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Research Application Summary

Developing soft skills sets for graduate employability in Africa

Akello, M.O.[1], Sylvia, C.C.[1], Nampala, P.[1], Adil, M.[2] & Limbikani, M.[3]

[1]Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) P. O. Box 16811, Kampala, Uganda
[2]University of Gezira, P. O. Box 20, Wad Medani, Sudan
[3]Lilongwe University of Agriculture and Natural Resources (LUANAR), Lilongwe, Malawi

Corresponding author: mollyakello2@gmail.com

Abstract

The current global labour market in the field of science technology engineering and math (STEM) is for employers to identify versatile graduates who are not only equipped with technical skills, but more importantly with soft skills that will drive their organizations to compete successfully in the labor market. Employers are however lamenting that the graduates have not adequately acquired employability skills and soft skills during their training in universities. The purpose of this article is therefore to discuss the various modules used by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) to improve postgraduate programmes in order to develop soft skills among graduates from RUFORUM member Universities. Particularly, the article will focus on two key skills enhancement courses which are aimed at developing the graduates' research skills and ultimately their employability in the field of STEM namely: Scientific Data Management and Analysis (SDM/A) training and the Proposal Writing Scientific Writing and Journal Publications training. These were the most sought for soft skills trainings among the RUFORUM member universities. The article seeks to highlight the benefits of the trainings to the staff and students from these Universities. The article will also present participants' views and perceptions regarding the training, collected via questionnaires, of the importance and necessity of the trainings for their studies and future careers.

Key words: Member Universities, soft skill enhancement trainings RUFORUM graduates

Résumé

The current global labour market in the field of science technology engineering and math (STEM) is for employers to identify versatile graduates who are not only equipped with technical skills, but more importantly with soft skills that will drive their organizations to compete successfully in the labor market. Employers are however lamenting that the graduates have not adequately acquired employability skills and soft skills during their training in universities. The purpose of this article is therefore to discuss the various modules used by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) to improve postgraduate programmes in order to develop soft skills among graduates from RUFORUM member Universities. Particularly, the article will focus on two key skills enhancement courses which are aimed at developing the graduates' research skills and

ultimately their employability in the field of STEM namely: Scientific Data Management and Analysis (SDM/A) training and the Proposal Writing Scientific Writing and Journal Publications training. These were the most sought for soft skills trainings among the RUFORUM member universities. The article seeks to highlight the benefits of the trainings to the staff and students from these Universities. The article will also present participants' views and perceptions regarding the training, collected via questionnaires, of the importance and necessity of the trainings for their studies and future careers.

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Introduction

Soft skills are the intangible, non-technical, personality-specific skills that determine one's strengths as a leader, facilitator, mediator, and negotiator. They are personal attributes that describe an individual's ability to interact with others. Also known as people skills, they complement hard skills to improve an individual's relationships, job performance and career prospects (Robles, 2012). According to Shakir (2009), desirable and quality graduates suitable for the job market are those who possess an essential blend of hard skills and soft skills including: communication skills, critical thinking and problem solving skills, ability to cooperate with others, lifelong learning and information management skills, ethics and professional moral skills as well as Leadership skills. The current labor market particularly in the fields of Science, Technology, Engineering and Math (STEM) seeks to employ fresh graduates and soft skills are critical in assessing the graduates ability to deliver effectively on their responsibilities.

Despite the fact that there are increasing employment opportunities for STEM graduates, employers are concerned that some graduates from Universities lack essential soft skills, required for them to enter the workplace once they have completed their studies. A recent study by Evolve Scientific on Science industry perceptions on preparedness of graduates, showed that recruiters place high importance on soft skills when hiring but that employers are increasingly finding these skills lacking in graduates. The study further revealed that graduates lacked critical thinking skills, independence and adaptability. There is therefore an urgent need for Universities to churn out high quality graduates with relevant skills to gain employment. Universities should therefore combine both soft skills to hard skills into their graduate training programmes. This will lead to confident graduates with a sense of balance and proportion in these skills to be produced (Hairuzila, 2009). The RUFORUM regional programmes strives to bridge this gap through collaboration with its member universities to maximize the chance of graduates gaining employment by ensuring they have the right mix of skills to meet industry needs. The RUFORUM skill enhancement trainings have been designed to fill gaps existing in the academic growth curve of both students and staff at the RUFORUM member universities. These training courses are conducted for both staff and students. A recent RUFORUM study (2014) indicates that the short skills enhancement trainings are contributing greatly to the performance of the alumni in their day to day work. The Training and Quality Assurance Unit supports the delivery of skills enhancement courses in the following areas: Scientific Data Management and Analysis (SDM/A), Proposal Writing and Scientific/Technical Writing, Leadership and Personal Mastery, Value Chains, Food Systems & Nutrition, and Journal Publications.

