Accessing HIV/AIDS information in Africa: Languaging in the internet cafe

Bonny Norton, Shelley Jones, and Dan Ahimbisibwe

Abstract

While the HIV/AIDS epidemic has wrought havoc in the lives of millions of people in sub-Saharan Africa, access to information about the causes, symptoms, and treatment of the disease remains a challenge for many, particularly young people. In a context in which discussion of sexuality is frequently taboo, and information about HIV/AIDS in the mother tongue is limited and often difficult to access, information about HIV/AIDS on global healthcare websites, frequently in English, offers alternative access to crucial and possibly life-saving data. This paper reports on an action research study undertaken in a rural Ugandan village in 2006, in which 12 young women participated. The focus of the study was a digital literacy course, which was developed with the primary aim of helping participants to gain access to information about HIV/AIDS through global health websites, available in English, Uganda's official language. The primary sources of research data included written observations by the course instructor, two questionnaires given to the participants, and participant coursework. The central questions we are addressing in this paper are as follows: (i) To what extent is digital languaging productive for accessing information about HIV/AIDS in African communities? (ii) Under what conditions does digital languaging take place? Our use of the term languaging is taken from the work of Swain (2006) and her colleagues. Our findings confirm that digital languaging enhanced access to HIV/AIDS information and provided multiple opportunities for English language learning. Further, the conditions under which digital languaging took place is best understood with reference to theories of investment, imagined identities, and language learning (Norton, 2000; in press). We address challenges and possibilities associated with digital languaging in African communities, and conclude with a discussion of the implications of our research for poorly resourced communities in Africa and elsewhere.

Introduction

In 2006, the authors were fortunate to receive a grant from BC TEAL "to promote AIDS and health education through content-based ESOL instruction." BC TEAL is the association of the British Columbia Teachers of English as an Additional Language, and is committed to the integration of health information amongst English language learners, their family members, and wider communities. At the time the award was granted, the three authors were working actively in a rural Ugandan community called Kyato[1] in the southwestern part of the country, where most residents are English language learners in a country where English is the official language. The funds provided an ideal opportunity to promote access to HIV/AIDS information for community members, as well expanded opportunities for English language learning. Norton had been conducting language and literacy research in Uganda since 2003; Jones had completed her doctoral research study

[1] In the interest of confidentiality, names of participants and places have been changed.

with a group of young women in Kyato in 2005/2006; and Ahimbisibwe had served as a community librarian in Kyato since 2002.

While the primary purpose of the BC TEAL grant was to develop materials to "integrate knowledge about AIDS with English literacy instruction", we also drew on funds from a federal grant (Social Sciences and Humanities Research Council of Canada) to investigate whether digital access to HIV/AIDS information for English language learners in Kyato might be a particularly powerful means to access HIV/AIDS information. In order to make the project manageable within our time and funding contraints, we focussed, in particular, on the young women who had taken part in Jones' doctoral research. Our study, in which 12 young women participated, took place from May to November, 2006. The participants ranged in age from 16 to 19, with a mean age of 17.8. The action research study included development of materials for an English digital literacy course taught by Ahimbisibwe; the development and analysis of two participant questionnaires, administered respectively before and after the course; and analysis of material written by both Ahimbisibwe as courses instructor, and participants as learners.

The particular research questions that we are addressing in this paper are as follows: "To what extent is digital languaging productive for accessing HIV/AIDS information in African communities?" and "Under what conditions does digital languaging take place?" Our use of the term "languaging" is drawn from recent work by Merrill Swain and colleagues (Swain 2006; Swain, Lapkin, Knouzi, Suzuki, & Brooks, 2009), who have used this term in innovative ways to reference the ways in which second language speakers of a language produce language in order to problem-solve and make meaning. Drawing predominantly on the work of Vygotsky (1978, 1987), Swain (2006, p. 148) argues as follows:

> Languaging serves as a vehicle through which thinking is articulated and transformed into an artifactual form. … Ideas are crystallized. They become available as an object about which questions can be raised and answers can be explored with others or with the self. In other words, languaging is a process which creates a visible or audible product about which one can language further.

