Chapter 7

Appropriating technologies and making them work for you in teaching and learning: depth is essential

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Abstract

Cell phones have been rapidly and creatively appropriated across Africa, in unexpected ways. The computer and the Internet are not nearly as widely used, especially by teachers. This is due to not only cost and complexity but also time constraints. Teachers have neither opportunities nor time to learn to integrate information and communication technologies (ICT) into their teaching, yet using ICT could help them deepen the learning experience. This chapter looks at the use of ICT in education through the lens of appropriation. Appropriation is more than merely using or mastering a technology. Appropriation is the process of shaping technology to respond to specific needs, to the point where it becomes almost part and parcel of our everyday lives. It is similar to the way that we learn and transform and even deform language to make it conform to our needs. The concept of appropriation is important in understanding ICT in education in Africa, where educational systems have been imported and computers are being parachuted in by multi-nationals that are more concerned with profits than ensuring effective use of ICT. This chapter examines ICT use in learning situations

in specific communities across the African continent. We then deconstruct and interpret these examples to explore and understand these phenomena. This analysis provides insight into how ICT appropriation processes shape the way we teach, relate to knowledge and relate to others. Ultimately, this insight could help us transform educational systems to be more in sync with the needs, desires and aspirations of learners. This chapter invites the reader to engage in personal reflection, and includes some short practical exercises to encourage more subjective and interactive teaching, similar to the appropriation process.

Introduction

"Appropriating" means adapting something to your specific needs and desires, rather than just using it "out of the box." Consider how cell phones have been appropriated in Africa. Farmers use them to access servers that post local market produce prices so they can choose the most profitable markets on a particular day. Travelers buy airtime by the second. People transfer airtime credits[1] from one phone to another. Some even use cell phones to transfer credits and convert them to cash at local boutiques. Health practitioners use cell phones to monitor nutrition and encourage patients to take their medicines correctly. Cell phones are increasingly integrated into early warning systems for threats to human health and agriculture. Educational administrators are experimenting with gathering statistics for national databases via cell phone. Nigerians have used the cell phone as an instrument of protest by boycotting mobile phone companies in response to poor service, demonstrating the potential of cell phone use in civic participation and democratic movements. Citizens used text messaging to monitor the 2007 elections in Sierra Leone. For service providers and traders, from taxi drivers to carpenters, a cell phone number is like a doorbell. Via the cell phone, villagers reach out to the African diaspora to request finances. And those in the diaspora stay abreast of developments back home. In Senegal, we see the

1 http://www.brightroam.com/airtimecredits.aspx

use of highly decorative cell phones at weddings. These particular phones may not work so well, but they have become status symbols at important ceremonial events. These diverse uses of the cell phone were not in the minds of the designers, but have come about through creative adaptation of the technology to meet specific contextualized needs.

The use of computers is much less widespread than the use of cell phones in Africa. When it comes to teaching and learning, they are hardly used. Why are more teachers not getting their students to use the computer and the Internet to conduct research and prepare and present the results? Why are more teachers not experimenting with meaningful uses of the computer and the Internet to prepare youth for tomorrow's challenges? Part of the reason has to do with the cost of the computer compared to the cell phone. Yet researchers have remarked that even when computers are readily available, teachers are slow to appropriate them. This is partly because we prioritize the technology itself instead of opportunities to learn how to use the computer and the Internet, which are more complex than the cell phone. In addition, Africans have promoted one-way, top-down teaching methods rather than interactive methods, which would derive more benefits from using the computer and the Internet for teaching and learning.

Using a cell phone is relatively simple, and we use them for one-dimensional activities. Thus, we move voice and data from one place to another when the sender and receiver are generally known and the information transfer is almost instantaneously confirmed. Internet use, however, is multi-polar, multi-dimensional and more complex than cell phone use. We have to look for pertinent information, process it and repackage it. Although we operate the computer with a clickable mouse, we have to do more than just click to make the computer meaningful for our work.

