

Research Application Summary

Embedding Post-Doctoral Fellows in African Higher Institutions of Learning: Experiences and Lessons Learnt from the case of Makerere University, Uganda

Karubanga, G. & Agea, J.G.

Department of Extension and Innovation Studies, School of Agricultural Sciences, College of Agricultural and Environmental Sciences, Makerere University, P.O. Box. 7062, Kampala, Uganda
***Corresponding author:** gkarubanga@caes.mak.ac.ug/ amootigabs@gmail.com

Abstract

The post-doctoral fellowship was intended to unearth the potential of participatory, and information and communication technologies (ICTs) led extension and learning approaches in agricultural and environmental education in Uganda. This involved establishment of a working team as required by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) including a mentor and other academic staff supervising a team comprised of two doctoral and three Masters students who were working on different topics related to the post-doctoral research agenda. All the graduate students were partially supported under the post-doc research fellowship to undertake their research activities. This paper provides insights and lessons learnt from implementation of the post-doctoral fellowship as well as progress made by the graduate students in their studies. The key skills gained as a result of the post-doctoral fellowship include among others mentoring and supervisory skills, publishing skills and financial management skills. Besides, through the post-doctoral fellowship, it was also learnt that it is imperative for mentors to be patient in supervising and guiding students with different academic backgrounds and research experience. This explains why the graduate students who were attached to this post-doctoral fellowship progressed at different paces. In a nutshell, the post-doctoral fellowship provides vast experience, knowledge and skills in capacitating young scholars upon completion of their doctoral studies. Thus, in future, there is need for systematic documentation of post-doc experience of the beneficiaries through peer learning and sharing experiences as different Fellows employed different post-doc models in mentoring the graduate students.

Key words: Makerere University, mentorship, peer-learning, post-doctoral fellowship, students training

Résumé

Les études post-doctorales avaient pour but de découvrir le potentiel des approches de vulgarisation et d'apprentissage participatives et basées sur les technologies de l'information et de la communication (TIC) dans l'enseignement agricole et environnemental en Ouganda. Cela a impliqué la mise en place d'une équipe de travail, comme l'exige le Forum régional des universités pour le renforcement des capacités en agriculture (RUFORUM), comprenant un mentor et d'autres membres du personnel universitaire supervisant une équipe composée de deux étudiants en doctorat et de trois étudiants en maîtrise travaillant sur différents sujets liés au programme de recherche post-doctorale. Tous les étudiants diplômés ont été partiellement soutenus par la bourse de recherche post-doctorale pour entreprendre leurs activités de recherche. Cet article présente les idées et les leçons tirées de la mise en œuvre de la bourse de recherche post-doctorale ainsi que les progrès réalisés par les étudiants diplômés dans leurs études. Les compétences clés acquises grâce à la bourse post-doctorale comprennent notamment des compétences en matière de mentorat et de supervision, de publication et de gestion financière. En outre, le stage post-doctoral a permis d'apprendre qu'il est impératif que les mentors fassent preuve de patience pour superviser et guider des étudiants ayant des parcours universitaires et des expériences de recherche différents. Cela explique pourquoi les étudiants diplômés qui étaient

rattachés à cette bourse post-doctorale ont progressé à des rythmes différents. En bref, la bourse post-doctorale permet d'acquérir une vaste expérience, des connaissances et des compétences pour former les jeunes chercheurs à la fin de leurs études doctorales. Ainsi, à l'avenir, il est nécessaire de documenter systématiquement l'expérience post-doctorale des bénéficiaires par le biais de l'apprentissage par les pairs et du partage d'expériences, car différents boursiers ont utilisé différents modèles post-doctoraux pour encadrer les étudiants diplômés.

Mots clés : Université de Makerere, mentorat, apprentissage par les pairs, bourse post-doctorale, formation des étudiants.

