USING EMERGING TECHNOLOGIES TO CAPTURE AND DISSEMINATE INDIGENOUS AGRICULTURAL PRACTICES FOR IMPROVED FOOD PRODUCTION IN UGANDA: A CASE OF LUWEERO DISTRICT (INDIGRIC)

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Project Team

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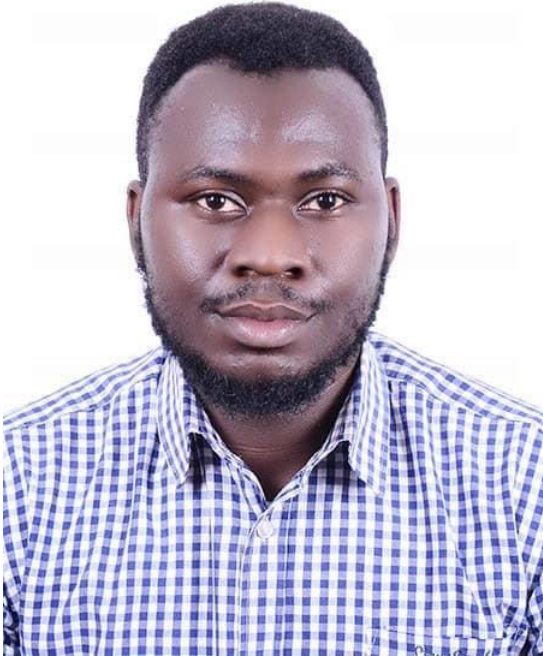Mentor: Prof. Paul Muyinda Birevu

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Other Project Team Members

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INDIGRIC App Developer

Mr. John Paul Ssebisubi

Extension Worker

Ms. Dartivah Asiimwe Kitinisa

Master Student

Introduction

INDIGRIC PROJECT

- Sought to use emerging technologies to capture, store and disseminate indigenous agricultural practices to farmers in Luweero District

- Observation that banana production in Buganda has deteriorated to such an extent that most banana supply into Buganda comes from outside the region.

- This was found to be a big challenge for the region whose staple is bananas/ plantain

- Low levels of production were attributed to presence of various pests and diseases, failure to modernize agriculture, unreliable water supply, changed socio-economic set up, the effects of climate change and poor soil fertility maintenance among others

- These challenges have led to decline in household food production for both home consumption and agricultural financial incomes

Introduction Cont…

INDIGRIC PROJECT

- Several indigenous agricultural practices which are cheaper, easy to use and without side effects exist and can be used to increase soil fertility and subsequently increase banana yields in Buganda

- These include mulching, using organic manure, intercropping, crop rotation, grassed soil bunds, and water retention trenches among others

- These were however found to be less known especially to the young farmers.

Therefore:

- Taking advantage of high presence of mobile phones among the youths, the INDIGRIC Project sought to develop online technologies, and an Application (INDIGRIC App) dedicated to training younger farmers through step-by-step demonstrations of affordable indigenous agricultural practices.

- The purpose was to tap into young farmers' social spaces and avail agricultural information in order to increase food yields for home subsistence and family financial incomes.

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Objectives of the Project

The objectives of the project were to:

- Carry out a needs assessment survey about farmers' agricultural challenges in Luweero District

- Capture relevant indigenous agricultural practices using emerging technologies

- Transfer indigenous agricultural practices to younger farmers using a mobile Application (INDIGRIC App).

- Develop journal articles disseminating findings about using emerging technologies to document and disseminate indigenous agricultural practices to farmers

Methodology

- The study used a Design Based Research (DBR) approach which combines research, design and practice and the output. The five iterative stages of DBR (Awareness of the problem; Suggestion of innovation; Development of the Solution, Evaluation of the solution; and Making a conclusion) were used.

- A Needs Assessment survey was carried out from selected villages in Luweero to inform the required information gap

- With the help of an Extension Worker, farmers using conservational agricultural practices were identified, interviewed and video recorded from other districts.

- An INDIGRIC App was developed and populated with content in English and Luganda, videos and images of the various indigenous practices

Methodology Cont...

- With support of Local Council leaders, 10 farmers were identified from five villages making a total of 50 farmers.

- Trained in using indigenous agricultural practices: making water retention, trenches, soil bunds, grassed soil bunds, making the right banana planting hole, selecting right suckers, preparing and applying organic manure etc

- The INDIGRIC App was installed on their smart phones, and they were guided in how to navigate it to access the information they required

- An evaluation of the App was carried out and feedback used for improvement.