In structuring an opportunity for students to engage in digital languaging, we sought to provide a forum in which English language learners in rural Africa could gain access to crucial and often life-saving information on global health websites. As these participants sought to articulate their understanding of HIV/AIDS information in English, one of their second languages, we hoped that they would gain a deeper understanding of the disease and its implications for everyday practice, as well as enhanced opportunities for digital languaging in English.

In this paper, we will begin by providing a review of literature relevant to our study, and then turn to our research context and methodology. In our findings and analysis, we consider how young Ugandan women engaged in digital languaging to acquire skills, construct knowledge about HIV/AIDS, and negotiate the English language in ways that resonated powerfully with their lives. We argue that digital languaging provides opportunities for young women to access specific knowledge about HIV/AIDS, and expose them to multiple ways of learning. We investigate the topics relating to

HIV/AIDS and sexual health education that are of particular interest to these young women, but we also examine the participants' levels of engagement with the learning processes associated with digital languaging. Our findings suggest that the keen intensity for learning that these young women demonstrated emanated both from the relevance and significance of HIVAIDS to their lives, as well as the opportunity that this research project provided for them to become digitally literate.

Literature review

The literature review for this research project is drawn from work in two distinct areas: (i) literature on "the new literacies"; and (ii) literature on applied linguistics and HIV/AIDS. Research on new literacies that is relevant to our project is associated with the work of Barton & Hamilton (1998), Hornberger (2003), Martin-Jones & Jones (2000), 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, & Leu, 2008). The central tenet of this research is that developments in ICT (Information and Communications Technology) 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 many scholars note (Andema, Kendrick & Norton, 2010; Muntonyi & Norton, 2007; Snyder & Prinsloo, 2007; 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.

In the literature on applied linguistics and HIV/AIDS, Higgins and Norton (2010) note that while HIV/AIDS has been an object of study for sociolinguists and discourse analysts for approximately two decades, most of this research has examined contexts relevant to gay men in resource-rich nations. The bulk of this research has focused on stigma, risk, and sexual identification in face-to-face interactions (cf. Jones, Candlin, & Yu, 2000). The use of conversation analysis, for example, has provided insight into the ways in which HIV/AIDS counseling is interactionally constructed (Maynard, 2003;

Peräkylä, 1995; and Silverman, 1997), while Jones (2002) has examined how speakers frame their activities when handing out informative pamphlets to men they identify as gay in Hong Kong's city parks.

Applied linguistics research on HIV/AIDS in resource-poor contexts is a much more recent development. In a review of sociolinguistic research in public health domains in sub-Saharan Africa, Djite (2008) concluded that there is a "relative dearth of sociolinguistic studies in the area of health" (p. 94) despite the millions of people who are infected across this continent. While studies are still relatively few in number, applied linguists have begun to turn their attention to HIV/AIDS in these contexts, focusing specifically on the creation of knowledge as it is constructed in language and multimodal semiotic systems (e.g., Drescher, 2007; Kendrick & Hissani, 2007; Kendrick, Jones, Mutonyi, & Norton, 2006; Mitchell, 2006; Mitchell & Smith, 2003; Mooney & Sarangi, 2005; Norton & Mutonyi, 2007). These studies reveal the presence of differing worldviews and perspectives at the levels of institutional structures and in the form of cultural practices. Such research is seen to be important for funding agencies, who have increasingly acknowledged the importance of understanding local contexts and cultures in order to make progress in culturally appropriate ways (Craddock, 2004; Farmer, 1994).

In the collection of article in Higgins and Norton (2010), it is made clear that research on HIV/AIDS in any geographic setting must take into account the role of context in the production of knowledge. This is particularly important in resource-poor contexts, where education efforts are often compromised by the limited availability of resources, gender relations, and cultural belief systems that differ from west-based, biomedical perspectives. In this spirit, we turn next to the research context in which our study took place.