This article will review the recently conducted skills enhancement trainings in the areas of Scientific Data Management and Analysis (SDM/A), Proposal Writing and Scientific/ Technical Writing and Journal Publications. These trainings were recently conducted in three RUFORUM member Universities: Lilongwe University of Agriculture and Natural Resources (LUANAR), University of Gezira, and Uganda Martyrs University based in Malawi, Sudan and Uganda respectively. The trainings were conducted during 2017 and 2018 attracting about 150 participants including both University staff and students.

Scientific Data Management (SDM) training. Scientific data management enhances the capacity of postgraduate students to meaningfully engage in conducting quality research by developing appropriate research proposals, design of studies, collection and analysis of data for meaningful reporting. PhD and MSc students are heavily involved in large scale experiments or surveys that sometimes lead to complex designs and to subsequent messy data. Figuring out how to handle data resulting from such experiments/surveys takes time, and getting appropriate assistance is difficult. The students are also constrained on how to effectively analyze data using appropriate statistical software, interpret the results and communicate well to the target audience.

In recognition of these shortcomings, RUFORUM facilitated SDM training among two member Universities to enhance the quality of research outputs among the students and graduates. Such courses were conducted between 2016 and 2017 in University of Gezira, Sudan, and Uganda Martyrs University with a total of about 150 University staff and students. This course is structured to encompassing broad biometrical needs that equips the postgraduate students with skills required in conducting their research efficiently and effectively. The content incorporated in this course is drawn from broader topics ranging from planning of experiments/surveys, designing and implementing experiments, conducting data analysis for qualitative and quantitative data. The students are also exposed to key statistical software for data analysis and reporting.

Methodology of SDM Course delivery. SDM is a 5-10 day course which employs a balanced approach based on an initial needs assessment of the participants to gauge their needs and wants. The course includes minimal theoretical underpinning, a wide range of statistical analytical tools, and practical application of the learning to solve real-world problems. Course delivery is based on mixed mode, including interactive lectures and practical sessions designed to complement the lecture material. The approach is mainly participatory, with students expected to be active learners, and to commit themselves to intensive and critical self-study. Assignments are designed to train and test critical thinking skills. Real life data sets brought by facilitators or drawn from students prior to the start of the course are used throughout as examples and exercises. Daily evaluations of the trainings are made on all activities covering aspects on module content, course delivery, depth of coverage, knowledge acquired, facilitators' understanding of concepts and skills, time management and welfare.

Proposal Writing, Scientific/Technical Writing and Journal Publications. A major bottleneck to quality publishing by universities in sub-Saharan Africa (SSA) is due to lack of adequate soft skills to write competitive manuscripts. This unfortunate trend is being transmitted down the spiral from supervisors to graduate students, with eventual decline of the visibility of SSA research outputs in various credible international frontier research repositories. This vicious cycle threatens entrenchment in research institutions and requires urgent redress. In order to address this challenge RUFORUM offers soft skill training on proposal, scientific and journal writing. This training aims at developing (graduate students) and strengthening (academic staff) capacities in writing marketable research manuscripts

for publication in popular scholarly dissemination channels including peer reviewed journals. Such training was conducted in 2016 in LUANAR and other Tertiary/Vocational Education Institutions in Malawi for selected academic staff and graduate students.

Methodology of Proposal Writing and Journal Publication Course Delivery. The training process begins with an initial plenary session held during check-ins at the start of everyday and end-of-day evaluations to self-evaluate participants to assess capacity needs. The facilitators of the training employ a participatory approach and discussions are based on the individual participant's recommendations and/or experiences to learn about cutting edge designing and writing skills. The main topics covered during the trainings are based on the key considerations and styled for different demands of the targeted audience. The trainings are predominantly hands-on exercises and programme activities are done through discussion groups comprising of 4-6 members based on peers in a given discipline.

The facilitators and course content are evaluated daily on the basis of importance - performance analysis (IPA), an evaluation tool developed by Martilla and James (1970) used in areas of education, research and sports. The IPA analysis is conducted in order to understand customer satisfaction and service quality (Ainin & Hisham, 2008). The facilitators and the method of course delivery is evaluated by the participants using a short fill-form that focuses on delivery and content of the presentations, extent of achievement of participant's expectations, and suggestions for improvement of the various activities, including logistics, welfare and coordination. At the conclusion of the trainings, all the slides and training materials used by the facilitators are packaged and shared with individual participants for future use.