Training Activities


Training of farmers at Luyobyo Village

Training of farmers at Waluleta Village

Key Research Outputs

- *Bridging the Digital Divide: Using Emerging Technologies to Bridge the Indigenous Agricultural Knowledge Gap Between the Young and Elderly Farmers in Uganda*

- *Demystifying the Dichotomy: Using Emerging Technologies to Capture, Store and Disseminate Indigenous Agricultural Practices in Luweero District, Uganda*

Innovations Arising from the Project
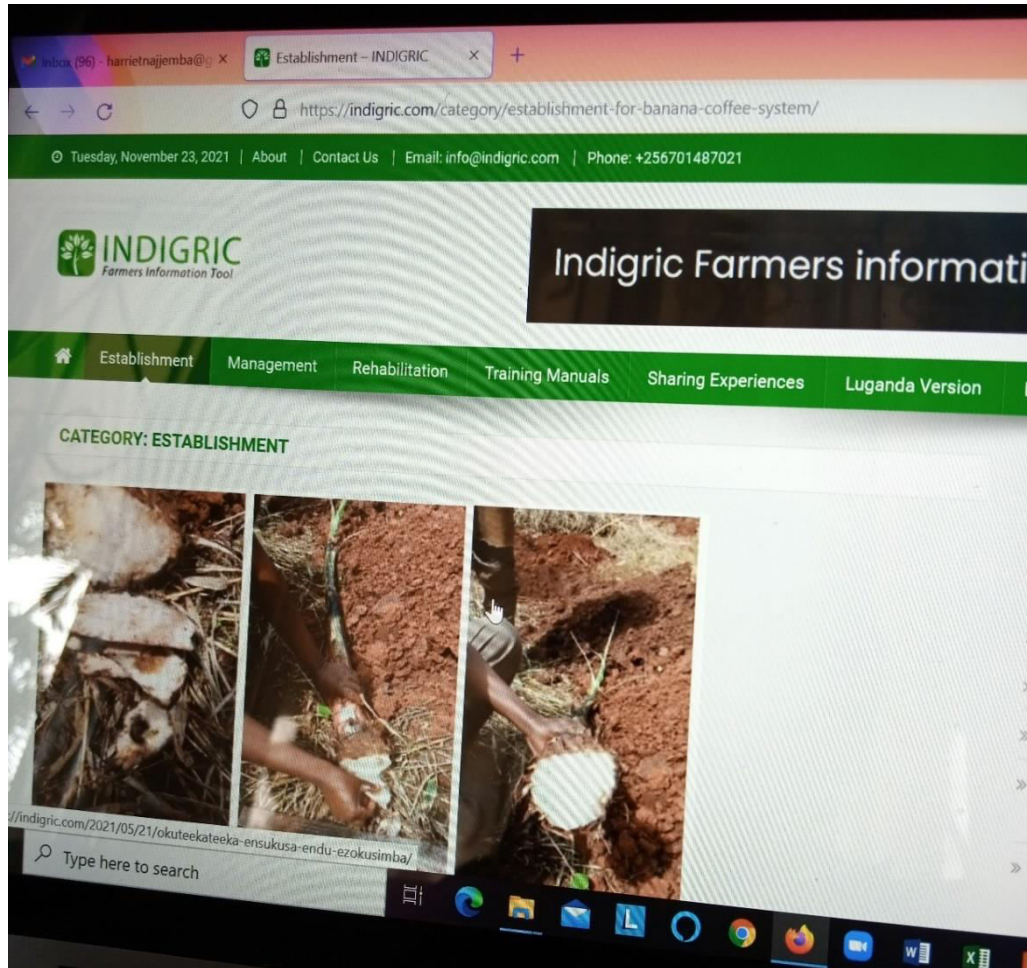
www.indigric.com

- Developed an App focused (Indigric Farmers' Information Tool) on guiding farmers on how to use indigenous agricultural practices/ conservational agriculture to improve banana production for increased food production for both subsistence and agricultural financial income.

- Inclusive of video demonstrations, photos, media text of the indigenous practices in both English and Luganda