Introduction

In Uganda, participatory, and Information and communication technology (ICT)-led extension and learning approaches in rural development are largely not exploited in development practices. The emphasis is currently shifting from purely technical to extension and poverty alleviation; which calls for a considerable need for more widespread application of robust participatory, and ICT-led extension and learning approaches (MAAIF, 2016). Thus it is important to train skilled professionals in this aspect. The Regional Universities Forum for Capacity Building in Agricultural (RUFORUM) has introduced post-doctoral fellowships where recent PhD graduates are awarded scholarships to strengthen their research, mentoring and interdisciplinary skills.

These scholarships are intended to enhance supervisory and mentorship skills among young scholars where students and their faculty advisors undertake research to address research gaps in an interdisciplinary manner. To contribute to this effort, the Post-Doc Fellow together with a senior university mentor and other staff at Makerere University supervised and mentored doctoral and masters' students in different research aspects but contributing to the major research theme of participatory and ICT-led extension and learning approaches. The Post-doc Fellowship was intended to achieve three specific objectives, i.e., 1) guiding and mentoring students in conducting research, 2) generating research results and information to strengthen regional watershed management and other related agricultural extension and education studies and 3) strengthening the capacity and skills of the Post-Doctoral Fellow to provide academic guidance and mentoring to graduate students.

The design of the post-doctoral fellowship

The post-doctoral fellowship started on 1st March 2018 and is expected to end by 28th February 2020. The Post-Doctoral Fellow was attached to Makerere University at the College of Agricultural and Environmental Sciences in Uganda. The Fellow worked under the guidance of a senior academic staff who acted as the mentor. In supervising and mentoring graduate students, other academic staff with relevant knowledge and skills in participatory and ICT-led extension and learning approaches were appointed by the School Board at Makerere University to strengthen the supervisory team. The fellowship supported the training of two PhD students and three MSc students with a potential spill over to undergraduate students in the Department of Extension and Innovation Studies. The research studies conducted by the graduate students were all related to the broad research area of the post-doctoral fellowship, i.e., participatory, and ICT-led extension and learning approaches in agricultural and rural development.

The Fellow worked with the research team to develop proposals, research tools, collect and analyze data, deliver seminars, prepare publishable research papers and develop theses/dissertations. Figure 1 shows that the senior academic staff (mentor) provided mentoring and supervision to the Post-Doc Fellow who in turn supervised the five graduate students (2 PhDs and 3 masters). The PhD students at some point mentored the MSc students especially in aspects of proposal development and research tool development. To some extent, the MSc students mentored the three undergraduate students pursuing Bachelor of Agricultural and Rural Innovation (BARI) during their supervised experiential learning

projects; an action-oriented research. This postdoc fellowship supported all students registered with the College of Agricultural and Environmental Sciences of Makerere University, Uganda for purposes of promoting communication and coordination of research activities. The students supported by the post-doctoral fellowship conducted their field research activities in different districts of Uganda including: Kiryandongo, Wakiso, Gulu, Kumi and Kakumiro. The research focus of the students were different, thus different study sites. The progress made by graduate students and their respective research outputs are indicated in the sub-subsequent sections.