The research context

Young women in Africa face numerous socioeconomic, cultural and educational challenges that negatively impact their ability to access the information they require to make informed choices about HIV/AIDS and healthy sexual relationships (Jones & Norton; Mutonyi and Norton etc). Although young women often have limited choice about the nature of their sexual relationships, their lack of access to information about possible preventative measures for infection by HIV/AIDS or other sexually-transmitted diseases (STDs), and limited avenues for treatment if they do become infected makes them even more vulnerable to inequitable cultural practices. Responding to findings from studies (Jones, 2008; Jones & Norton, 2007; Neema & Bataringaya, 2000) that indicate that young women require far superior sexual health education than that which they are currently receiving, and based on the emerging and immensely promising potential of technology to connect learners to a global data base (Warschauer), we sought to link the content and mode into our research project. We were acutely aware that our learners have a mother tongue other than English, and so promoting access to the digital world would also provide extensive access to literacy materials in English.

Uganda, where our research study took place, is one of the poorest countries in the world, ranked 145 out of 177 countries on the Human Development Index (UNDP, 2006). It is also one of the countries that has been hardest hit by the HIV/AIDS epidemic (refs). In Africa, HIV/AIDS transmission occurs predominantly through heterosexual

contact (Malinga, 2001), and almost 50 % of the HIV/AIDS-infected population is youth. Although the male:female ratio of HIV infection among adults is 1:1, it is 1:4 amongst adolescents (Neema & Bataringaya, 2000), and some research indicates that girls in the 15-19 year age range are up to six times more likely to contract HIV than boys in their age cohort (Dworkin & Ehrhardt, 2007; Malinga, 2001; Mirembe & Davies, 2001). In addition to physiological factors, the reasons for the acute differential in HIV/AIDS infection rates between young men and women are related to significant sociocultural and economic factors. Ankrah (1991) notes, for example, that the "low status and powerlessness of the African woman have been identified as leading contributors toward their vulnerability to HIV infection" (p. 971). Young women from poor, rural backgrounds, such as the participants in this study, are particularly at risk as transactional sex is often the only way they are able to forge a better future for themselves by, for example, using money earned through sexual relationships to pay school-related expenses.

In Kyato village, which borders a trading centre that is approximately seven miles from the nearest town centre, Ganda, poverty is endemic and acute. There is no running water, and the limited electricity available comes from solar power. Most of the participants' families survive by subsistence-level farming, with small incomes sometimes earned through men's employment (e.g., as labourers or in other occupations, such as tailoring or driving taxis), the sale of crafts such as mats and baskets made by women, or the sale of extra food grown in the family gardens. The official per capita income is less than $1 US per day, although it is likely that many families lived on less than $1 US per day. Malnutrition, disease, and poor living conditions are widespread, and it has been one of the areas in the world hardest hit by the HIV/AIDS pandemic. In our study, most of the girls noted that the problem of girls having sex to pay for school fees and supplies was a common one in Uganda, and four of the girls said that they had had sex to raise money for their own school fees and supplies. Every girl in this study had been affected in some way by HIV/AIDS; they had lost friends, siblings, relatives and even parents to the disease. HIV/AIDS was never far from their thoughts, and it constituted a perpetual source of anxiety and fear.

Despite the widely acknowledged sex-related dangers young women face, they receive minimal sexual health education in school. It is included in subjects like biology, Christian religious education, and health education, but there is no comprehensive sex education component of the curriculum (Jones & Norton, 2007). Nor are there many other possibilities for youth to access the sexual health services, information, and resources they need. Studies have shown health clinics to be generally lacking in outreach, and "unfriendly" towards youth: "Adolescents were not accessing the services due to lack of confidentiality and rudeness among service providers, rumours about contraception use and ignorance about the existence of these services" (Neema & Bataringaya, 2000, p. 12).

