

Development of a virtual space for online supervision and mentoring as a novel architecture for learning and improving the quality of graduates' studies in Africa

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Abstract

The quality of tertiary agricultural education is critical because it determines the expertise and competence of scientists, professionals and business leaders in all aspects of agriculture and related industries. Unfortunately, the quality of graduates is deteriorating as universities experience overwhelmingly high lecturer-to-student ratios and declining public funding yet the agricultural labour market is increasingly demanding more fit-for-purpose graduates. There is an urgent need for innovative approaches to effectively mentor and supervise graduate students. The development of virtual online supervision and mentorship approaches offer a complementary method to face-to-face contacts. GRS has therefore been developed as a virtual tool for enhancing the quality of African University graduates by deploying an effective and interactive on-line technology platform for supervision, mentoring and tracking of graduate students. The online tool facilitates interactions between graduates and the global agricultural research community within a web-based knowledge and learning support system that also serves as a repository of knowledge on agricultural biodiversity research in Africa.

Key words: Mentoring, supervision, tracking, virtual tool

Résumé

La qualité de l'enseignement supérieur agricole est essentielle car elle détermine l'expertise et la compétence des scientifiques, des professionnels et des chefs d'entreprise dans tous les aspects de l'agriculture et des industries connexes. Malheureusement, la qualité des diplômés se détériore avec l'expérience des universités est massivement envahi par les hautes proportions professeur-élèves et le financement public en déclin, tandis que le marché du travail agricole est de plus en plus exigeants, il veut des diplômés plus en forme à l'usage. Il y a un besoin urgent d'adopter des approches novatrices pour efficacement avoir de mentor et encadrer des étudiants aux cycles supérieurs. Le développement des approches virtuelles de la supervision et de mentorat en ligne offre une méthode complémentaire contacts de face-à-face. Le GRS a donc été conçu comme un outil virtuel pour améliorer la qualité des diplômés de l'université africaine par le déploiement d'une plateforme en ligne de technologie efficace et interactif pour la surveillance, l'encadrement et le suivi des étudiants des cycles supérieurs. L'outil en ligne facilite les interactions entre les diplômés et la communauté de la recherche agronomique mondiale dans une connaissance basée sur le

Web et le système d'apprentissage de soutien qui sert également de référentiel de connaissances sur la recherche de la biodiversité agricole en Afrique.

Mots clés: le mentorat, la supervision, le suivi, l'outil virtuel

Introduction

The quality of tertiary agricultural education is critical because it determines the expertise and competence of scientists, professionals, technicians, teachers, and civil service and business leaders in all aspects of agriculture and related industries. It raises their capacities to access knowledge and adapt it to the prevailing circumstance, and to generate new knowledge and impart it to others. Unfortunately, the quality of graduates is deteriorating as universities experience overwhelmingly high lecturer-to-student ratios and declining public funding yet the agricultural labour market is increasingly demanding more fit-for-purpose graduates. There is also evidence of agricultural labour markets expressing low confidence on the graduates (RUFORUM, 2009), primarily as a result of insufficient supervision and mentorship. Employability of the graduates is thus diminishing when they are most needed to drive the agricultural innovation processes in order to revitalise agriculture, boost economic recovery and growth and hasten attainment of the MDGs.

The demand for tertiary education has continued to rise (World Bank, 2009) and subsequently, the number of both public and private Universities is increasing tremendously. However, the majority are overwhelmed by the worsening lecturer-to-student ratios with some lecturers now supervising up to 20 graduate students over one academic year. For instance, annual growth in graduate student population at Egerton University and JKUAT in Kenya increased from 45% in 2003 to 110% between 2007 and 2011 without a corresponding change in the number of supervisors. This is dramatically weakening the quality of supervision and mentorship of graduate students. There is a consensus amongst recent studies, such as those by the Inter-Academy Council and the Commission for Africa, that urgent action must be taken to restore the quality of graduate and postgraduate agricultural education in Africa (FARA, 2006).

The Commission for High Education in Kenya (CHE) recommends lecturer-to-student ratio of 1:10 for applied, pure and natural sciences but all the public universities only meet 44 to 58% of the required number of lecturers (Gudo *et al.*, 2011). With this overstretched supervision capacity, the quality of the graduates and their research products is adversely affected. This is evidenced by high level of plagiarism in Theses and papers submitted for publications. This situation also lengthens the time to graduation (TTG). As universities struggle to cope with the surging numbers of graduate students, many faculty staff continue to use the conventional learning, teaching and supervision approaches based on face-to-face encounters between the students and supervisors. This is quite demanding both in time and financial resources and there is an urgent need of innovative approaches to effectively mentor and supervise the graduate students. The development of virtual online supervision and mentorship approaches therefore offer a complementary method to face-to-face contacts and are more cost-effective with wider reach and could improve the quality of graduates

studies. Their use is favoured by the increased public investment in fibre optic cables and promotion of ICT.

