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Digital identities, student investments and eGranary as a placed resource

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In this article, we draw on our research on the digital portable library, eGranary, undertaken in a rural Ugandan village in 2008, to contribute to place-based studies of digital literacy. Our research project investigated the uptake of eGranary by students in the community, focusing on six secondary students who worked as library scholars in the local library. Drawing on Blommaert's construct of scale, we illustrate how both space and time were implicated in the diverse practices associated with eGranary, and their indexical meanings in the wider community. In addition, with reference to Norton's work on identity and investment, we illustrate how students' identities shifted over time from trainee to tutor, and how the use of eGranary enhanced what was socially imaginable to the library scholars. We demonstrate that Norton's construct of investment thus serves as a useful complement to Blommaert's construct of scale. We also found, however, that students in the wider community who did not have access to eGranary engaged in practices of resistance. We conclude that while eGranary traveled well to Uganda, the limited local resources available in the community compromised its effectiveness, and may well limit the realization of students' imagined identities for the future.

Keywords: digital literacy; identity; investment; globalization; Uganda; eGranary

As a library scholar, eGranary helps me a lot by making me perfect. If I have homework, I go to the eGranary and I look for that homework. I learn a lot and more topics that I have not yet covered. (Zuena, female, aged 15, November 24, 2008)

And another problem is that as you have one computer and one eGranary, so many, many people were interested in using it and they could not know very well how to use it, so, they sometimes tried to destroy it, to disturb it in its functions. (Joseph, male, aged 16, November 24, 2008)

Zuena and Joseph are Ugandan teenagers participating in a 2008 research study on the effectiveness of eGranary, a digital portable library, in a rural Ugandan library. As their comments testify, there are both possibilities and limitations associated with this new digital resource, which has traveled many thousands of miles from North America to Uganda. In this article, after reviewing the literature relevant to our study, we describe our research project, in which we investigated how eGranary was 'taken hold of' (Street 2004, 328) by six secondary students in the Kyoto Community Library. We then present the conceptual framework we used for data analysis, drawing particularly on Blommaert's (2010) construct

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of 'scale', which conceptualizes place as both spatial and temporal. In our analysis, we consider to what extent our data help to illuminate issues of scale with regard to the use of eGranary. We also argue that Norton's (2000) work on identity and investment is a useful contribution to the construct of scale, and provides insight into issues of uptake with regard to the development of digital literacy, in general, and the use of eGranary, in particular.

Literature review

In a prescient observation, Warschauer (2009, 136) argues that as there is an increase in efforts to expand educational technology into the developing world, 'a host of new research questions related to digital literacy practices and outcomes will be thrust on the agenda'. We seek to contribute to this emerging area of research by investigating how eGranary functioned as a 'placed resource' in a rural Ugandan library. We first became familiar with this construct on reading Prinsloo's (2005) article, 'The new literacies as placed resources' in which, drawing on Blommaert (2002), Prinsloo argues that despite their global impact, the new literacies, including digital literacies, 'are best studied as resources situated in social practices that have local effect' (2005, 87). In contrasting old and new literacies, Prinsloo distinguishes between literacies that are print and paper-based and ones that integrate written, oral and audiovisual modalities within screen-based and networked electronic systems. His ideas are developed more fully in Baynham and Prinsloo (2009) and Prinsloo and Baynham (2008), which index a trajectory of research on new literacies by a wide range of contemporary scholars (Kress 2003; Street 2003, 2004; Luke 2004; Pahl and Rowsell 2005; Barton 2007; Stein 2008; Janks 2010; Lam and Warriner in press).

With reference to two research studies on digital literacy in the South African context, Prinsloo makes the case that the new literacies cannot assume a generalisability from middle-class American or European contexts to other places. As he notes (2005, 96):

At the level of practice, the new literacies are never reproduced in their entirety across different contexts. They function as artefacts and as signs that are embedded in local relations which are themselves shaped by larger social dynamics of power, status, access to resources and social mobility.

In low technology and socially distinctive African contexts, Prinsloo argues that new literacies work in very particular and unique ways. Whether new literacies offer opportunities for particular users cannot be assumed, he argues, but has to be established by situated research. This is a point also made by Blommaert (2003), Mutonyi and Norton (2007) and Snyder and Prinsloo (2007). Further, Prinsloo critiques models of globalization that do not address complexity and hybridity at local level, arguing that what is needed is a theory of globalization that seeks to understand local cultural processes, and the ways in which symbolic processes are sensitive to local variation.