The study

In order to address our two research questions, we developed two questionnaires, which we refer to as Q1 and Q2, respectively, as well as an intensive digital literacy course. In

Q1, we asked the participants their expectations of the course, their interest in computer literacy, what they knew of the internet, and the extent of their interest in health information, and HIV/AIDS in particular. This questionnaire was administered at the beginning of the course. The second questionnaire, administered at the end of the course, included the following areas: What participants had learnt from the course; what benefits technology and the internet might have for the future; what health information they had acquired, and what information about HIV/AIDS they might still like to get. The digital literacy course comprised an intensive six-session, 46 hour curriculum that took into account the fact that the participants had had very little experience with computers or the internet. In order for the participants to access health websites at the closest internet café in Ganda, they needed a comprehensive introduction to computers and digital technology, as well as hands-on practice. The course, taught by Ahimbisibwe, took place during the school holidays from August to September, 2006. The instruction, which was given in English, took place in both the Kyato community library, where a computer and solar power was available, as well as the internet café in Ganda, which was about a 45-minute walk from Kyato village. Ahimbisibwe kept a detailed journal during the course, and adapted the course to suit the needs of the learners.

Findings

Questionnaire 1

In Q1, we learnt that 10 of the 12 participants had never used a computer before. Of the two who had used a computer before, one had used it 6-10 times in the past year, in the Kampala district; the other had used it about once a month in the Kyato community library. The computers had been used for such activities as writing letters and essays. All indicated that they would like to use a computer more often.

With regard to the internet, although 11 had heard of the internet, four had little knowledge of exactly what it was. As Faridah M noted, “I have heard about the word internet but I don’t know its meaning”. There were five, however, who understood that the internet was associated with access to information, as exemplified by Faridah Makato’s comment , “I know that internet is a world wide web where you can get information from different countries”. The remaining two participants focused on the communication possibilities of the internet, as Sarah noted, “The word internet means the world wide web. This means people can communicate through computers”. Not one participant had used the internet over the past year, but all of them indicated that they would like to use the internet more often. Most indicated that instruction and practice was necessary to enable them to use the internet. As Filista noted, “I will need training because I don’t know how to use it”, while Jesca wrote, “1st teach me about the internet and provide as many as possible so that we use them frequently.”

When asked, “What health information, if any, would you like to get from the internet?” 11 of the 12 participants indicated that they would like to get information about HIV/AIDS. Participants were interested in a range of issues, including the causes of AIDS, how to reduce AIDS; how to help people live longer; how to treat people with AIDS; and how to prevent AIDS. Sarah, in particular, focused on the impact of AIDS on youth: “I want to know more about HIV/AIDS because it is the killer of the youth and we

don't know more about it". The one participant who did not mention AIDS, Faridah M, indicated her interest in the brain and heart, "The health information I like is to know about the brain of human beings because some are thinking more and others less and also on heart diseases."

When asked what other information (apart from health) that the participants would like to get from the internet, there were a wide range of responses. Jesca noted, for example, that she wanted "Information concerning with problems of girls and jobs of women in all the world"; Rose noted that she wanted "information about different kinds of people from different countries;" Judith wanted knowledge about "female bodies, how do they look like"; and Sarah wanted "to know more about English". In response to the question about their "main interest" in learning more about the internet, Faridah M. added the following new information, "I want to know everything which can help my life now and in the future". The desire to connect with Canadian people was also mentioned as a desirable outcome of internet access. As Sarah noted, "I will learn more about myself from sharing view with Canadian people;" and Lydia noted as follows, "My main interest in learning more about the internet is that I want to make friends outside my country like in Canada".

With reference to course expectations, six participants hoped that the course would increase their employability. Margie wanted more job opportunities; Prisca wanted to be an entrepreneur; Judith, a doctor; Rukia, a dressmaker; F. Makato, a business person; and Lydia, the headteacher of a secondary school. The remaining participants wished to learn more about computers, and how to use them for communication, entertainment, and access to information. In response to the question, "How do you think you could benefit from learning to use the computer?" Sarah and Lydia added the following additional information. Sarah noted that "I will understand more about English language", while Lydia noted that she would become "mentally modernized".