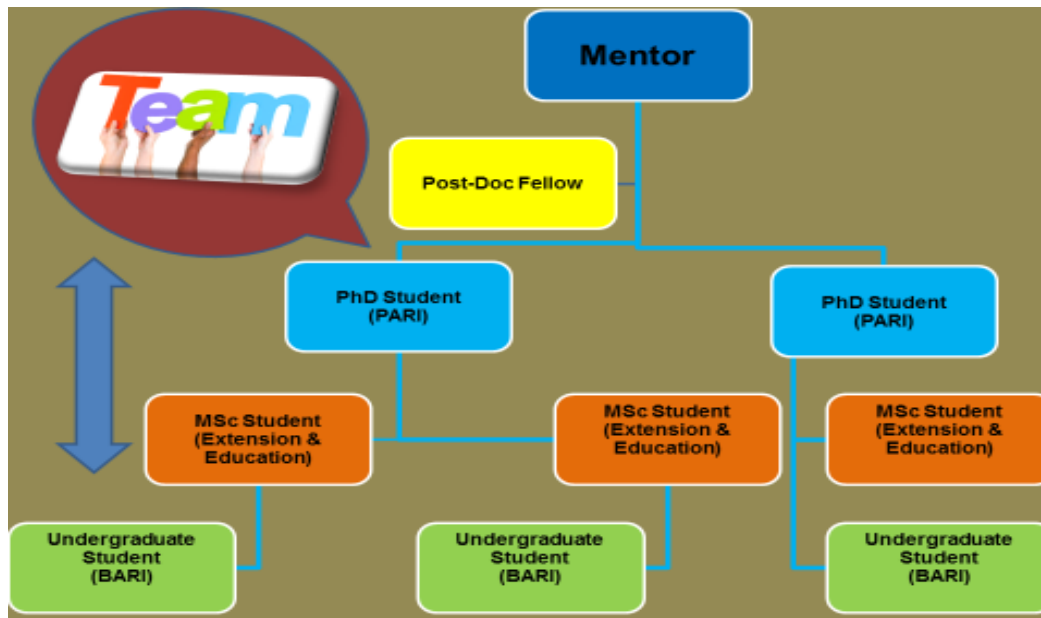


Figure 1: The structure of a post-doctoral fellowship research team

Post-doctoral fellowship experiences and skills

Research, supervision and mentorship. During the post-doc fellowship the Post- Doctoral Fellow gained experience via the guidance of a senior university academic mentor which has strengthened the research and mentorship skills of the fellow. This also led to development of team work spirit and skills in the process of supervising and mentoring graduate students. Further, experience has been gained through following up of the students during data collection exercise which strengthened the Fellow's skills and knowledge on how to effectively design, execution and evaluation in relation to the study objectives. This, enhanced the monitoring and evaluation skills of research activities progress for the Fellow. It also provided technical opportunity for backstopping to students as they collected their research data.

It was also of great experience mentoring and supervising graduate students with varied backgrounds and especially limited skills in research methods. The students enrolled for programmes which required background in social science disciplines. What made it interesting was the supervision of one of the PhD students with natural sciences with different style of writing. This called for constant coaching of the mentee and provision of articles in areas of social sciences as well as recruiting academic staff with relevant experience in natural sciences.

Publishing. Research and supervision of students forms the core requirement by the university for professional growth of the Post-Doctoral Fellow. The final stage in any well-structured academic research process requires publishing of research articles in reputable journals. However, publishing good pieces of work requires adequate knowledge and experience. Fortunately, during the Post-Doc Fellowship, vast knowledge and skill has been gained and strengthened with regards to developing

and reviewing manuscripts for publication. Together with the assistance of the mentor, the post-doc Fellow, graduate students and some faculty members, various journal articles have been developed, submitted and some published in reputable journals as key outputs of this fellowship. Currently, a total of seven journal articles have been published in reputable journals and one accepted during the post-doc fellowship. One of the other experiences is that publishing is a frustrating process more especially when comments are returned amidst other engagements with tight deadlines. Table 1 below provides the research outputs of the post-doc fellow and the respective graduate students.

