

## **EGRANARY AS A DIGITAL RESOURCE IN UGANDA: PRELIMINARY FINDINGS**

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**Abstract.** In this paper, we address preliminary findings from a digital literacy study on the use of the portable digital library, eGranary, currently being conducted in a rural Ugandan school. The eGranary system is an intranet that comprises a 750Gb harddrive with specialized browsing software, which can be attached to a PC or a local area network. It contains approximately 10 million educational documents, including Wikipedia, which can be searched like the internet (see [www.egranary.org](http://www.egranary.org)). Drawing on theories of new literacies and identities, the two research questions we are addressing in our current project are as follows: (i) how does eGranary function as a placed resource in Ugandan society? (ii) to what extent do identities shift as teachers learn from and contribute to global knowledge production? These research questions are centrally concerned with the innovative use of educational resources to promote social inclusion in poorly resourced regions of the world.

### **1. Introduction**

One of the greatest challenges to secondary education in Uganda are the limited resources, such as textbooks, in Ugandan schooling. (Businge, 2010a, 2010b). To address this problem, along with other educational challenges in Uganda, our larger UBC research team has begun to research the potential of information and communication technologies (ICTs) to address the acute shortage of textbooks and other material resources in the country. Drawing on research conducted in marginal communities internationally (see Snyder and Prinsloo, 2007), Mutonyi and Norton (2007) identified 5 “lessons” that are relevant to ICT research in Uganda: Collect empirical data that can be used by policy makers and curriculum planners; recognize

local differences between rural and urban areas; promote professional development of teachers and teacher educators; integrate in-school and out-of-school digital literacy practices; and provide opportunities for Ugandans to both access and contribute to global knowledge production.

Notwithstanding the excitement about the potential of ICT to transform learning and teaching in Africa, and to address the shortage of material resources, two well-documented problems are connectivity and bandwidth (Castells, 1996; de Roy, 1997; Warschauer, 2003). Our team has learnt that conventional uses of ICT, apart from mobile phones, are beyond the reach of most Ugandan teachers and students, particularly in rural areas. In our search for more creative approaches to ICT, we identified the new “internet in a box” eGranary Digital Library system, developed by the University of Iowa, as a particularly powerful resource ([www.egranary.org](http://www.egranary.org)). The eGranary system is an intranet that comprises a 750Gb harddrive with specialized browsing software, which can be attached to a PC or a local area network. It contains approximately 10 million educational documents, including Wikipedia, which can be searched like the internet. While electric or solar power is needed to run the system, there is no need for connection to the wider internet, and the costs are not prohibitive. Not only does eGranary provide a wealth of information for users, but users can also develop digital skills like browsing and searching, without connectivity. In June 2008, we contacted Cliff Missen, the Director of the eGranary project, to order the product, and to invite him to meet our research team at UBC. We learnt that if eGranary is to achieve its potential in Ugandan education, teachers need to be able to adapt the system to local needs.

## 2. Research Questions

To this end, the two research questions we are addressing in our current project at Sibatya Secondary School are as follows: (i) how does eGranary function as a placed resource in Ugandan society? (ii) to what extent do identities shift as teachers learn from and contribute to global knowledge production? These research questions are centrally concerned with the innovative use of educational resources to promote social inclusion (Warschauer, 2003) in the global community. As Mutonyi and Norton argued in 2007, the questions address the need for teachers to contribute to, and not only learn from global knowledge production. Our hope is that eGranary can serve as both a tool and a new social space that restructures inequitable social relations. It is being conducted in the spirit of capacity-building advocated by the indigenous scholar, Linda Tuhiwai Smith (Smith, 1999).

## 3. Theoretical Framework

The theoretical framework for the research project is drawn from work in two related areas, each broadly corresponding to the two research questions, respectively: (i) “the new literacies”; (ii) language and identity. Research on new literacies that is relevant to our project is associated with the work of Hornberger (2003), Prinsloo (2005), and

Street (2001). These researchers take the position that literacy practices cannot be isolated from other social practices, and that literacy must be understood with reference to larger historical, social, and economic processes. Thus, while earlier psychological perspectives conceived of reading and writing as the acquisition of particular behaviors and cognitive strategies, more recent insights from ethnography, cultural studies, and critical theory have led to the recognition that literacy is not only a skill to be learned but a practice that is socially constructed and locally negotiated.