The Digital Literacy Course

The first session of the digital literacy course, which took place on Sunday, August 20th 2006, in the Kyato community library, introduced the participants to the objectives of the course, and the research study more broadly. The 12 participants also signed consent forms and completed Questionnaire 1. In his journal, Ahimbisibwe notes, "I could tell from the faces of the girls that they were interested", and he comments that questions from the participants were "endless". Such pressing questions included:. "What is a computer? How does it work?" The second session provided an introduction to computers and other technological equipment such as printers, digital cameras, and digital recorders. The participants were also introduced to internet vocabulary such as search engine, website, keywords, toolbar, homepage. "They were all enthusiastic to start", writes Ahimbisibwe. After lunch, each participant had 15 minutes on the library computer, and learnt to open a Microsoft program, type a few words, and save a file. "Each girl was fidgeting to be the first one to sit on computer as it was their first time to use the computer", Ahimbisibwe says. Indeed, he notes, "it was not enough to some of them. Up to evening they wanted to go on and on."

In preparation for the third session, which focused on the internet, Ahimbisibwe visited the internet café in Ganda and did a Google search on people and places that

would be familiar to the learners, including their home village and the names of the researchers. He then Xeroxed the documents and made copies for each of the participants. During the third session, "all the girls were so attentive and eager to see what I have for them", notes Ahimbisibwe. The day was a very productive one, in which the participants learnt much about the internet and its potential, and reviewed the materials that Ahimbisibwe had brought.

Session four was the first visit to the Ganda internet café, reached by local taxi, and took place on Sunday, August 27. As noted above, not one of the participants had ever used the internet before. The participants worked in pairs to search for information on HIV/AIDS, and, as Ahimbisibwe notes, "the girls were very excited by the whole thing. You could hear them exclaiming at whatever they saw on the monitor". In the discussion that followed, the participants noted that the following were the issues they would like to learn more about: How AIDS spreads and ways of avoiding it; the number who have died of AIDS throughout the world; signs and symptoms of AIDS; the origin of AIDS; the treatment of AIDS; antiretroviral drugs; prevention of mother to child transmission; testing centres. "The questions were so many", Ahimbisibwe notes.

In the fifth session, which started in the library and continued in the internet café, the participants worked in pairs to search for the information that they had identified as relevant to HIV/AIDS. Ahimbisibwe notes that after the participants had found the particular information they wanted on HIV/AIDS, they "wanted to look at other interesting things on the internet as it was the chance and they don't know when they will get another one to look at other things". In the discussion after the visit to the internet café, the participants shared the information they had found, and Ahimbisibwe made the following significant observation: "Since now they have accessed the information they wanted to know, Sarah said they have joined the group of knowledgeable people around the world."

In the sixth session, held on September 3, participants made class presentations on what information they had accessed, and Ahimbisibwe noted the following in his journal:

> After lunch we discussed what girls have learnt from each other's presentations. Girls responded positively that indeed it was very interesting and educating to each other, not only to get knowledge and understand about AIDS/HIV but also to learn a computer how it works, internet, how it works, getting information from internet and getting an opportunity to present their findings as all of these were very new things which they didn't have hope to get access to them in near future but because of Shelley, Bonny Norton and Dan here they are in front of a computer in front of the group presenting their findings. Unbelievable.

An additional session was held on Wednesday, September 6, in which there was a final visit to the internet café. Ahimbisibwe notes in his journal how enthusiastic the participants were, because they knew how to use the computer and the internet. The participants had planned ahead, and knew what topics to research. "Although they still had problems with how to handle the mouse and move the cursor properly," Ahimbisibwe notes, "but they knew what they were doing." Ahimbisibwe adds, however, that issues of broadband became a challenge for the participants. "Another difficulty they face is some computers are very slow when it comes to the internet so they were

complaining that all their time went without actually getting to the website". After lunch, Ahimbisibwe led a discussion and writing session about what the participants had learnt, and the participants completed Questionnaire 2.

Questionnaire 2

While space does not permit a comprehensive review of what each participant had learnt in the digital literacy course, and what information they had gained about HIV/AIDS from their internet searches, we would like to provide key data with respect to access to information, in general, and access to information about HIV/AIDS in particular. First, it was clear that participants needed to learn how to use a computer before they could access health information on the internet. The comment from Sarah captures many of the responses to the question, "What did you learn from this course?"