- Has a component of farmers sharing experiences, viewing upcoming events, and asking questions or leaving a comment
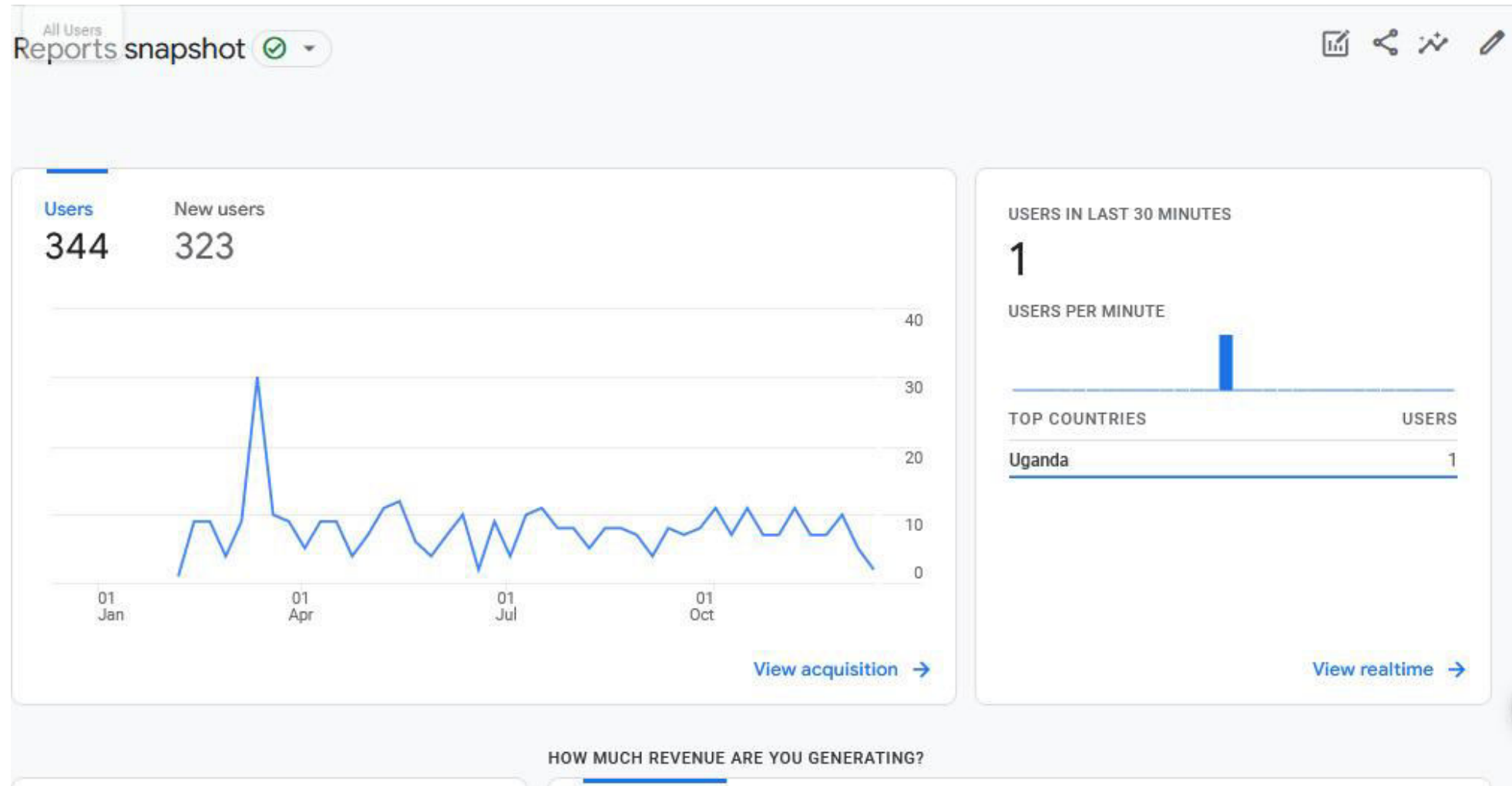
Training Farmers to Use INDIGRIC App

Screenshot of INDIGRIC App as it appears on phone

Training farmers to use the INDIGRIC App

INDIGRIC APP.

Benefits to Society, University & Research Community

Benefit to Society

- Farmer groups in Luweero working with the project have been trained to use indigenous agricultural practices to start or revive their banana farms

- Through the project, farmers were able to get the services of an agricultural extension worker

- These had complained that they had never got the services of agricultural extension workers and did not know where to find them

Benefit to University

- Through capacity building workshops that staff from the Institute of Open Distance and eLearning (IODeL)

- After sharing experiences with St. Pauls' University – Kenya and United States International University-Africa (USIU- Kenya), IODeL was able to guide the university in the policy guideline changes required to hold online/ alternative Examinations