Working with Snyder in another key publication (Snyder and Prinsloo 2007), Prinsloo develops these ideas, arguing that the new literacies do not have an 'intrinsic resourcefulness' and that debates on the digital divide do not do justice to the situatedness of new literacies. As Snyder and Prinsloo argue (2007, 174):

Digital divide logic overemphasizes the importance of the physical presence of computers and connectivity to the exclusion of other factors that allow people to use electronic media for meaningful ends.

Blommaert (2003, 2010), like Prinsloo and Snyder, is also interested in issues of place with respect to what he calls a 'sociolinguistics of globalization', and he argues that there needs to be a paradigmatic shift from the study of language as 'static, totalized and immobile' to one that is 'dynamic, fragmented and mobile' (2010, 197). The genesis of these ideas, which are more fully developed in his 2010 monograph, are found in Blommaert (2003), in which he argues that a sociolinguistics of globalization is in fact a sociolinguistics of mobility. As he notes (2003, 612):

[W]henver sociolinguistic items travel across the globe, they travel across structurally different spaces and will consequently be picked up differently in different places.

These different places, Blommaert argues, are structured by inequality, and the impact of social and cultural forms of capital across these spaces, whether geographical or social, varies greatly. Further, whenever discourses travel globally, he argues, what is of great interest is not their shape, so to speak, but their value, meaning and function. These are, 'a matter of uptake, they have to be *granted* by others, on the basis of dominant indexical frames and hierarchies' (2003, 616, *italics in original*).

Drawing on the example of a letter written to Blommaert by a young Tanzanian girl he calls Victoria, Blommaert makes the case that many linguistic resources, particularly those associated with people in periphery communities, do not 'travel well' (2003, 619). The letter is written in English, but has many non-standard features. As Blommaert notes, the value of this letter in Dar es Salaam would be indexical of success and prestige; indeed, as he argues, it would construct Victoria's identity as that of a 'good girl', who performs well, and is likely one of the best pupils in her class. As the letter travels to Europe, however, it loses its value and its indexical meaning changes. As Blommaert (2003, 619) concludes:

Consequently, we are facing '*placed resources*' here: resources that are functional in one particular place but can become dysfunctional as soon as they are moved into other places. The process of mobility creates difference in value, for the resources are allocated different functions. The indexical links between signs and modes of communication, and social value scales allowing, for example, identity construction, status attribution and so forth – these indexical links are severed and new ones are projected onto the signs and practices.

While Blommaert expresses some interest in the relationship between literacy and identity, as do other new literacy scholars, this relationship is of central interest to Norton, whose theories of identity and investment in the field of language education have proved productive in our research (see Norton 2000; Norton and Toohey 2011). Drawing on poststructuralist theory, particularly associated with the work of Christine Weedon (1997), Norton takes the position that 'identity' is not a fixed character trait but must be understood with reference to a learner's relationship to the wider social world, changing across time and space, and reproduced in social interaction. In this view, she argues, identity is multiple, changing and a site of struggle. With reference to investment, as Norton and Toohey (2011) note, the construct was developed by Norton to complement the construct of motivation in the field of language learning, and has broader application to other areas of language, literacy and learning (Norton *in press*). Inspired by the work of Bourdieu (1977, 1991) and drawing on a wide range of research, Norton makes the case that learners invest in the target language at particular times and in particular settings, because they believe that they will acquire a wider range of symbolic and material resources which will increase the value of their cultural capital and social power. As the value of learners' cultural capital increases, so learners reassess their sense of themselves and their desires for the future. Hence, Norton argues, there is an integral relationship between language learner investment and language learner identity. Further, investment assumes a wider range of questions associated with a

learner's commitment to learning. In our study, in addition to asking, 'To what extent is the learner motivated to become digitally literate?' we asked, 'What is the learner's investment in the digital literacy practices of eGranary?'

Related to the construct of investment is that of imagined communities and imagined identities (Anderson 1991; Norton 2001; Kanno and Norton 2003; Pavlenko and Norton 2007). Developing this notion with reference to language education, Norton and colleagues have argued that in many language classrooms learners may have the opportunity to invest not only in the classroom community, but in communities of the imagination – desired communities that offer possibilities for an enhanced range of identity options in the future. Imagined identities can be highly varied, from the imagined identity of the more public professional, such as doctors, lawyers, and teachers, to that of the more local homemaker or farm worker. Norton argues that an imagined community assumes an imagined identity, and that investment in language or literacy practices must be understood in this context. Such theories have proved productive in the analysis of findings from our study.