> I learnt how to use a computer/introduction to the computer. I learnt to access information on the internet. I learnt how people can communicate through internet. I learnt how people get information from the internet. I learnt the methods of preventing HIV/AIDS and all about AIDS.

The participants noted that "computers make the work easier", that they "save time", that they are essential for "accessing information", and that they promote "communication with other people". The role of English in internet information was noted by Sarah, who wrote that she "had learnt the English language" on the internet, because it is "arranged properly". A number also noted that knowing about computers and the internet is important for future employment. As Margie noted,

> I have learn how to use a computer, how to write the information on the computer and how to search the information on it. It can help me to get job opportunities in my future because now days every job needs to be with an experience to computer such as being an office manager, secretary accountancy and others.

Participants noted that there was still much they would like to learn about computers, such as developing their own websites, uploading photographs, and using skype (or, as Judith noted, "learn to talk to somebody while his or her image appears on a screen"). With reference to cultural practices, Filista noted that "I would like to learn more about the behaviours of other girls outside Uganda because me as I am I behave the way I behave like a Ugandan girls so what about others?"

With reference to access to health information, and HIV/AIDS more specifically, there was overwhelming consensus that access to the internet had provided crucial and comprehensive information about HIV/AIDS. By way of example, Hamidah noted,

> I have got health information from the internet which concern to the HIV/AIDS. Now I know how to prevent AIDS/HIV and other information about it. AIDS stands for acquired immune deficiency syndrome and what of HIV is human immune deficiency virus.

Margie noted that she had been surprised to find that the "highest percentage of people who die AIDS are youth/teenage this is very dangerous because me also I am a teenager." Jesca, from a slightly different perspective, discusses not only how to protect herself, but how to advise others:

> From the internet I searched different information on some of the health information is about AIDS/HIV from the internet. Now I know how to protect myself from HIV/AIDS, how to know that someone is HIV positive, what to do if I become affected that I rest, I don't work hard, I have to look for treatment that I can get ARVS that stop the cells to multiply. I knew the symptoms of AIDS but I got all these from the internet. Through the use of internet just know I can advise different things to my friends about HIV/AIDS.

In a similar spirit, Nakato noted not only that "I can be prevented using condom" but that "I can counsel somebody with AIDS by telling him that being HIV positive it doesn't mean the end of your life". Margie noted, in addition, that, "someone with AIDS may experience the wide range of different diseases and opportunistic infection."

A number of participants were particularly concerned about the way in which AIDS had affected their own country of Uganda, and noted that they had learnt more about the relationship between AIDS and development. Fortunately, much new and important local information was also learnt on the internet, such as the role of TASO, Uganda's leading AIDS Support Organization, which has "tried to look after the affected people through rendering services".

Other health information, particularly relevant to Uganda, was also searched on the internet, including information on malaria and early pregnancies. For example, Nagasagga noted as follows,

> From the internet I have got some other information like the information about malaria and so I want also to know more about it like how it spread, its symptoms and how it can be prevented because malaria is a very big problem in our area so more information is needed from that.

With regard to early pregnancies, Filista noted as follows,

> On the internet I searched many health information including AIDS/HIV/STD and other diseases like malaria. Apart from these I searched about girls who become pregnant when they are still at school. I found it and they are very many who become pregnant and some are ending up affected with AIDS so what should we do?

As if in response, Judith noted as follows,

> It was very important and interest for me to know how to prevent pregnancy when I am still studying like using contraceptives and abstinence from sex. I became happy because some of us don't know how to prevent pregnancies and we do lack some information.

When asked what other information they would like to share with the researchers, many participants expressed their appreciation for the course, as exemplified by Jesca, "For me I just thank you for your organization because it has been good and beg you to help and organize other courses like that one because we learned many things. So thanks."