Another important factor is time. Reviewing the different examples of cell phone appropriation listed above, many became meaningful due to speed. Via the cell phone, farmers can boost their daily revenues through timely access to market prices. Citizens can help monitor elections by forwarding news of irregularities for instant review and action. We can transfer credit almost instantaneously from one place to another, and from one person to another.

Use of the computer and the Internet in education becomes most meaningful not in terms of gains in speed, but in terms of gains in reach and depth. Consider the African scholar who can make her writings more available via a personal website. Through the site, email and other forms of communication, scholars can reach a wider audience, obtain more citations, and receive more reviews and feedback that, over time, can advance their work. It is evident that this use of technology is more multi-polar and multi-dimensional than regular cell phone use.

Consider teachers who manage to integrate the computer and the Internet into their teaching and who ask students to actively participate in the collaborative construction of a website that presents the results of researchers in the community. Such constructive processes are known to advance learning because they engage the learner in the larger world. However, they take time: time for the teacher to feel comfortable with the technology and constructive teaching methods, time for students to feel comfortable with inquiry-based learning, and time to prepare, guide and participate in the process.

Paradoxically, teachers have little time to learn new things, as they are already overburdened with large classes and may have over 100 different subjects and levels to prepare, as well as tight daily timetables.

Business people use the cell phone and the computer as tools to save money or increase their profits. However, in education, we are mainly interested in deepening the learning experience and expanding the cognitive breadth of learners. This does not happen overnight. Integrating the computer into education in ways that will make qualitative differences in specific contexts takes time and requires us to understand the conditions for technology appropriation. We can learn from those who are pioneering the use of the computer in teaching and learning in Africa.

7.1 Appropriating versus just using technologies

If you appropriate something, you do not just repeat like a parrot. Instead, you create and innovate. You take a technology and use it in an unexpected, new or creative way that helps you accomplish your needs. You inject part of yourself into the process. The difference between "use" and "appropriation" is "doing what is obvious and easy with the technology versus turning the technology to serve your own purposes, ensuring that it reflects your goals and culture" (Surman & Reilly, 2003, p. 25). When we mould technology to our needs and wishes, "its real potential emerges" (Ibid., 2003, p. 35).

When technologies are appropriated for teaching, they respond to specific contextualized learning needs. Their use becomes embedded in the practice. Moreover, this does not happen without transformation: transformation of the ways in which the technologies are used as well as the ways that we think, learn and teach. Appropriation cannot happen without change.

Teachers who understood teaching as the transfer of knowledge from teacher to student have had to rethink this concept in their encounters with information and communication technology. They have had to allow room for what students bring to the classroom, in terms of their interests, pre-existing knowledge and new knowledge, including what they discover on the Internet. Teachers who formerly considered themselves the "master" see their students assimilating new knowledge on the Internet and begin to question their role as teacher. They realize that it might be more appropriate to be the "guide on the side."

When we appropriate technologies, they start to become part and parcel of the way we get our students to learn. We make technologies "our own," in the same way, for example, that we have learned our mother tongue and "made it our own." We were not born knowing a language, but we have learned different languages and made them a part of ourselves. We have appropriated them to different degrees.

Appropriation means taking something outside yourself and shaping it strategically. Without this process, what is taken in remains "foreign." Appropriation is the process of taking something from outside your everyday sphere of activity, working with it and using it to accomplish specific contextualized objectives. Local appropriation of information and communication technologies (ICT) is:

> … a **process** where communities and groups **select and adopt communication tools** according to their different needs and then **adapt the technologies so that they become rooted** in their own social, economic and cultural processes. The process reflects creativity and freedom of expression and, in some cases, resistance to political and cultural dominance by global media markets (adapted from the Global Knowledge Partnership [GKP], 2002, p. 19; in Michiels & Crowder, 2001; emphasis added).