Key findings from the trainings. Analysis of the evaluations of the soft skills training on Scientific Data Management by the participants provided great insight regarding the benefits of soft skills training. Findings showed that overall the SDM training was beneficial and relevant to their research and career development prospects. The trainings were conducted based on key thematic areas obtained from the needs assessment analysis. In the area of data management, majority (93%) of the participants benefitted either very much (48.8%) or much (44.2%). The reasons provided by the participants for rating how much they benefitted included: practical/hands on experience on data management (24.4%); data management in excel (31.7%); Pivot table, filtering and pivot chart (22.0%); more information learnt in excel (9.8%) and willingness of the facilitators to share their knowledge (4.9%). Participants however lamented about the speed at which the courses were being delivered and data entry in Excel as the most difficult topic on data entry and it was suggested that more practical sessions were necessary to ensure all students were at par and that the facilitators could consider slowing down to allow the students grasp some of the concepts.

In the area of Data analysis and Cross tabulation, 98% of the trainees indicated that they benefited either very much (61%) or much (37%). Students gave several reasons why they felt that they benefitted from the training. These included ample time given to coding and entering data in the analysis software, participatory sessions and adequate support and attention from facilitators. On the other hand, 52% of the students did not benefit from the training either due to lack of personal computers, 20 % did not have the requisite software on their computers while 13% lacked clear understanding.

Most participants were satisfied with the software used during the training like SPSS and GenStat. Participants were equipped with knowledge on how to use the software to calculate the frequency

tables/tabulations, import data, sampling methods, coding multiple response, Generating statistics using GenStat, designing experiments and drawing graphs/graphics, chi-square, descriptive statistics for categorical data, analysis and interpretation, sampling error and sample size determination. The IPA analysis indicated that the participants benefitted either very much (75%) or much (25%). The participants appreciated the topics as they were able to learn how to code multiple response questionnaires and analyze and interpret different data sets, hence helpful in guiding their research.

Majority (97.1%) of the participants could clearly distinguish between discrete and continuous variables, sampling methods and multiple responses. About 74.3% of the trainees indicated that they benefitted either very much or much (22.9%) in this area. Participants gave the following reasons as to why they benefitted; the facilitators exhaustively explained concepts, and practical approach of the training planning and designing data entry.

Outcomes of the proposal writing and journal publication training. A report obtained from the participants attending the training sessions at LUANAR indicated that the training enabled them to: 1) appreciate the role of publication towards career development; 2) develop and outline manuscript structure; 3) appreciate the processes involved in developing and writing up a thesis and a manuscript indented for a peer-reviewed journal; 4) understand that the burden of writing is with author after paper has been reviewed; 5) recognize the systematic presentation of results in text, tables, figures and/or images; and 6) learn the use of various referencing tools like EndNote for citations. 6) understand result and discussion presentation either singly or combined; and 7) appreciate that one should discuss more of differences than similarities. 8) understand the role of ethics in science communication; 9) make informed choices on journal selection; and 10) understand the process of manuscript submission and how to deal with review comments.

At the end of the training, staff collectively analyzed the status of publications amongst themselves and the publication culture among academic institutions in Malawi. It was established that several of the departments had never written and/or submitted a paper particularly for students and also many junior staff. It was evident that most hadn't published and hence the need for publication irrespective of their discipline.

Overall, the participants were satisfied with the clarity of presentation. They thought that facilitators of the trainings were knowledgeable with clear understanding of the concepts both in theory and practice in their areas of specialty. That they provided good explanations for the questions put to them. One of the participants stated that 'all the questions were answered very well. The evaluations also indicated that none of the trainees rated the presentations as not being clear. On the other hand, language barrier was seen as a great challenge particularly in Arabic speaking countries. In institutions of higher learning in these counties, 60% of the participants lamented that they were slow in understanding some of the concepts delivered in English.

Conclusions and recommendations

In this article, the key findings from the trainings conducted in the three member Universities indicated that the participants benefitted highly. The results of this study can help universities to improve their curricula. More of such trainings should be introduced in the training programmes among institutions of higher learning to boost the research outputs of both the staff and the students in accordance with current market requirements.

In spite of the benefits of publishing papers among institutions of higher learning, disturbingly, most departments in LUANAR had never written and/or submitted a paper for publication. There is therefore need to incorporate such trainings within the curricular to improve visibility of the University and enhance research outputs both among staff and students in the University.

Participants attending both trainings however lamented about the speed of course delivery with some of them indicating that they did not find ample time to practice and exercise on some of the key activities like data entry and data analysis. Emphasis therefore should be placed on increasing contact hours and student clinics to address some of the individual concerns by the staff and students. The courses could also be offered in the most preferred language by the participants to ensure understanding of the course content. Universities could also invest on buying analysis software and have them installed freely on student and staff computers for easy accessibility. Furthermore, universities should conduct a study to determine the level of graduates' competency in research skills. This information will certainly assist them to re-allocate their resources and implement improvement programmes, such as facilities development, financial reallocation, and curriculum development, in order to improve graduate's soft skills and ultimately employability.

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