Table 1: Research outs of the Post-Doc Fellowship

Name of the post-doc fellow/ graduate student	Topic under investigation	Research output
Post-Doc Fellow (Dr. Gabriel Karubanga)	Unearthing the potential of participatory, and information and communication technologies' (ICTs) led extension and learning approaches in agricultural and environmental education in Uganda.	<ul style="list-style-type: none"> • Poster presentation at the 6th RUFORUM bi-annual conference in Nairobi, Kenya from 20th – 27th October 2018 • Attended a one week leadership training funded by RUFORUM and Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya from 15th- 19th October, 2019 • Three abstracts were developed and submitted to the African Journal of Rural Development (AFJRD) for the 2018 Bi-annual conference in Nairobi Kenya • Three manuscripts published and one accepted for publication as shown below. <p>Karubanga, G., Agea, J.G., Okry, Florent., Kiwewesi, S. and Lwanga., M.K.J. 2019. Factors effecting change in rice production practices and technologies among smallholder farmers in Kamwenge District, Uganda. <i>Indian Journal of Ecology</i> 46 (2): 316-324.</p> <p>Karubanga., G. and Agea., J.G. 2018. Unearthing the potential of participatory, and information and communication technologies' led extension and learning approaches in agricultural and environmental education in Uganda. <i>African Journal of Rural Development</i> 3 (2):729-737.</p> <p>Karubanga, G., Okry, F., Kibwika, P., Agea, J.G. and Sseguya, H. 2019. Reinforcing social learning beyond video: lessons from the Sasakawa Global 2000 rice videos in Kamwenge district, Uganda. <i>International Journal of Agricultural Research, Innovation & Technology</i> 9 (1): 59-66.</p> <p>Ekepu, D., Karubanga, G., Agea, J.G., and Okiror, J.J. (accepted). A review of social learning as a function of student-centered outreach in African universities. <i>Journal of Agricultural Review</i>.</p>
PhD students		
1. Kalule Wamala Stephen (Reg. No. 2014/HD02/508U)	Psychosocial antecedents to farmers' learning behaviour in the student-to-farmer University Outreach in Northern Uganda	<ul style="list-style-type: none"> • Three manuscripts published <p>Kalule, S.W., Sseguya, H., Ongeng, D. and Karubanga, G. (2019). Contextual determinants of learning behaviour differentials amongst host-farmers of University-Student Outreach in Uganda. <i>Advances in Agricultural Sciences</i> 7 (2): 33-47</p> <p>Kalule, S.W., Sseguya, H., Ongeng, D. and Karubanga, G. (2019). Social cognitive drivers of farmer learning behaviour in the student-to-farmer university outreach in Uganda. <i>African Journal of Science, Technology, Innovation and Development</i>, DOI: 10.1080/20421338.2019.1586114</p>

		Kalule, S.W., Sseguya, H., Ongeng, D. and Karubanga, G. (2019). Facilitating conditions for farmer learning behaviour in the student-to-farmer university outreach. <i>The Journal of Agricultural Education and Extension</i> , https://doi.org/10.1080/1389224X.2019.1604389 .
2. Richard Kifuko (Reg. No. 2014/HD02/510U)	Influence of cage aquaculture on livelihoods of capture fishers around Lake Victoria in Wakiso district, central Uganda	Two manuscripts drafted and data analysis still on-going in preparation for drafting the dissertation
Masters students		
1. Acom Janet (Reg. No. 2013/HD02/1928U)	Farmer evaluation and uptake of improved groundnut varieties for enhanced food and income security in Kumi district, Eastern Uganda	Draft dissertation in place
2. Asasira Gilbert (Reg. No. 2016/HD02/112U)	The role of video in influencing farmer learning about postharvest handling practices and technologies among maize farmers in Kakumiro district, Uganda	<ul style="list-style-type: none"> • One manuscript published Asasira, G., Karubanga, G., Okry, F., Kibwika, P. and Agea, J.G. (2019). How video attributes influence farmer learning about maize postharvest handling practices and technologies in Kakumiro district, Uganda. <i>Int. J. Agril. Res. Innov. Tech.</i> 9 (1): 59-66. DOI: http://dx.doi.org/10.3329/ijarit.v9i1 .
3. Mr. Eku-lu Emmanuel (Reg. No. 2016/HD02/114U)	Effectiveness on-farm demonstration method on farmer learning about improved cassava production practices and technologies in Kiryandongo District, Uganda	<ul style="list-style-type: none"> • One publication drafted for publication in the Journal of Agricultural Extension (JAE) • Dissertation submitted for examination

Communication, coordination and reporting. In the process of supervising and mentoring graduate students, a variety of methods, tools and techniques were employed by the Post-Doc Fellow including phone calls or SMS, use of emails and WhatsApp conversations especially with students having smart phones. For purposes of sharing experience with the postdoctoral team, a WhatsApp group was created in order to share progress related to research work. Focus was on sharing field experience during data collection process, drafting articles for review and sharing literature among the team members. At times, physical quarterly meetings were organized by the Fellow to meet and discuss with the graduate students and the senior academic mentor. Frequently, individual meetings were conducted with respective graduate students to discuss progress and challenges in the implementation of the fellowship. During the implementation process of the post-doc fellowship, the students were encouraged to present their research progress during the Friday graduate seminar series. Besides, receiving comments from fellow students and academic supervisors, the students gained skills in presentation, and this built their confidence. This also enhanced the students communication skills and interpersonal relations. One of the requirements regarding the post-doc fellowship was reporting status of implementation of research work. In performing this, quarterly, bi-annually and annual reports were prepared and submitted to RUFORUM.