Associated with new literacies is the increasing research on digital literacy, multiliteracy, and multimodality (see Coiro, Knobel, Lankshear, and Leu, 2008). The central tenet of this research is that developments in ICT profoundly affect literacy practices across different sites of learning, and that a “text” is not only printed material, but includes visual, oral, and multimodal products. The complex ways in which schools, families, and communities engage in digital literacy practices have become an important site for literacy research and theory, and provide significant insights into the ways in which people learn, teach, negotiate, and access literacy both inside and outside school settings. However, as scholars such as Snyder and Prinsloo (2007) and Warschauer (2003) note, much of the research in this area has focused on research in wealthier regions of the world, and there is a great need for research in poorly-resourced communities to impact global debates on digital literacy. Further, as Prinsloo (2005) notes, digital innovations need to be studied as “placed resources”, suggesting that any given technology, when transplanted, takes on new meanings, particularly in socially distinctive African contexts. The extent to which the resource offers opportunities for users, and the ways in which it is used, needs to be established by research, rather than simply assumed.

With reference to language and identity, the research project seeks to investigate the extent to which teachers’ engagement with eGranary can be understood with respect to research on identity, investment, and imagined communities (Norton, 2000; Kanno and Norton, 2003). This research makes the case that the conditions under which language learners speak, read, or write is best explained with reference to the multiple identities they negotiate in different sites of learning, sites, which are often characterized by unequal relations of power.

#### **4. Methodology**

The research project is taking place at Sibatya Secondary School, a co-educational day school in rural eastern Uganda, which has 700 students and a staff of 35. In September 2008, the UBC team was invited by the principal to help promote digital literacy amongst teachers and students. Of particular interest was the eGranary digital library as well as digital cameras, both of which can be used with limited electrical power and no connectivity. The initial communication was followed up by a research visit to the school in August, 2009, in which Early and Norton met with the principal, teachers and students, and conducted a two-day workshop on the use of eGranary. Tembe joined the project in January 2010, and is maintaining regular communication with the school.

Nine teachers are participating in the research process, two of whom, as subject English teachers, are serving as focal participants. The remaining seven teachers

represent instruction in both the humanities and sciences. The teachers have shared their insights about eGranary in diverse data forms, including face-to-face interviews, questionnaires, email exchanges, professional conversations, photographs, video-footage, and written and audio-taped reflections. The questionnaires required short, open-ended responses and included items related to the teachers' previous experience with computers, with email, and with other digital devices. Question regarding eGranary's perceived strengths and limitations and how it might be adapted for pedagogical purposes in the teachers' subject areas were also addressed. The semi-structured interviews followed up on the themes of the questionnaire. The two focal teachers were interviewed together, and the other teachers were interviewed in two small groups organized by disciplines (humanities and sciences). In all, then, three semi-structured interviews were conducted, each approximately 25 mins to 45mins in length. In addition to following up on the questionnaire information, additional information was gathered in the following areas: 1) the challenges the participants faced in attempting to improve the teaching of their subject area within the limited resources of their local context; 2) how the teachers innovatively made use of local resources to support their students' learning; and 3) how eGranary as a placed resource may (or may not) be useful in their work. The interview data was transcribed in full.

Norton and Early have collaboratively undertaken an initial data analysis and the preliminary findings are reported here. We each read the interview transcripts, questionnaire responses and audio and written reflections. Each made notes about what themes and issues emerged and discussed our preliminary understandings. We are presently engaged in a systematic re-analysis of this data and the additional data that is being collected in the school in Eastern Uganda by Tembe on an on-going basis. The analysis is proceeding through three (3) phases. In Phase 1, initial coding and category identification, we independently read the transcripts and responses and establish emerging themes and categories. In Phase 2, we exchange and share our category systems and, through discussion, modify the existing set of categories and identify emerging clusters as themes. In Phase 3, as an interactive process, we re-analyze the data in more depth according to the established themes and categories as a test for robustness. Thus, the data is analyzed inductively and recursively to find major themes on an on-going basis. The data will be triangulated for 'trustworthiness' and findings reported back to the participants for member checks.