Research study

In 2008, we undertook a research study in a community library in southwestern Uganda, pseudonymously called Kyato Community Library (KCL), in which we sought to determine how secondary school students engaged with a new digital technology called eGranary, and how the development of digital literacy impacted student identity. This project was part of a wider research program, begun in 2003, in which a team of researchers at the University of British Columbia (UBC) in Canada are working collaboratively with East African scholars, teachers, and students, to address language and literacy challenges in the region (see for example Mutonyi and Norton 2007; Kendrick and Jones 2008; Tembe and Norton 2008; Norton and Early 2011; Norton, Jones, and Ahimbisibwe 2011). One of the central questions in the larger research program addresses the ways in which innovations in digital technology can improve language and literacy education in this poorly resourced region.

The eGranary digital library, developed by the Widernet Project at the University of Iowa (www.widernet.org), is an offline digital library that comprises a 750 GB hard drive with specialized browsing software, which can be attached to a PC or a local area network. It contains approximately 10 million educational documents, including websites like 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. This 'Internet in a box' is thus ideally suited to poorly resourced communities. Not only does eGranary provide a wealth of information for users, but users can also develop digital skills like browsing and searching without connectivity. Further, the system can be updated and includes software that enables users to upload local content and distribute it to other users. While the development of eGranary remains in progress, the one in use in the Kyato Community Library is one of the first generation made available by the Widernet Project.

Kyato Community Library, situated next to Kyato Secondary School, is located in Kyato village, about seven miles from the closest town, Ganda. At the time of the study, there was no electricity or running water in Kyato, and the library made use of solar panels for electrical power. The village is very poor, with most families surviving by subsistence-level farming. The library, staffed by local librarians, served both the Kyato Secondary School and the wider community. An eGranary had been donated to the library, and there was a system of 'library scholars' drawn from the local secondary school, who helped with library duties in return for the payment of school fees. It was these six library scholars

who participated in our research study. In the community, the dominant home language is Luganda, one of the six officially recognized regional languages in the country, where English is the official language. Some members of the community, such as teachers from other regions of the country, are multilingual, and English is a second, third, or fourth language for Kyato residents. The library has books and newspapers in both English and Luganda, and many adults from the local community visit the library to read the daily news. In the evenings, the library is one of the few places that offer students light and space to study.

From September to December 2008, Williams, a graduate student working under the supervision of Norton, went to KCL to conduct a qualitative case study on eGranary, with the six library scholars serving as research participants. Norton had visited KCL on many occasions prior to the eGranary study and had conducted literacy research in Kyato village (Jones and Norton 2007; Norton, Jones, and Ahimbisibwe 2011). Dan Ahimbisibwe, the local librarian, helped Williams to negotiate the research site, and served as an important source of local knowledge. His familiarity with the local language (albeit not a mother tongue) has been invaluable in Kyato research projects, since neither Williams nor Norton can speak Luganda. Data were collected with the help of questionnaires, observations, interviews and journal entries, all undertaken in English, the medium of instruction at the school. Prior to Williams' arrival, little use had been made of eGranary because students and teachers had received limited training in the use of the system, and also had little experience with computers. The eGranary had in fact only been used by librarians and one library scholar. This was not an indication of the lack of interest in eGranary, but rather of the lack of opportunity and experience in navigating and searching for meaningful information in a digital format.

The six student participants ranged in age from 14 to 18, and from secondary grade levels 2 to 4 (equivalent to Grades 9 to 11 in North America). Of the six participants, four were male (John, Joseph, Mohammed, Theo) and two female (Nakalema and Zueni). Shortly after arrival in Kyato, Williams administered Questionnaire 1 to the library scholars. It served as an indicator of the participants' ability levels and previous experience with information and communication technology (ICT) and digital literacy, so that Williams knew how best to proceed with computer training and the eGranary study. In Questionnaire 2, administered six weeks after the beginning of the study, Williams asked more specific questions about participants' use of eGranary, particularly to determine whether the participants could use eGranary on their own, and possibly train others, without assistance. Williams made regular observation notes, and made use of a CD that Norton had prepared, which documented her extended conversation with an eGranary technician at the University of Iowa. Norton kept up a regular email correspondence with Williams via the Internet café in Ganda. Towards the end of the study, in November 2008, Williams conducted interviews with all the participants, ranging in length from 15 to 40 minutes. Participants were asked for suggestions on the best use of eGranary, and were invited to share their hopes for the future. While diverse findings from the study can be found in Williams (2009), we wish to focus on data that help to illuminate issues of place with regard to the development of digital literacy, in general, and the use of eGranary, in particular.