Analysis and Discussion

In our research project, we sought to determine, with respect to the participants in our study, if digital languaging was productive for accessing information about HIV/AIDS, and the conditions under which digital languaging takes place. At a quantitative level, it is interesting to note that although Q 2 was modeled on Q1, and participants were given the same number of pages (4) in which to write their responses, the responses in Q2 were considerably longer and more developed than those in Q1. A computer word count provided an approximation as to the difference between the total length of responses in Q2 as opposed to Q1: There were 6294 words in Q2 and 3260 words in Q1. This suggests that the participants had much to say about the course and their internet searches, and their learning was reflected in the comprehensiveness of their written responses. In Swain's terms, it is possible to argue that a great deal of languaging had taken place during the course, and that practice with computers and the internet had been key to gaining access to information about HIV/AIDS, and in articulating this learning in both oral and written form.

Our central finding, then, is that the internet provided multiple opportunities for participants to gain access to information about HIV/AIDS and to engage in regular digital languaging. Perhaps more interesting however, are our findings with respect to our second research question, "Under what conditions does digital languaging take place?" To address this question, we have found research on identity and language learning very helpful, particularly with reference to work on investment, imagined communities, and language learning.

First, with regard to investment, Norton (Norton Peirce, 1995; Norton 2000, in press) has argued that if learners "invest" in learning a language, they do so with the understanding that they will acquire a wider range of symbolic and material resources, which will in turn increase the value of their cultural capital and social power. The construct of investment conceives of the language learner as having a complex identity, changing across time and space, and reproduced in social interaction. It provides for a particular set of questions associated with a learner's commitment to learning the target language. In addition to asking, for example, "To what extent is the learner motivated to learn this language?" the researcher asks, "What is the learner's investment in the language practices of this classroom?"

There is abundant evidence to suggest that the participants in this study were highly invested in the language practices of the digital literacy course. In Q2, all the participants noted how much they had learnt in the course, and how interested they were in the diverse aspects of the course. Their appreciation was effusive, with participants like Jesca noting that the course "has been good and beg you to help and organize other courses like this one because we learned many things."Ahimbisibwe also noted

frequently how excited the participants were. "I could tell by their faces that the girls were interested", he notes on the 20th August; "they were all enthusiastic to start" he continues on the 23rd; and on September 3rd, noted that it was "unbelievable" what progress the participants had made. The three particular areas of interest noted by Ahimbisibwe provide important clues as to why the participants were highly invested in the course: the participants had access to information about HIV/AIDS; they had learnt how computers and the internet work; and they had been given the opportunity to share their learning with their peers in presentation format. Prior to the course, Ahimbisibwe notes, these were all "very new things which they didn't have hope to get access to them in near future."

The research context provided at the beginning of this paper gives some explanation as to why these three language practices were hitherto unavailable to the participants. First, information about HIV/AIDS is difficult to access in remote Ugandan communities, and HIV/AIDS is topic that both parents and teachers tend to avoid. As Norton and Mutonyi (2007) note, HIV/AIDS clubs are one of the few sites in which young people can access information on the disease, and "Talk what others think you can't talk". Second, access to computers and other technology is very difficult in rural Uganda, primarily because of the expense involved, and there are great inequities between urban and rural centres (Mutonyi & Norton, 2007). Further, as Jones and Norton (2007) note, young women, in particular, struggle to fund even the most basic necessities of life, and paying for computers and internet access would be a luxury way beyond the budgets of young rural women. It was interesting to note Ahimbisibwe's observation that after the participants had found the information they wanted on HIV/AIDS, they turned their attention to "other interesting things on the internet" as they didn't know when they would be given this opportunity again. Third, the student-centred pedagogy that Ahimbisibwe adopted, which included pair and group work, class presentations, and regular student-teacher interaction, was also novel for these young women, who were accustomed to large, teacher-fronted classrooms. In Jones's doctoral research, participants had shared with her their experiences of many unsatisfactory classrooms, as evidenced in the following extract (Kendrick, Jones, Mutonyi & Norton, 2006 p. xxx),

> Shelley: How is learning English through doing a project like this different from learning English in the classroom?
> Rose: In class teachers write on the blackboard - and we just listen…
> Shelley: In the research project how do you use English?
> Rose: Communication.
> Shelley: Do you learn more by studying English or by communicating in English?
> Rose: Communicating…
> Shelley: Why?
> Rose: Because when you communicate, you think your own English.