## **5. Preliminary Findings and Analysis**

Although we are still in the process of data collection, we have some preliminary findings to share with regard to our two research questions. With regard to the first question, on the ways in which eGranary functions as a placed resource in Ugandan society, we have found that there is great interest in the information available on the system, and in exploring innovative ways to adapt the resource to local needs. As one participant noted in an interview, many teachers struggle to access information relevant for their teaching:

The main challenge has been the accessing information - actually the books - the books are not there. (Or) those ones which are - that may be donated to us are not relevant to what we are teaching ... Not relevant to the syllabus - So it gives the teacher a lot more time - you have to hunt - for rele- related information - before you can give it to the students.

The participants noted that the eGranary has a wealth of information. As one noted in a questionnaire, "in the absence of textbooks, as it has been in most schools in Uganda, the eGranary is very resourcefull". Other advantages, recorded in questionnaires, are as follows:

- "easy to store and access information"
- "Easily portable and usable where there is no internet service"
- "It's cheaper"
- "More reliable than internet"

The central challenge for teachers is to determine what information on eGranary is in fact relevant to their needs. As one teacher noted,

[the eGranary] has too much information, some of which we might not need... right? For our purposes. So we're looking at the possibility of looking for those sensitive topical issues which we need for our own particular (course work). And we try to download them onto our... uh... computers here.

Further, there is recognition that users of eGranary need to work collaboratively to maximize the effectiveness of the system. As one teacher noted,

So our coming together like this is a way of putting out heads together to know what you can grasp- you can grasp a small part, he grasps another one, she gets another one. Now tomorrow the part which defeats you to get is the one you run to the friend and say 'now how do we do this?' so that together we can access that information for our own good.

In their questionnaires, the teachers also recognized the limitations of eGranary, as the following three questionnaire extracts demonstrate:

- "Can't operate without a laptop"
- "Works only on electric power"
- eGranary "useless without electricity"

With regard to the second research question on the extent to which identities shift as teachers interact with eGranary, the following preliminary findings are relevant. In the following extract, the teachers define themselves as the sole source of information for students in the school. This is captured in the reference to the teacher being "the Bible" in the school. With the introduction of the eGranary, we anticipate that this identity will shift.

Teacher 1: In fact the teacher is just the (whole) Bible-  
 Teacher 2: The teacher is just the Bible in the school. [laughs]  
 Teacher 1: There is no other [laughs]  
 Norton: Is that right, the teacher is the person who has the knowledge.  
 Teacher 2: Yes. Teacher 1: Yeah Norton: There is nobody else.  
 Teacher 1: Yeah. Teacher 2: Because the students-  
 Early: The "e-Granary."

Norton: You're the e-Granary. Teacher 1: [laughs]

In addition, teachers are centrally concerned with the opportunities eGranary will provide for their students, particularly with reference to self-directed study and ownership of meaning. As the following questionnaire data indicates:

- "It's important when the student is allowed to search information on his or her own, will be able to discover and internalize information easily"
- "Learners can access information without necessarily having to move out of their setting"

Our ongoing research will expand on these preliminary findings, focusing on the central role of communalism in African social practices (Kanu, 2006), as well as shifts of identity for both teachers and students.

## 6. Conclusions

As previously stated, these findings are preliminary and so any conclusions should be deemed tentative. That being said, it would be fair to say that in a poorly resourced school, such as our research site, eGranary holds tremendous potential as a 'placed resource' in accessing and providing information for teachers to use with their students. At a minimum, in the absence of textbooks, the teachers, who have classes of between 60 and 120 students, are downloading texts and making copies for students to share. Additionally, an LCD projector has been donated to the school and teachers are able to project relevant subject related information from eGranary for large classes, when electricity is available. However, as has been noted, there are limitations, including frequent electrical power outages and only one laptop and one eGranary for 35 teachers and 700 students. It will be interesting to see how the teachers' remarkable resourcefulness and sense of community plays out in this context. With respect to changing teacher identities, we anticipate a shift from the teacher as sole "bible"/ 'eGranary', to mentor/facilitator, with eGranary as a resource. Moreover, as teachers become more at ease with use of the laptop, eGranary, and email communication, we will be examining how this changes their teacher identities from digital 'apprentices' to 'natives'. Finally, we hope that teachers will soon be creating and uploading locally developed materials, in both English and local languages, to the eGranary. We will be carefully investigating the extent to which our participants' sense of self shifts as they contribute to global knowledge production, becoming digital producers as well as digital consumers.

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