Conceptual frame

To illustrate how our study might contribute to place-based studies on digital literacy, we draw on Blommaert's (2010) construct of 'scale' which, as discussed below, seeks to conceptualize 'place' as both spatial and temporal, vertical and horizontal. As Blommaert

Table 1. Blommaert and the construct of scale.

	Lower scale	Higher scale
Time	Momentary	Timeless
Space	Local, situated	Translocal, widespread

argues, when people or messages move, ‘they move through a space which is filled with codes, norms, and expectations. Scale is a metaphor we can use to imagine such moves’ (2010, 32). By way of explanation, Blommaert argues that scholars such as Fairclough (2006) have used the notion of ‘scale’ to simply denote ‘spatial scope’ (2010, 33) and takes the position that ‘a purely spatial use of the term de-historicizes the processes it is supposed to capture’. Scale, in Blommaert’s terms, problematizes binary relationships between the micro and macro, the individual and the collective, the temporal and the timeless, the specific and the general. As he notes (2010, 33–4):

The metaphor suggests spatial images; however, these images are vertical metaphors of space rather than horizontal ones, which are implicit in such terms as distribution, spread, and even community and culture, among others. Scales offer us a vertical image of space, of space as stratified and therefore power-invested; but they also suggest deep connections between spatial and temporal features.

In developing this construct, Blommaert distinguishes between what he calls ‘lower scales’ and ‘higher scales’ (2010, 34), and argues that movement from one scale to another invokes images of society and the social order. With reference to the spatial and the temporal, which are defining characteristics of scale, lower scales are associated with momentary points in time, and local, situated contexts in space. Higher scales, in contrast, are associated with timelessness, and are conceptualized as translocal and widespread in space. Table 1, drawn from Blommaert (2010, 34), captures these distinctions.

In arguing for an integral relationship between time and space, Blommaert draws on Wallerstein’s (1997) notion of TimeSpace, a single dimension that integrates time and space. As Blommaert argues: ‘every social event develops simultaneously in space and in time, often in multiply imagined spaces and timeframes . . . a notion such as scale refers to phenomena that develop in TimeSpace. Scale is not just a spatial metaphor’ (2010, 34). Crucially, then, the phenomena that develop in TimeSpace are social phenomena, and people draw on semiotic practices to make sense of space and time. Further, the TimeSpace in which an event takes place has important implications for what Blommaert calls its ‘indexical meaning’, which refers to instances of communication that can be seen as, ‘pointing towards socially and culturally ordered norms, genres, traditions, expectations’ (2010, 33). In this view, as people seek to achieve understanding in communication, they need to understand a particular instance of interaction in relation to a set of common meanings, so that available meanings can be retrieved and new meanings can be produced.

Findings and analysis

The conception of place as scale, which captures the relationship between time and space, is a useful lens through which to analyse our data on practices associated with eGranary. While TimeSpace is considered an integral construct, we have found that initially conceptualizing Space and Time as distinct heuristics is productive for the purposes of analysis.

Space and eGranary practices

With regard to space, it is clear from the data that practices associated with eGranary, with reference to the translocal and widespread, on the one hand, and the local and situated, on the other, had a marked impact on their indexical meaning with respect to the students in the study. To illustrate: eGranary had been brought to Kyato library from a distant North American site, thousands of miles away, and had been installed in a rural Ugandan library that, at local level, had very few resources. As Williams noted in her journal on October 3, 2008:

Worked with John Bosco, started by showing him around eGranary then got him to do some searches on his own. He also loves Wikipedia. 'First you bring us watches, then you bring us computers, now you bring us eGranary! You people don't rest, you don't sleep! EGranary has come!'

The reference to 'you' indexes people from highly resourced parts of the world who have donated and brought sophisticated equipment to the Kyato library. The equipment is not indigenous, but has traveled across continents from a technologically wealthy site to one where digital technology is relatively unknown. The eGranary indexes not only wealth and power, but also social inequity at a global level. At the same time, however, the eGranary was limited in that it could not serve to electronically connect users locally and globally, which was disappointing to local users.

It was hoped, however, that the eGranary might help mitigate social inequities, partly by providing a wide range of information to users. As Williams noted in her journal of September 28, 2008:

Left off exploring eGranary. As of now, wikipedia.org has been the most successful search option. Dan and a local teacher, observing and throwing random topics at me, were very impressed by the information available on Wikipedia. Everything from a detailed biography of Museveni to bed bugs. Some local content is available.

