pedagogical implications of ICT

The digital-information century presents each individual and institution with new

challenges to survive and thrive. According to Sullivan (1999) the main drivers that explain the globalisation phenomena include technological advances in communication and information processing along with lower trade and investment barriers that, in turn, translate into increased competition. The rationale with the strong focus on information communication technology within this program aims at narrowing the digital divide that not only exists between the North and the South, but also within nation states. Knowledge about information communication technologies, how to use them and how to utilise them, is of great necessity and will undoubtedly gain momentum in years to come. The program conceptualisation is based on the assumption that to give more African people access to e-knowledge and to learn how to deal with the emerging knowledge society is extremely important in any learning and teaching environment.

The focus on information and communication technologies does not function on its own, but is integrated into different activities across the pillars of the program. Firstly, the functioning and impact of ICT as it pertains to this community of scholars and their activities are monitored through research. All strategic decision-making regarding this pillar of the Productive Learning Cultures program and the management of the learning environment is based on *'just-in-time'* research findings. One senior researcher is inquiring into the following e-learning research questions:

1) What is the nature and quality of the scholarly interactions amongst the community of scholars (existing of doctoral students) and the team of international (including African) supervisors in the *e-learning environment*?
2) What are the best learning facilitation practices for enhancing quality *on-line learning* experiences for post-graduate research students?
3) What are doctoral students' and supervisors' *expectations of on-line learning* and to what extent are these expectations met?

Secondly all the program participants make use of the electronic information communication platform, Luvit, for various purposes. As mentioned previously, PhD students receive continued training, feedback and support from one another and the team of supervisors.

Thirdly, the science education focus in this pillar is represented by the research work of one of the PhD candidates. This PhD candidate's work involves the designing of virtual laboratory activities that can be utilised in deep rural high schools where well equipped school science laboratories are non-existent. The candidate's research project evaluates the quality of conceptualisation of scientific concepts after learners have been exposed to the virtual practical science activities.

What has been achieved by the Productive Learning Cultures program?

The project is serious about the fact that performance is not only about the number of tangible outcomes, but about the quality and sustainability of those outputs. The assessment of this project by the Southern coordinating university's vice-chancellor was very favourable

when he wrote the following in the 2003 assessment report: *"We are delighted to observe that the project does not leave the outputs to be delivered only after the project period. Participation in the project has already resulted in many positive outcomes considering that the project was only launched in March 2002. In terms of publications and disseminations, 17 events have been reported as either publications in accredited journals or papers presented at conferences, which is impressive"* (Mogotlane 2003, p. 1). The program received the award for Education Innovation from the University of Pretoria in 2004.

A three year funding grant from the University of Bergen was initially (1998-2001) used to establish the partnership network for the project. During this period, two peer-reviewed scholarly books were edited and published:

> Meerkotter, D., Fataar, A., Fuglestad, O. L., & Lillejord, S. (Eds.). (2001). *Learning from each other. School development & social transformation in South Africa.* Wyvern Publications: Cape Town.
>
> Calitz, L., Fuglestad, O. L., & Lillejord, S. (Eds.). (2002). *Leadership in Education.* Heinemann: Sandown.

From 2002, the following tangible outputs can be reported to date:

> A peer-reviewed book is currently being edited with the following title: Qualitative Research Methodology: An African perspective.
>
> Twelve articles were published by this community of scholars in accredited, leading international journals.
>
> Three PhD candidates have already completed their PhD research in less than four years and have been replaced by new research students.
>
> The Unit for Research on Indigenous Knowledge Systems and the journal called INDILINGA: African Journal of Indigenous Knowledge Systems were established. The journal is in the process of being accredited.
>
> The South African Association for Research and Development in Higher Education (SAARDHE) and the Productive Learning Cultures program co-hosted an international conference in Durban, South Africa, 2004, on Indigenous Knowledge Systems in Higher Education.
>
> In 2005 another international conference will be hosted by the same partnership in Norway and the theme for the conference will be Knowledge Production in Higher Education in the 21st Century (http://www.knowledge2005.uib.no). PhD students will present their completed PhD research along with international scholars at this conference. For more information on this and other projects the website may be visited: http://www.siu.no/nufu
>
> The program sponsored an additional edition of the accredited journal called African Journal of Research in Mathematics, Science and Technology Education, 8(1) in 2004. The feature article in this edition addressed ontological, epistemological and methodological issues in indigenous knowledge systems in science and technology

education. This edition afforded emerging African scholars the opportunity to publish their research alongside established scholars in the field of mathematics, science and technology education.

The obvious strength of the program is that while it started with a very broad scope, the researchers have managed, through an ongoing negotiating process, to settle on two major themes: *ICT and learning and Indigenous Knowledge Systems.* These two themes enlighten and challenge one another. Through discussions and deliberations in the research-group, the focussing process has provided the program with a theoretical and methodological foundation. The PhD-students learn from and contribute to the ongoing epistemological discussions on topics with relevance for the two focus areas.