Financial management and accountability. This involved preparation and submission of financial reports to RUFORUM showing how the funds were utilized during the excursion of the activities which were planned to implement the fellowship. In the process a lot of experiences and skills were gained such as managing funds for the fieldwork through making requisitions and following up students during their field work to ensure that the funds are put to rightful use.

Participation in the grant proposal writing. It was an interesting experience participating in the grant proposal writing responding to the European Union call entitled 'Intra-Africa Academic Mobility Scheme' - Call for proposals EACEA/03/2019. The call targeted African universities where it was a key requirement to form consortia for effective implementation of the projects. A consortium consisted of the following higher institutions of learning; Botswana University of Agriculture and Natural Resources (BUAN) in Botswana as the lead applicant, Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Kenya, Nelson Mandela Africa Institute of Science and Technology (NM-AIST) in Tanzania, Makerere University (MAK) in Uganda, University of Eduardo Mondlane (UEM) in Mozambique and University of Lomé (UL) in Togo. In trying to respond to the call, the post-doc Fellow participated in developing and submission of a proposal entitled 'Scholars' mobility for excellence in agricultural sciences in Africa (SMEASA). SMEASA's aim is to enhance quality and quantity of human capital for the agricultural sector while enhancing intra-Africa collaboration in Agricultural Education and Training (AET) and research to end hunger in Africa as required by Agenda 2063. The intention is to promote multi-disciplinary skills and partnerships, with the goal of training a pool of future scientists with such skills. In the process a number of agricultural professionals will be trained who will champion agricultural development in Africa. It targets providing opportunities to students and academic faculty from weak institutions to train in stronger institutions for enhanced quality education and research around the continent. The experience, knowledge and skill gained was also related to working with diverse categories of people with multidisciplinary expertise.

Conference and workshops attendance. Attendance of the 6th RUFORUM conference in Nairobi, Kenya in October 2018 was one way of sharing experience with the international body of scholars where poster and oral presentations were made. This helped in creating networks for the post-doc Fellow with other experienced scholars. It is hoped that this will lead to development of sustainable collaborations and networks. During the post-doc fellowship, the post-doc Fellow was selected as one of the four Carnegie sponsored fellows to participate in the Carnegie Corporation of New York (CCNY) panel at the 62nd annual meeting of the African Studies Association (ASA) in Boston, USA from 20th – 24th November 2019. This also provided an opportunity to participate in an intensive two-part PEASS writing workshop in Nairobi, Kenya from 23rd – 26th October 2019. This allowed the Fellow to meet one-on-one with a number of the African Studies Review Editorial Team or Board to discuss the revisions made on the draft article prepared by the Fellow. Through this experience the Fellow will gain a lot of knowledge and skills in the review of publishable articles which is critical for professional growth.

Leadership training. As a part of building leadership skills and competence of young scholars, the Fellow attended a one week leadership training funded by RUFORUM and Jomo Kenyatta University of Agriculture and Technology (KUAT) in Nairobi, Kenya from 16th- 19th October, 2019. The training was organized and delivered by AWARD (African Women in Agricultural Research and Development) purposely to engage Fellows under the Carnegie fellowship in a leadership and mentoring training workshop. The training ended with award of certificates for having successfully attended and completed the training on leadership course. Upon return, this enabled the Fellow to implement the new knowledge and leadership skills in his teaching and research of at Makerere University.