Questions for reflection

1. In your life, what have you truly "appropriated"? Give two examples.
2. Pedagogically, what have you appropriated, since your first days in the classroom, to improve the quality of your teaching? Give one example.

7.2 Appropriating technologies in teaching

Let us begin thinking actively. Go ahead and take out a pencil or a pen and take 10 minutes to complete the following practical exercise, and pat yourself on the back when you finish.

Practical exercise

Put the following actions in two categories: ones demonstrating a) little appropriation of technology and b) a greater degree of appropriation of technology. Then, for each action, write why, according to you, there is little or a lot of appropriation.

a. A teacher attends classes to learn to use Word or Excel.

b. Social studies teachers in two different schools in Abidjan ask groups of students to prepare 1-minute Youtube videos on workers in the informal economy. Students critique the videos of their peers via email, according to mutually agreed upon criteria.

c. Administrators at a school in Benin communicate information on students' performance by placing audio messages on a server. Parents access these messages, in their local language, by calling the server with their cell phones.

d. A teacher makes readings for her science course available on the Web so students may access them and continue to study even where there are university strikes.

e. Newly literate women in Mali go to the keyboard to type up stories and poems well known in the community in Bambara language for use in preschools.

f. A teacher surfs the Web to find maps to teach history and geography and drawings to teach biology.

g. A student brings information to class from several different reliable websites to support her response on an exam and challenge the low grade.

We turn now to a few examples. A teacher who surfs the Web to find maps and drawings is active. Perhaps he was tired of drawing maps with chalk on the blackboard every day. He makes a conscious decision to surf and sift through information until he finds the most useful teaching materials for the particular subjects and grade levels he teaches. He may ask himself,

"Will this one print or reproduce well?"; "If this is taped to the wall at the front of the classroom, will students at the back be able to make out the points we will stress in class?"; or "Maybe I will need several copies so students can work in groups on an exercise using the map in relation to the lesson for the day."

Then, we have the teacher who makes her science course available on the Web. For her, this is a proactive way to stay in contact with her students despite a university strike. This is also a way of empowering the learners to take more responsibility for learning. She provides a structure in which the learners can progress despite disruptions on campus. The teacher appropriates technology to respond to a West and Central African socio-political reality.

What about the newly literate women in Mali who type up well-known stories for preschool learners? These women are not only active, they are creating teaching materials for their community. By using computers and printers, they are appropriating technologies to document oral knowledge and use it in the school curriculum. They are translating their culture into written words to communicate their traditions and imbibe their children with local values.

What about the innovative way of communicating information on student performance to parents in Benin? At first, the administrators posted only the end-of-term grades, out of a maximum possible grade of 20, on a computer or "server" that could "serve" the grades to parents. Parents phoned in to get the results by text messaging, but administrators learned that many parents could not interpret the grades. That is, they had to understand that 14 out of 20 was acceptable and that 8 out of 20 meant the student needed to invest more effort. So they decided to accompany the numerical grade with an oral narrative – in the parents' language. This is an example of creatively adapting and combining technologies to respond to the socio-economic and cultural realities of parents.

Another example of the pedagogical appropriation of technology in Benin is the teachers who helped students contact national stars to get their permission to develop Websites promoting their accomplishments. In this case, teachers helped students make contact with national personalities. Students developed communication skills while learning more about their own culture and how to present it to others. In a way, they became cultural producers.

Finally, consider the girl who gathered documentation from the Internet to present a case against her teacher concerning a grade she had given her. This student appropriated ICT to defend herself and challenge the teacher's authority. Repeated incidents like this are likely to change classroom dynamics. As we explained earlier, appropriation does not happen without change. Appropriation involves upsetting relations of power.