Sustainability and quality through substantial support and competence building

Both external (funders) and internal (coordinators) stakeholders demand accountability, exceptional performance and quality from the program participants. These demands, however, are sensibly balanced with quality support to all who have to deliver the quality outcomes. Both external and internal stakeholders realised that sustainability of learning and initiatives beyond the program period is dependant on quality support to all involved.

Support to all the program participants takes on many different forms namely academic, administrative, technical and financial:

The academic support to PhD students and their supervisors have been described throughout the article. The main academic support mechanisms will briefly be highlighted again in this section. Support to PhD candidates is provided through competence building in research methodology and the use of the web-based communication platform during workshop sessions and the support is continued virtually after the workshops have taken place. The interactive web-based module on qualitative research methods is another support tool for both the PhD candidates and their supervisors. The team approach to supervision supports supervisors in the responsibility to ensure the high quality of their PhD candidates' research.

The support to PhD students and their supervisors to *publish* their work is possibly the most significant feature of this project that makes it both powerful and successful in achieving the high standards that should be set for all PhD programs. To date, various opportunities have been created that afforded all PhD students that have been and are currently part of the PhD program to publish their research. So far, this publishing platform consists of the journal Indilinga and planned books.

Administrative support is crucial to the current success, measured against the kinds of outcomes delivered by the program. Both the Northern and Southern coordinators have been able to set up what can be called an administrative office, which is pivotal in the effective management of the many program dimensions. These offices ensured regular and open communication lines to the many participants in the different

countries. These offices also facilitate the student and staff exchanges, between the different institutions as well as the administration that is involved in attending and organising conferences.

The success of the ICT activities rests on the *efficient technical support* provided to each PhD student and his/her supervisor. The expertise of information communication technologies experts from both the coordinating universities have been contracted to provide quality technical support to all project partners.

The *financial support* given to the PhD students is broad in scope and supports a student to engage in the following scholarly activities:

> Register for a PhD at their respective universities.
>
> Cover the running costs that are instrumental for conducting research such as tape recorders, transcribers' fees, editors' fees, purchasing of research instruments, equipment and appropriate books.
>
> Attendance and presentation of their work at workshops and at least at one national and one international conference.

The most significant lesson learned from the program is the importance of focusing on outcomes and honouring initiatives. Participants who show initiatives that lead to outcomes have been supported, financially and otherwise, in their endeavours. So far, the most prominent examples of this are the journal Indilinga and the web-based module in qualitative research methodology. The biggest obstacle has been that the PhD-students only study part time, and work full time. If the universities, where they are registered, could have supported them financially, at least for part of their work, they could have finished earlier. Another problem is logistics, caused by the number of countries, universities and people involved in the program. In order to keep the project focused, everybody has to participate on a regular basis in the ongoing debates, and this presupposes frequent meetings. There are certain issues that are not easily resolved through ICT, and question of trust, partnership equality and accountability are among these. The types of competencies that were acquired by the different stakeholders involved in the program varied. While students gained competence in research skills, their supervisors learned from one another about different supervision approaches and the potential effects of these approaches on the quality of student research. The project leaders who were responsible for coordinating all the activities and initiatives and who are academics themselves, learned mostly through trial and error methods about the project and people management. As project leaders we realised that to sustain enthusiasm, participant motivation and ultimately progress, we had to communicate personally on a very regular basis with the participants. Where the communications were face-to-face in person, the success measured against outputs and attitude, was more prominent.

Conclusion

The program *Productive Learning Cultures* received an award from the management

of the University of Pretoria as being innovative in a holistic sense through its conceptualisation, structuring and functioning. Some of the characteristics that were highlighted and perceived as both innovative and effective may be summarised as follows:

The PhD program has a strong *African and international* presence.

Doctoral students benefited from the advantages that a *team-approach to supervision* had to offer.

Annual workshop-based accountability sessions and research methodology training were held. The discussions that were initiated at the workshop sessions were sustained through *web-based interventions* such as:

Scholarly *e-interaction* amongst PhD candidates themselves and the team of supervisors.

e-training and *e-support* on qualitative research methodology.

A *virtual community of scholars,* which worked across geographical and institutional boundaries, was established.

There was an intentional focus on developing the *capacity of all* participants alike, which included students, supervisors, project managers, technical and support staff.

The virtual community's pedagogical and scholarly activities were monitored through *research* and *research-based decisions* made about the effectiveness of the curriculum and nature of the program.

The PhD students were supported to finish in the required time and to *disseminate knowledge* through publications in accredited and peer-reviewed journals, books and at conferences.

The overarching intention of the program Productive Learning Cultures is to detect and build on existing strengths at each participating institution. An essential trait of the program is partnership equality, and this taken for granted attitude of mutual trust has undoubtedly contributed to the strengthening of ties between the participating institutions. Through workshops, seminars and conferences, joint publications and a close follow-up of the PhD-students' thesis, the goal has been to build a strong and sustainable foundation for knowledge about research throughout the network and thus strengthen each institution's research capacity. During the entire project period, there has been a steady focus on academic quality and accountability. Because of this basic focus and the participants' willingness to contribute, the project has served as a learning experience for all involved.

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