The Graduate Research Support (GRS) online tool. The aim of the GRS online tool is to enhance the quality of African University graduates by deploying an effective and interactive on-line technology platform for supervision, mentoring and tracking of graduate students. GRS provides a virtual space to facilitate agricultural biodiversity research by providing virtual roaming supervision and mentoring at all stages of research with reviews of students hypothesis, research questions, methodology and results write-ups provided by renowned experts to complement the supervision provided by the University where students are registered. It helps graduate students by providing an additional support mechanism as they go through thesis research. The online tool facilitates interactions between students and global researchers and is a web-based knowledge and learning support system and repository of knowledge on agricultural biodiversity research in Africa. Discussion forums on specific topics related to the students' research are moderated by students and are open to input from a global scientific community through blogs. Links to on-going work and completed thesis and related publications are provided to build a body of work in agricultural biodiversity. This also ensures that graduate research by African students is not 'lost' and remains available to a global research community. A database of experts and institutions is progressively built to facilitate networking, knowledge sharing and collaboration. GRS intends to convene biennial workshops of alumni and supervisors to discuss their work, present papers, provide targeted courses for professional and skill development and to foster networking.

It offers increased access and networking with global experts in agro-biodiversity and agricultural research in general. GRS has the advantage of opening new and more opportunities for graduates to engage with other experts and actors in the agricultural labour market in a bid to improve practical exposure and improve relevance. This platform provides a virtual environment for collaboration, communication, information dissemination and interaction between graduate students, alumni, professors and various other stakeholders. These groups will form a dynamic community of practice and serve as an innovative approach and an interactive online networking platform to promote inter and intra institutional networking among universities, agricultural research institutions including the CGIAR Centres, agricultural development agencies as well as advanced research institutes in different parts of the world. The GRS key features and processes

Application form and the process. The student fills an on-line application form that provides personal identification particulars and contacts for ease of communications. The student also provides thesis related information including the title, the University where the student is registered, collaborating institutions and names of supervisors. The key words are also provided and the student then uploads summary proposal and photo suitable formats. The application is then submitted to ABCIC where the necessary verifications are made and a suitable expert is approached and assigned to review the proposal.

Project reviews and student blogs. This feature allows for scientific reviews of the students' research by the experts and mentors in a blog system. The blog makes it possible for diverse comments to be made by a wide range of experts therefore adding value to the quality of the student's research. The bloggers provide their contacts for any possible follow up with the student individually. This component provides updates on the status of the reviews and the progress made in the research work. Any publications from the research work are listed as a repository of information and for reference purposes. The web link for journals and University libraries where the scientific publications and Theses could be accessed will be provided.

Data base of experts and reviewers. The process of building a data base of experts and reviews is underway. The experts and reviewers are well accomplished scientists in their own fields of expertise and they provide the required technical support, reviews and mentorship on voluntary basis. However, depending on the level of scientific inputs and technical support, they may be included as co-authors of any publications emanating from the research activities. They may also be considered as co-supervisors for the research work. This serves as an incentive to their continued interest and support to the students and the initiative.

Database of alumni and community of practice. As the program develops, a database of alumni will be developed and will be used as a basis for establishment of a network and community of practice for past students, experts, reviewers, University supervisors and mentors. These agro-biodiversity and agricultural practitioners will be provided with a biennial platform for interactions, scientific exchange, information sharing and networking.

Information repository. Keeping track of research graduate research outputs particularly Theses and papers published in refereed journals is often a tedious process. GRS will therefore develop a tracking and depository system for the graduate students research outputs with web links to the repository particularly libraries and journals. A database of published works will be developed, maintained and updated for reference purposes. Where possible and where copyrights and intellectual property rights are not compromised, the papers and Theses will be documented and made available to *bona fide* users. Links to on-going work and published papers are provided to build up an online, open access database of work in agrobiodiversity. Students' biodata and summaries of their work are visible on the GRS website thus raising their professional profiles.

Piloting the GRS online tool. The GRS online tool has already been tested and its potential for supervision, mentoring and support to graduates students is highly promising. It's potential has been demonstrated by the large number of enquiries by graduate students and numerous website hits. The tool needs to be further developed to enhance interactions and inter-phases between the experts' databases and the rest of the tool. The data base of expertise, reviewers and mentors also needs to be increased. A stringent system of enlisted students into the online tool is also need and RUFORUM may provide the students' recruitment platform.

Conclusion

The GRS online tool has a great potential to enhance the quality of African University graduates through virtual supervision, mentoring and tracking of graduate students. It has a multiplicity of benefits to the graduates, supervisors, experts, Universities and other collaborating institutions. However, its full potential needs to be realized through investments in developing all the features fully and expansion of the graduate students and database of experts and reviewers.

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