It is clear from the data that the participants in the study were "thinking [their] own English", and it is this ownership of meaning-making that was central to their investment in digital languaging.

Related to the construct of investment is that of imagined identities and imagined communities (Norton, 2001; Kanno & Norton, 2003; Pavlenko & Norton, 2007). In many language classrooms, Norton and colleagues argue, learners may be given the opportunity to invest not only in the classroom community, but in communities of the imagination --a desired community that offers possibilities for an enhanced range of identity options in the future. Such imagined identities can be highly varied, from the imagined community of the more public professional, such as doctors, lawyers, and teachers, to that of the more local homemaker or farm worker. Learners have different investments in particular identities, and of particular interest in this study is the extent to which such investments are productive for languaging in both the classroom and the wider community.

Again, there is much evidence to suggest that digital languaging in English provided an enhanced range of identity options for the future of these young women. Particularly profound is the comment by Sarah, that "they have joined the group of knowledgeable people around the world." In a related comment, Faridah noted that her "main interest" in learning more about the internet was that it enabled her to "know everything which can help my life now and in the future". Employment was a central concern. As Margie noted, "now days every job needs to be with an experience to computer such as being an office manager, secretary accountancy and others". Prisca wanted to be an entrepreneur; Judith wanted to be a doctor; Rukia, a dressmaker; F. Makato, a business person; and Lydia, the headteacher of a secondary school. To realize such imagined identities would be rare for many rural Ugandan women, but the participants hoped that digital languaging would help them achieve their ambitions.

Of particular interest is the desire of some participants to know about, and possibly challenge what could be considered "normal" in Ugandan society. Lydia noted, for example, that she wanted to become "mentally modernized". A particularly powerful comment, in this regard, was made by Filista who said that she would like to "learn more about the behaviours of other girls outside Uganda because me as I am I behave the way I behave like a Ugandan girls so what about others?" With a related focus, Judith wanted to know about "female bodies, how do they look like". [more analysis]

In seeking connection with what could be considered "imagined communities", a number of the participants noted their desire to become global citizens and to connect with others outside the Ugandan community. As Lydia noted, "My main interest in learning more about the internet is that I want to make friends outside my country like in Canada". Jesca noted that she wanted "Information concerning with problems of girls and jobs of women in the all world", and Rose wanted "information about different kinds of people from different countries." [more data and analysis] In this regard, the English language is seen by some as central in global communication. In response to the question, "How do you think you could benefit from learning to use the computer?" Sarah noted, for example, that she would "understand more about English language".[more analysis]

Concluding comments

In responding to diversity in language and literacy education, McKinney and Norton (2008) note that teachers need to consider not only what is possible, but what is desirable. In many poorly-resourced communities, in Africa and other parts of the world, what is "possible" may appear bleak and discouraging. However, what is clear from our

study is that the hopes and desires of young people in the most rural parts of Africa are no less ambitious than those of young people in Singapore, Seattle, or Sydney. The young women in our study wanted access to current and reliable information on health, job opportunities, diverse international communities, and the English language. Further, they not only wanted to be receivers of global information; they want to produce information, make their own websites, skype with friends, and engage actively in global knowledge production.

While governments, policy makers, and funding agencies try to catch up with the desires of youth, and their need, in particular, for easier access to potentially life-saving health information, there are interim measures that might serve the needs of poorly-resourced communities. Digital portable libraries such as eGranary are a prime example. Developed by the University of Iowa (www.egranary.org), eGranary is an "internet in a box" that comprises a harddrive with specialized browsing software, which can be attached to a PC or a local area network. It contains millions of educational documents, including Wikipedia and World Health Organization data, which can be searched like the internet, without the need for connectivity. As we have noted in previous research (Norton, Early, & Tembe, 2010), not only does eGranary provide a wealth of information for users, but it can be used to develop digital skills like browsing and searching. In the absence of a local internet café, there may be other, more appropriate "placed resources" that can promote digital languaging in Kyato village.