Demonstration Gardens

Master Student Supervision

Ms. Dartivah Asiimwe Kitinisa

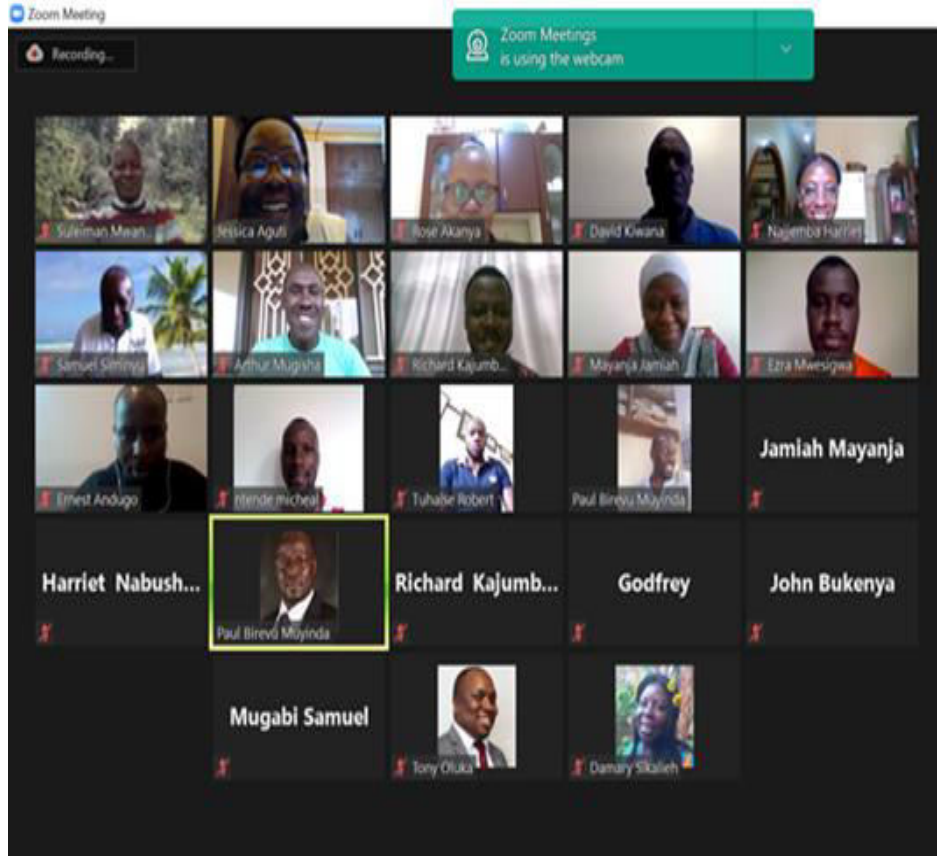Master of Instructional Design and Technology (MIDT)

Title of the Thesis:
"Use of Weblog to Interpret Literary Texts: A Case of Immaculate Heart Girls School, Rukungiri"

Completed and submitted for examination

External Examiner's Report is already in and student just waiting for Defence

Capacity Building in the Unit

- Three capacity building workshops were carried out for faculty in the Institute of Open Distance and eLearning (IODeL)

- Three-day training workshop in were trained to create zoom accounts, sharing them, scheduling meetings and creating webinars, using the Big Blue Button (BBB), to set up polls, word clouds and Jamboard etc

- Another two-day workshop trained in online assessment, including setting quizzes, multiple questions, matching, including images in questions, shuffling questions and making a grade book etc

Skills Enhancement Workshop

- The skills enhancement workshop was held in Nairobi, Kenya as IBIS Styles Hotel

- Enhancing teaching and learning outcomes of Higher education in Africa

- The theme of the workshop was "*Growing Africa's higher Education Through Quality Assurance, Assessment and Embracing Digital Solutions.*"

International Virtual Conference

- Virtual Conference organized by the International Conference on Distance and Open Education and was to do with sharing experience in all aspects to do with distance and open education

- Another conference organized by the International Conference on Education and Distance Learning especially sharing experiences of how institutions coped with teaching and learning during COVID-19 period

Challenges / Limitations and how they were overcome

Challenge / Limitation	How they were overcome
Two Lockdowns	• Leveraged by calling the leaders of farmer groups individually to check on the progress of the activities • Several visits were rescheduled and took place at later dates
Young Farmers' love for quick money	• Counselling and continuous mentoring • Replacing those who had left
Initial poor quality videos	• Recording better quality videos • Placing some in the farmers' shared experience section • Involving the Extension worker
Failure of Physical meetings with App Developer	• Resorted to virtual meetings using Zoom
Failure of physical meeting with Master student	• Resorted to virtual meetings using Zoom

Conclusions and Recommendations

- The post-doc activities provided further training for the PI

- Apart from the research activities and fieldwork, ensuring that all activities were carried out required a lot of planning, time management, team work and collaboration

- There was need to multi-task and carry out several activities at the same time in order to leverage time lost during lockdown

Recommendations

- Technology can be used to improve agricultural production especially among the youths

- Collaborations/ partnerships between Ministry of Agriculture Animal Industry and Fisheries, Extension workers and Ministry of ICT can pass on a lot of agricultural information to improve productivity.

Appreciation

- Greatly appreciate the financial support from Carnegie Corporation of New York which funded all the project activities

- I would also like to appreciate the Directorate of Research and Graduate Training (DRGT), Makerere University for all the financial and administrative support

- Appreciate the farmers of Kazinga, Luyobyo, Waluleeta, Bbaale-Kamuzingiza, & Kiyana villages for their time and collaboration

- The Project Team members for all the teamwork in executing the project activities

Thank you for Listening to me