Further, it was interesting to note that eGranary also increased the social value of the Kyato Community Library at both local and translocal levels. As Joseph said:

It is helpful that it can attract people to come and use it, eh? So that the eGranary can be known by many people, the library can be known, e.g. someone from far, like from Kampala, can come and see that the machine can display such information, and can tell many people that they can come that our eGranary, that our library would be known all over the world, the country, and even outside the country. (Interview, November 24, 2008)

However, at the local and situated level, the site into which eGranary was placed had little socioeconomic structure, no electricity, and no running water. It was only with solar power that the eGranary was able to operate, and even this resource was often unreliable. As Theo noted:

Power is still a problem, because we just use the solar system and then sunshine takes sometimes long without shining. And it rains for two and three days. So if it rains and then to me there is no power. So we just need more solar panels just to connect the power to the computers. (Interview, November 24, 2008)

In addition, not only were local resources limited, but eGranary strained the few resources that were available at local level. As Mohammed said:

We want, we need to have more power because when the computers, or the eGranaries increase, also the power will be needed at a high rate because the eGranary is taking much power compared to other programmes. (Interview, November 24, 2008)

Nevertheless, what was also evident, with reference to issues of local and situated place, is that the students saw in eGranary an opportunity to access a wide range of information,

and to better understand their own location – geographical, political and personal. They eagerly sought information about their President Museveni, about the history of Uganda and its people, and about Africa more broadly, but they also used eGranary to make sense of more personal histories and experiences. Theo, for example, spent much time searching for information about fish, explaining as follows:

When I was young, I could see people moving down the lake just feeding the fish in the water. . . and then my grandmother was always cooking fish, mostly on Sundays, and then it was very sweet. So that's why I check all the information about fish. (Interview, November 24, 2008)

Over time, however, the limited resources associated with the eGranary site created social tension with regard to the use of the system. This is an issue that will be discussed in greater detail below. Hundreds of students and many teachers wished to access the one eGranary, and the demand for the resource was overwhelming. As Williams noted in her journal on October 13, 2008:

eGranary has created mild chaos in the library. Order in the court! Big crowds have started to cause a lot of disturbance (to me and Dan especially) and distraction. Will next discuss establishing order around the computer. Rules and signup sheets perhaps? Yes! I posted rules and eGranary posters for a little advertisement.

Time and eGranary practices

With regard to the dimension of time in the construct TimeSpace, it is clear that the indexical meaning of eGranary was associated with the particular period in time in which students engaged with this resource as well as broader conceptions of time in Ugandan society. With regard to the particular moment in time in which eGranary was used, Barack Obama, an African-American, was standing for election as President of the United States of America. Although this was not a local event, it created much interest in Kyato, as it did in many parts of the world. One student, for example, tried to search the eGranary to address the following question, 'how did Obama get to be in America since he is a black person'. Interestingly, because the particular eGranary that was sent to Kyato had been 'frozen' in time on December 11, 2006, students were unable to locate much information about Obama on eGranary, except that he was a popular senator in the state of Illinois. Further, when they searched for information about Obama's rival, John McCain, they were directed to McCain foods, and came up with many references to McCain's pizza pops, frozen foods sold in North America. This was clearly a limitation of eGranary.

With regard to the use of eGranary, other indexes of time, which were less 'momentary' in nature, were associated with the relationship between time and money, a relationship that could be considered relatively timeless. For example, a number of students commented that use of the commercial Internet was difficult because they had to go to an Internet café to use it, which was expensive, and the costs were exacerbated by the slow bandwidth, because they paid for usage by the minute. With eGranary, students could search for information without having to pay for the period of time in which it was used. As Theo said:

Because I can search different information from the eGranary, thus I can even spend little time, or much of the time without going to the Internet just to pay money. (Interview, November 24, 2008)

In the above discussion, while we have drawn on the construct of scale, we have focused on data that highlight space and time, respectively. However, it is clear that each event or interaction took place in a particular time and space, and that the construct TimeSpace helps to illuminate this relationship. Thus 'chaos' in the library is associated not only

with a particular place which was a remote, poorly resourced rural community, but with a particular time in which Williams was able to train community members in the use of a powerful digital resource. Similarly, the interest in Barack Obama, while taking place at a historical moment in time, must also be understood in relation to a particular place where the inhabitants, most of whom are African, were excited by the unprecedented success of an African-American in USA politics.

Investment and eGranary practices

While the construct of TimeSpace is productive, what Blommaert does not fully develop in his theory of scale is what he calls the issue of 'uptake' by participants in an interaction. As indicated above, Blommaert notes that when discourses travel, their value is 'a matter of uptake, they have to be *granted* by others, on the basis of dominant indexical frames and hierarchies' (2003, 616). Of central interest in our study is precisely the issue of 'uptake', or what we would call the investments of students in eGranary, and the extent to which the identities of participants were implicated in the indexical meaning of practices associated with eGranary.