Lessons learnt from the Post-Doc Fellowship

Follow up of students for progress assessment. During the implementation period of post-doc fellowship, a lot of lessons were learnt with regard to supervision and mentorship of graduate students. Firstly, to enhance timely submission of deliverables, students need to be constant followed-up and reminded about the timelines. This was done through sending SMS, WhatsApp and phone calls. It was coupled with regular meetings with the students for purposes of encouragement and technical backstopping and in the process the progress made was assessed. It was observed that group-based meetings are imperative in mentoring and supervision of graduate students as this approach allows for smooth interactions among the students, which is cardinal for graduate studies as well students getting to know the status of the other. This however, does not mean that individual meetings are not paramount as they help in guiding students who require specific attention regarding their research work. Conversely, effective mentorship during research work demands a lot of efforts and energy in following up and coordinating with students especially during data collection process. It also enhances field-based guidance and analysis of findings with regard to qualitative data being collected.



Dr. Gabriel Karubanga, a Post-Doc Fellow at the cassava demonstration plot with an MSc. student in Kiryandongo district, Uganda.

Being empathetic. Graduate supervision and mentorship through post-doc fellowships require a lot of patience, kind and being empathetic to students particularly those who are slow in grasping research skills. This is true in circumstances where students enroll for graduate studies with different academic and social backgrounds. As a mentor, one should employ step-by-step guidance if the supervision and mentorship is bear fruits. It is vital to acknowledge that graduate students live in an environment where they have social networks that tend to grab their attention as well as attending to social responsibilities.

Supportive environment. During the implementation process of the post-doc fellowship, it was learnt that for supervision and mentorship to be effective, resources should be adequate to procure equipment such as computers for students. The computers availed to students would help them type, analyze and prepare their reports in a timely manner rather than taking their research work to secretarial bureaus, which violates the principle of confidentiality in social research. Lack of computers delay the students to have their deliverables in a timely manner as the bureaus were often busy with other assignments from other scholars. Quality of work produced by the bureaus was also contested due to many spelling errors, thus leading to a student taking a lot of time to edit the write-up. In order to provide a conducive environment for the mentees, it is necessary also that they are provided with the necessary equipment such as computers since they enroll for graduate studies with basic computer skills.

Developing research protocols. It is imperative that all academic research work of the Fellows has a predetermined work plan in order to track progress made. The plan should clearly articulate what, how and when certain research activities should be conducted with clear justification. The lesson learnt through this post-doc fellowship is that for effective mentorship to take place, clear plans have to

be developed by the students with guidance from their mentors for purposes of efficient delivery of research outputs. This is evident where two of the graduate students exhibited steady progress after following the plans which they developed to guide their research work. The lessons acquired from this practice is to recommend that all future post-doc Fellows enforce this practice for efficient and effective process.

Conclusion

The Post-Doc Fellowship was intended to unearth the potential of participatory, and information and communication technologies (ICTs) led extension and learning approaches in agricultural and environmental education in Uganda. Through this fellowship, the capacity of the Post-doc Fellow to supervise graduate students was strengthened given the collective technical backstopping and guidance support from the rest of faculty academic staff. The key skills gained as a result of the post-doctoral fellowship include, among others, mentoring and supervisory skills, publishing skills and financial management skills. In particular, publishing, leaderships, communication and presentation skills were harnessed through attending workshops, conferences, seminars and other related feedback fora throughout the entire post-doc fellowship. This also helped the Fellows to establish collaboration with diverse actors including other post-doc scholars, policy and higher institutions of learning across the globe, which is cardinal for experiential sharing and learning. However, effective mentorship through post-doc arrangements requires constant follow-up and communication between the mentors and the mentees to track progress for efficient delivery of outputs.

In future, Post-Doc Fellowships should provide more opportunities for Fellows for continued sharing of experience amongst the Fellows as this will inform on how to effectively and efficiently implement the same model targeted at young scholars. What happens after the post-doc fellowship is a cardinal question; implying that the Fellows have to be adequately grounded in grant proposals to make the training and supervision of students sustainable. This can be integrated in the policies and strategies in the Carnegie Corporation of New York (CCNY) together with the African universities implementing the Post-Doc Fellowship. The experiences and lessons presented in this manuscript provide insights for CCNY, RUFORUM, higher institutions of learning, post-doc Fellows and graduate students for future and sustainable implementation of similar fellowships. In a nutshell, post-doc fellowship are critical as they help in grounding young scholars as competent and future researchers and supervisors of graduate students.

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