A deconstruction of these various examples reveals the different characteristics of what it means to appropriate technologies in educational settings. Appropriation involves agency and interactivity, on the part of teachers to meet certain teaching needs and on the part of students to become active in their own learning. Sometimes it involves using technology to challenge the powers that be, which could result in reconfigured relations between teachers and students. A guided appropriation of technologies can grant students the power to query the status quo and represent themselves and their community to their peers and to others, in a nearby school or in a country on the other side of the globe. The appropriation of information and communication technologies means adapting or bending them to respond to specific contextualized socio-cultural situations. This appropriation can valorize local knowledge and culture, which is often undervalued or neglected altogether in some African educational systems. The pedagogical appropriation of technology can deepen the learning experience. The process requires socio-constructivist teaching methods; otherwise the use of computers in teaching could simply mimic the rote learning that has characterized conventional education systems.

7.3 The importance of appropriation in African educational settings

Why is it so important to consider the appropriation of technologies for teaching in Africa? In Africa, education is generally ill-informed by societal cultures (Nyamnjoh, 2004). Development approaches on the continent since colonialism and structural adjustment are largely outward looking. Educational systems were imported from former colonial powers. Today, classroom innovations are regularly proposed by outside partners and technologies are increasingly parachuted into schools. There is little concern for teacher training, although teachers need opportunities to learn to use these technologies and make them meaningful for their teaching and their own professional development and lifelong learning.

Looking at the use of technology through the lens of appropriation can help us determine whether its usage is contextually meaningful. We consider whether and how the technology is anchored in the aspirations, concerns and needs of specific cultural contexts. This reflective approach to our use of technology deemphasizes determinism and reaffirms agency. Rather than allowing the technology to dictate how we work, we can decide and shape how the technology should work for us. Teachers are perceived as creators and resistors, as agents and subjects of change.

According to Hountondji (2002, p. 222), an ambitious strategy of the appropriation of knowledge by African societies (not driven by the North) is needed. Ancestral and traditional knowledge has been marginalized and relegated to the periphery, when it needs to be explored and integrated (Ibid., 2002). To end extraversion and dependence, there must be a "methodical reappropriation of one's own knowledge and know-how as much as the appropriation of all the available knowledge in the world" (p. 255). Teachers can use technologies in ways that help learners value what they already know, learn from other communities, construct their own knowledge and share across communities. By valuing what is already inside, learners can more confidently confront other worlds.

Questions for reflection

1. Do you know other teachers who have begun to appropriate technologies for teaching? Give two examples.
2. What about learners: in what ways have they begun to creatively appropriate technologies for their own learning? Give two examples.

7.4 Understanding appropriation in relation to language

We have discussed how appropriating technology is like learning a language. To further explore the concept of appropriation, let us continue to think about language. Consider how Ivorian youth have appropriated the French language by developing their own slang called *le Nouchi*. In developing this slang, they have to some degree appropriated or "domesticated" the language they inherited from their colonizers.

Black Americans, according to Baldwin (1979), did not adopt a foreign tongue, but created "an alchemy that transformed ancient elements into a new language: […] *the rules of the language are dictated by what the language must convey*." Appropriation involves bending and shaping, as Black American does with the English language, as the blacksmith skillfully and strategically crafts his metal over the fire until he has a useful tool that is responsive to his specific needs, or those of his neighbour. Consider villagers in Mali who use a car battery to power a projector for evening literacy classes after everyone has returned home from a day of working in the fields. The villagers bend, adapt or appropriate the car battery to help meet their contextualized learning needs.

Blacks have appropriated the English language in ways that transformed it and eventually their environment, and that responded to their need to communicate with each other and in ways, e.g., to communicate danger, that the white man, from whom they learned the language, could not understand.

Do you know some children who have sufficiently mastered their language so as to develop their own version, one that adults cannot understand? These children have more than mastered their language; they have appropriated it for their specific needs. Appropriation goes beyond mastery. In appropriating something, we bring a part of ourselves to bear. We make our context, needs, desires and aspirations matter. These factors become influential as we shape a technology to meet our needs.