The central argument we wish to make is that students were highly invested in eGranary because, as users, eGranary expanded the range of identities available to the students, both in the present time and in their imagined futures. It is clear from our data that students' cultural capital and social power increased as they became more digitally literate and proficient with eGranary. At the beginning of the research period, students were learners and trainees. In the first questionnaire, we learnt that five of the six participants were only 'somewhat familiar' with the computer, and only one had ever used the Internet before. By the end of the research, the students had transitioned from being learners and trainees to teachers and trainers, sharing knowledge, skills and information with students, teachers and other members of the wider community. They took their roles as trainers very seriously, considering it their responsibility to make the eGranary accessible to the community, residents of other villages, and even 'the world in general'. As Theo noted:

I want to spread technology about, over the village and then, if time goes on, even the world in general, because there are many people in our villages that don't know about using the computer, and they cannot read. But if I train them how to use the computer, you never know, they can use it. (Interview, November 24, 2008)

Comments written in the first questionnaire illustrated the students' investment in digital literacy and indicated that the students already associated computer knowledge with academic success, improved communication and professional career goals. The following comments are representative of those made by the students in answer to the question, 'How do you think computers can help you with your studies?':

They might help me to pass my exam through making research and knowing more about other features. (Joseph, Questionnaire 1, October 3, 2008)

Through knowing how to use granaries, I could enjoy with it. Through knowing how to send greetings to some people, I could start communicating with them easily. (Nakalema, Questionnaire 1, October 3, 2008)

It can be help for getting job, you can get a job of teaching computer in the country, it can help you find more things. (John, Questionnaire 1, October 3, 2008)

As the library scholars developed their skills and it became known at the school that this select group of students had access to information and technology, they became more

valuable members of the school community. It was well recognized by members of the community that they might need the assistance of library scholars to gain access to eGranary, and to use it effectively. As Mohammed said:

The library scholars, the eGranary has helped us to be famous, known, because many students have come to know that we are (?) whereby we use the eGranary to teach them how to find information on the eGranary and also the outside people have tried to come across us so that we can teach them. (Interview, November 24, 2008)

In many cases, the students had access to more information for certain subjects than the schoolteachers had, and they sometimes assisted the teachers with the technology and their information searches on the eGranary. Zuena, in fact, recommended that the teachers use eGranary as a pedagogical aid, so that both students and teachers could collaborate in the learning process. As she said:

I think it's important for the teachers to use eGranary in teaching us because if they use eGranary in the class and teach us, the students can come on a screen of the computer and see exactly what the teacher is trying to teach and understand. (Interview, November 24, 2008)

Over time, the eGranary and the laptop computer were no longer seen as mere physical tools and material resources – they became meaningful symbolic resources as well. The eGranary was associated with improved academic performance, enhanced possibilities of employment, increased financial resources, and greater access to social networking. The library scholars were highly invested in the new technology, as they saw great benefits accruing from the knowledge gained and the digital skills acquired. Their identities shifted from trainee to trainer, their cultural capital and social power increased, and a range of imagined identities emerged. The following extracts reflect the relationship between student identities, learning, and imagination:

Williams: So if you had a computer lab at the school, what would it mean for the students' future here at the school?

Zuena: It means our future is bright!

Williams: How does it make it bright?

Zuena: We will become experts in the computers . . . I want help my generation also, our young sisters and brothers to have computers and to be allowed to come here in the community library and use computers because it is more important in the future to be knowing the computers. (Interview, November 24, 2008)

Zuena hoped to become a social worker in the future so that she could help her community learn and progress, and help local residents who were suffering from various health and social problems. She emphasized the importance of computers in the future education and progress of her generation, indicating that their future would then be promising. She was willing and able to take on an important role in this transformation. John, similarly, was aware that digital literacy increased the privileges he had in his community. As he said:

Yeah, it's, computer can give us advantages. Even you can get a job in the future for computer in, for example, in supermarkets you can get a job for accountants with a computer. . . I like to be a teacher! . . . I would like to teach biology and mathematics. (Interview, November 24, 2008)

In the following quote from Joseph, we see the value he places on being well known in the community. Throughout his interview, he emphasized the desire for public recognition, both for himself and for the library. Personal fame would make him known as an intelligent,

well-educated and well-trained individual. His comments also reflect his desire to share his knowledge and to help others. By being well known, he can serve as a resource person in the village. As he said:

For me, I think it is important for me because I will, first of all I will be known, as I have some knowledge of using the eGranary. Some people will be, who will have come from very far, will tell others there is a gentleman, I am a gentleman, Joseph, eh? That he knows the eGranary, who can help you, can guide you, that is on my side very useful to be known by the community. It is a good thing. (Interview, November 24, 2008)

Joseph also stated that he wished to become an electrical engineer, an ambitious goal for a poor, rural student. In his eyes, no wish or imagined future identity was invalid or illegitimate. In a slightly different spirit, well aware of the uncertain nature of his educational opportunities, and given the fact that the continuation of his education depended fully on the availability of funding and assistance with school fees, Mohammed used this opportunity to learn the eGranary and the computer in order to develop a provisional plan for his future. In the event that he could no longer attend school due to financial constraints, he could take advantage of his computer skills to seek related employment until he was able to return to school. As he noted:

For me, it will help me because I may, I may, I may leave the KCSS. I could, I should, I could finish my 'O' level when I have no further assistance for further education, so I may use that knowledge that I acquired from the eGranary to get jobs like secretariat and also some simple jobs like playing discos, playing music on discos, and also other jobs in the category of computers. So I'm gaining future knowledge on the eGranary. (Interview, November 24, 2008)

The data suggest that practices associated with eGranary, including social networking, enhanced what was 'socially imaginable' (Prinsloo, pers. comm. May 14, 2011) for these students. For example, we found that the University of British Columbia, most likely unknown to many of the students prior to the UBC research program, became one of the students' favorite sites on eGranary. Theo, for one, was eager to go to UBC to further his studies. His imagined identity was that of an internationally trained doctor. As he noted:

My name is Theo. So mostly I want to ask different questions about the people of the University of British Columbia. I'm willing to join you in next two, three years. So that's after my S6. So because I'm just remaining with two years then to be almost done with my S6. So I expect to join your university. So that's where I become – I want to become a doctor. (Interview, November 24, 2008)

Resistance and eGranary

While the TimeSpace value of eGranary was celebrated by the Kyato community, and the library scholars had great investment in eGranary, we became aware of a darker set of practices associated with this resource, which could not possibly meet local demands for its use. The students often made reference to the fact that only one eGranary was available, but hundreds of students wished to use it. Because of the 'chaos' in the library, Williams in fact wrote a 'Notice to All Computer Users' in which she outlined 'a few friendly rules to follow' with the use of eGranary, and attached it to the eGranary computer. The rules were as follows:

- (1) No more than 2 (**TWO!**) people at a time. **NO CROWDS ALLOWED.**
- (2) You may use the computer for **20 minutes** at a time. If nobody is waiting for you, you may continue working.

- (3) If you wish to use the computer, you will put your name on a **signup sheet**. First come, first serve!
- (4) If you would like to watch **videos** or listen to **music**, you **must** use the **headphones**.
- (5) Please *be gentle* with the computer and treat it nicely. *Be patient*, it's slow because it's a little old.
- (6) Please do not shut down the computer! (Only library scholars may do this at the end of the day.)
- (7) Learn lots and enjoy the eGranary!

Despite these rules, however, competition for the use of eGranary became intense, and, occasionally, Williams had to limit the use of eGranary to the library scholars. This led to resentment amongst students who were not included in the study. Comments from the excluded students were typified by the following: 'Why send us away from computer and yet we want to learn?' (Williams 2009, 64).

While this resentment is an understandable response to being restricted from access to highly desirable technology, the resentment led to a range of undesirable practices and covert forms of resistance on the part of some students. These acts were not forms of resistance to the technology itself, but to the lack of opportunity to develop digital literacy. For example, the library scholars became targets for some unhappy students, who disrupted the library scholars as they worked on eGranary. As Mohammed said:

Because we have only one eGranary and one computer we could find problems like, often students could come and in the absence of Madame Carrie, some students would disturb us, saying that the computer is not ours, let us also give them so that can learn well, while it's our time to learn, because we are the first learners to teach them. That has been the problem with the students. (Interview, November 24, 2008)

Of particular concern was the possibility that frustrated students might damage the eGranary and the computer, rendering the technology unusable to anyone. As Joseph said:

And another problem is that as you have one computer and one eGranary, so many, many people were interested in using it and they could not know very well how to use it. So, they sometimes tried to destroy it, to disturb its functions. But Madame Carrie tried his level best to keep it in safe conditions and those are some of the problems. (Interview, November 24, 2008)

The practices of resentful students were called 'teasing' by the library scholars, and Nakalema said that if the school got more computers, in a computer lab, the aggressive behaviour towards the library scholars would cease:

A computer lab would help, eh, with the students, because everyone will [have?] a computer to overcome the problem of teasing other. (Interview, November 25, 2008)

Discussion

In our analysis of findings, we have addressed the extent to which our research with eGranary in a rural Ugandan library might help to illuminate issues of place with regard to students' development of digital literacy, in general, and the use of eGranary in particular. Drawing on Blommaert's construct of scale, we illustrated how both space and time, or TimeSpace, were implicated in the diverse practices associated with eGranary, and the students' investments in these practices. The information the students sought, for example, was explained with reference to both local and translocal interests, while limitations in access to eGranary were associated with limited local resources and global inequity. Further, we argued that both the

knowledge gained from eGranary, as well as the digital literacy developed, enhanced what was socially imaginable to this group of students: study abroad, travel, advanced education, professional careers, and other opportunities became part of the students' imagined futures and imagined identities. This is not to suggest that what was socially imaginable was also socially available, however. Nevertheless, it was clear that as the students developed valued digital skills and the ability to serve as trainers to other members of the community, their identities shifted, and they gained increasing cultural capital and social power.

While it could be argued that eGranary did 'travel well' to Uganda, the local constraints nevertheless greatly limited its potential. Warschauer (2003) has argued that key resources are needed to promote meaningful access to and use of information and communications technology, particularly in the developing world, and it is helpful to consider the uptake of eGranary with reference to his four-part model. First, Warschauer argues that physical resources, such as computers and the Internet, are key to uptake. As we saw with eGranary, while the Kyato community welcomed eGranary, the fact that there was only one digital portable library, with one laptop, was a severe limitation, and led to great tensions in the community. The lack of electricity was also a major hindrance in the use of eGranary, and there was disappointment that eGranary did not enable students to connect electronically with other users. Warschauer's second key resource, 'digital resources', refers to online content and tools in multiple languages, appropriate to the needs of diverse learners. While the content on eGranary was extensive, the information did not extend beyond 2006; further, most of the content was available in English only, a concern to many scholars such as Canagarajah (1999) and Pennycook (2010).

The third set of resources is called 'human resources', and Warschauer refers to knowledge and skills developed through instruction, critical inquiry and situated practice, asking as follows: How can ICT support literacy, and how can literacy support ICT? While all the students in the study were literate, and used English with relative ease, it is interesting to recall the comment made by Zuena in which she suggested that students and teachers should share the eGranary screen, so that students would know what teachers were trying to teach them. The suggestion here is that ICT provided students with direct access to information, so that learning could be co-constructed by teacher and student. The fourth key resource, 'social resources', refers to the community, institutional and societal structures that support access to ICT. In our study, we found that despite educational policy goals that support the use of ICT in education, resources at local level remained extremely limited and compromised the effectiveness of eGranary. Further, it is of great concern that these limited social resources may also limit the realization of students' hopes for the future. The report card on eGranary is thus a mixed one; despite its great potential, limited key resources at local level limited its impact and uptake in a particular TimeSpace. Such findings are supported by research in other parts of the country (Norton, Early, and Tembe 2010).

Conclusion

In a sociolinguistics of globalization, Blommaert (2010) argues that there is a shift from seeing language as tied to a community, a time and place, and serving local functions, to seeing language as existing in and for mobility across space and time. Further, the process of mobility creates difference in value with respect to a given resource, and this has implications for its indexical meaning in a given community. In our study, we found that the value of eGranary was associated with a wide range of functions in a particular TimeSpace, and its strengths and limitations were best understood with reference to the key resources Warschauer (2003) has identified as necessary for meaningful use of technology. We have

argued that there is a need for greater attention to issues of uptake with regard to the value of a given digital resource, and that constructs of identity and investment can contribute to analysis of place-based studies of digital literacy.

An intriguing question for further research concerns the ways in which eGranary, and technology more broadly, might shift perspectives of space and place amongst users in remote parts of the world. In our study, we found that, in general, the 'village' constituted the boundary of the students' worlds and, as they said, the rest of the world was 'outside' and 'far away'. Indeed, according to Joseph, someone from 'far' was someone from Kampala, no more than a four-hour drive from Kyato. In rural communities in Uganda, and no doubt many other parts of the world, word often travels by word of mouth and people 'tell others' about developments in communities they have visited. As the library scholars gained greater access to both information and technology, they eagerly sought to shift the boundaries of their worlds, to learn more about Uganda, Africa, and the international community, and to make meaningful connections with a wider community. Indeed, it was clear that the students were embracing technology to transform both themselves and their place in the world. The implications for a sociolinguistics of globalization are profound.

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