Consider how Wolof speakers in Senegal refer to ICT. They call them *Dioumtouway kharala you bess yi*, which means "tools for performance." Rather than focusing on information or communication, the appellation refers to the end result of ICT use. Bamanankan speakers in Mali, when referring to the Internet, sometimes say *Tilé koura subahana mansinw minu nyèsiné bè kunafoni soroli ni a jensenni ma*, which may be translated as, "extraordinary machines of the new era destined to receive and diffuse information," or *ni doniya tilalila*, "to share knowledge." Different cultures call ICT by different names that bring their culture to bear. How do *you* "name" ICT in the different languages you speak? Naming ICT in a culturally meaningful way is part of the appropriation process.

"Language, incontestably, reveals the speaker. […] People evolve a language […] to describe and thus control their circumstances, or […] not to be submerged by a reality […] they cannot articulate. […] They […] have very different realities to articulate, or control" (Baldwin, 1979). Imagine teachers who appropriate ICT for teaching in the same ways that people use language, as described by Baldwin. These teachers, who do not just use ICT but appropriate them strategically for pedagogical purposes, bring sociocultural realities to bear on learning and equip learners with tools to shape their futures. Teachers in Argentina do not necessarily appropriate ICT in the same way as teachers in Niger.

Questions for reflection

1. In what ways have you (and/or those around you) "distorted" a language to make it serve you better?
2. When you cook, do you try to imitate the dishes of those who taught you, or do you sometimes experiment, according to your personality and the specific situation?
3. When you learn (or use) technologies for teaching, whose interests are you serving? The interests of the company selling the computers? Of the NGO trying to convince you of their value?
4. Why do we ask learners to use technologies? To help them gain access to the supposed advantages of modernity? To bring value to their experience and reflect their realities? To discover their own strengths, express their truest aspirations, and discover new horizons?
5. When you use technologies for teaching and when you get your students to use them to learn, do you just use them or do you appropriate and domesticate them? What is revealed? Who speaks? Which stories are told?

7.5 What conditions are required for the pedagogical appropriation of technology?

What conditions are required if we are to go beyond the mere use of technology and "appropriate" it? It requires starting with strategic uses in mind (Surman & Reilly, 2003, p. 45). What would you like technologies to do for you?

Change and appropriation do not come out of a box. There must be time and support mechanisms for individual and group experimentation and creativity. Collaboration is important in the change process, which requires communication and border crossing. Support mechanisms, in the case of technology integration, can be as hi-tech as access to technology experts and as low-tech as a space for collective dialogue and reflection on practi-

ces. Training can become a force for change, counterbalancing pressures to maintain the status quo and supporting processes that may entail risk. Reading and writing can be part of the constructive process, helping in coming to terms with novelty and selecting and integrating parts of it.

Practical exercise

For each activity below, write how it demonstrates the appropriation of technologies for teaching and/or education administration.

- Students in Benin develop websites dedicated to national stars to develop their technology skills and at the same time promote their own culture.
- English teachers in francophone countries in West Africa integrate time for student use of the Internet in their classes to encourage more use of the spoken language and more mutual sharing of culture with English speakers in other parts of the world. This motivates students, enlivens courses, leads to better mastery of the foreign language and advances the teacher pedagogically.
- A school principal in Senegal makes stencils of selected content gathered from the Web by his pedagogical team and, combining older and newer technologies, reproduces them with a ditto machine for classroom use.
- Rural people in Mali use a truck battery to power a projector for evening literacy classes. After working all day in the fields, people gather together to follow the lessons.

Appropriation often involves combining various things. Like social change and learning, it is a process involving the self and the other, tradition and novelty, and a constant tension between comprehension and non-comprehension. Appropriation is an organic social process that unfolds over time. It involves blending from various sources and, in the case of technology, moulding it to serve specific contextualized needs. Appropriation requires time. It requires flexibility. Communication, dialogue, experimentation and reflection are at the heart of the process, which is a deepening process.

There is an underlying tension in change and appropriation processes between the old and the new, liberation and annihilation, retention and loss of culture, affirmation and loss of identity, and the local and the global. In the midst of these tensions, we transform raw materials into something intimate, meaningful and useful. As Hountondji (2002, p. 242-243) explains, "The real preoccupation [...] concerns the 'unpacking' of the [...] technology and its integration within the host culture."

Practical exercise

More examples of the pedagogical appropriation of technologies.

Write how each activity demonstrates appropriation:

- Students in Ghana use videos to represent themselves in virtual intercultural encounters, to promote tolerance and respect for diversity and to know one's own culture and others'. They become the authors of their own representations, which they exchange between different locations (see Borgartz, 2001).
- Psychology professors at a teacher training institute in Cameroon developed a website where girls and boys anonymously ask questions about reproductive health, HIV/AIDS, etc and receive informed answers online.
- A South African university faculty developed special software so students could demonstrate their understanding of theory related to film narrative and spectatorship by constructing film sequences. This is a way to develop contextually appropriate learning resources in post-apartheid South Africa (Deacon, Morrison & Stadler, 2005).

Conclusion

Although computers and the Internet are not widely used by teachers in Africa, there are numerous examples of how teachers in Africa are creatively appropriating ICT to deepen and even transform the ways we teach and learn. Appropriation is the process by which we adopt and adapt technologies to respond to specific contextualized challenges. By studying how teachers on the African continent have appropriated ICT, we can inform and deepen our practice and the learning process. If we can appropriate ICT rather than just using them out of the box, we can ensure that their use is meaningful for the needs, desires and aspirations of learners in the communities we are meant to serve. An innovation has to take root to be appropriated, and when it takes root in a specific context, it will grow in a specific way.

This reflection paper draws on ERNWACA research as well as reading, fieldwork, reflections, and writings for my PhD thesis. Comments from teachers, school directors and researchers are welcome and may be sent to kathryn_toure@yahoo.com.

References

Baldwin, J. (1979, July 29). If black english isn't a language, then tell me, what is? *The New York Times*. Retrieved April 16 2009, from http://www.times.com/books/98/03/29/specials/baldwin-english.html.

Borgartz, L. (2001). *Digital media and cultural exchange: Representation, self-representation and the Fiankoma project*. Brighton, UK: The Fiankoma Project. Retrieved April 16 2009, from www.fiankoma.org/pdf/Digital%20Media%20and%20Cultural%20Exchange.pdf.

Deacon, A., Morrison, A., & Stadler, J. (2005). Designing for learning through multimodal production: Film narrative and spectatorship in *Director's Cut*. *International Journal of Education and Development using Information and Communication Technology, 1*(1), 72-89. Retrieved April 16 2009, from http://ijedict.dec.uwi.edu/include/getdoc.php?id=221&article=26&mode=pdf.

Global Knowledge Partnership. (2002). *Recommendations on issues of bridging the digital divide*. Kuala Lumpur, Malaysia: GKP Secretariat. Retrieved April 16 2009, from http://www.gkpcms.com/gkp/index.cfm?pageid=424.

Hountondji, P. J. (2002). *The struggle for meaning: Reflections on philosophy, culture, and democracy in Africa*. Athens, OH: Ohio University for International Studies.

Nyamnjoh, F. B. (2004). A relevant education for African development: Some epistemological considerations. *Africa Development*, *29*(1), 161-184. Retrieved April 16 2009, from http://www.nyamnjoh.com/files/nyamnjoh_ad_2004.pdf.

Surman, M., & Reilly, K. (2003). *Appropriating the internet for social change: towards the strategic use of networked technologies by transnational civil society organizations*. New York, NY: Social Science Research Council. Retrieved April 16 2009, from http://programs.ssrc.org/itic/civ_soc_report/.