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Distance training of teachers in a rural area in Kenya

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Summary
Globalisation has intensified and delocalised social relations at a worldwide level; it has connected "distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa. Local transformation is as much a part of globalisation as the lateral extension of social connections across time and space" (Giddens, 1990).

The revolutionary changes that have occurred in information technology and the ensuing phenomenon of the digital divide are important aspects of this process. In this study, we analyse the digital divide by looking at it from a peripheral perspective, compared to the developed world, where this revolution has started. Africa and Kenya thus become the changing local context from which we observe the penetration of new technologies as part of the globalisation process.

In Africa, the situation concerning the digital divide, the social gap in the access and use of information technologies and, in particular, the delay in the implementation of the infrastructure required to ensure their availability and use, is inadequate. However, it should be noticed that the globalisation process is contributing to a progressive penetration of new technologies in the African continent. But the population should not only be able to use them - they should also be able to promote, manage and regulate them. This is important because ICT carry major consequences on both social practices and local culture.

This article illustrates a pilot e-learning project for teachers carried out in the Gwassi district, a rural area in Kenya. We start with an overview of the national and local context and go on to consider how culture mediates between the individual and technology. Finally, the paper looks into the local situation and illustrates the context and the strategic issues in which the project stakeholders are working on now.

Keywords: digital divide, Africa, e-learning, Kenya, globalisation, teachers, multicultural, training, penetration, developing countries

1 Technologies, education, culture

1.1 New technologies and education in Africa

In Africa (except for South Africa), the delay in the realisation of the structures required to guarantee the availability of information technologies is made worse by the absolute shortage of skills in the use of these technologies. Manuel Castells highlights that "In the present state of things, Africa is excluded from the IT revolution, except for a few financial and international business nodes that are in any case directly linked to global networks and completely bypass African economies and societies" (Castells, 1998). In this part of the world, there is no basic infrastructure to enable the use of IT equipment and provide access to digital information. With

regards to the question of infrastructure, Castells states that before moving to electronic networks, Africa must be provided with a reliable electric supply.

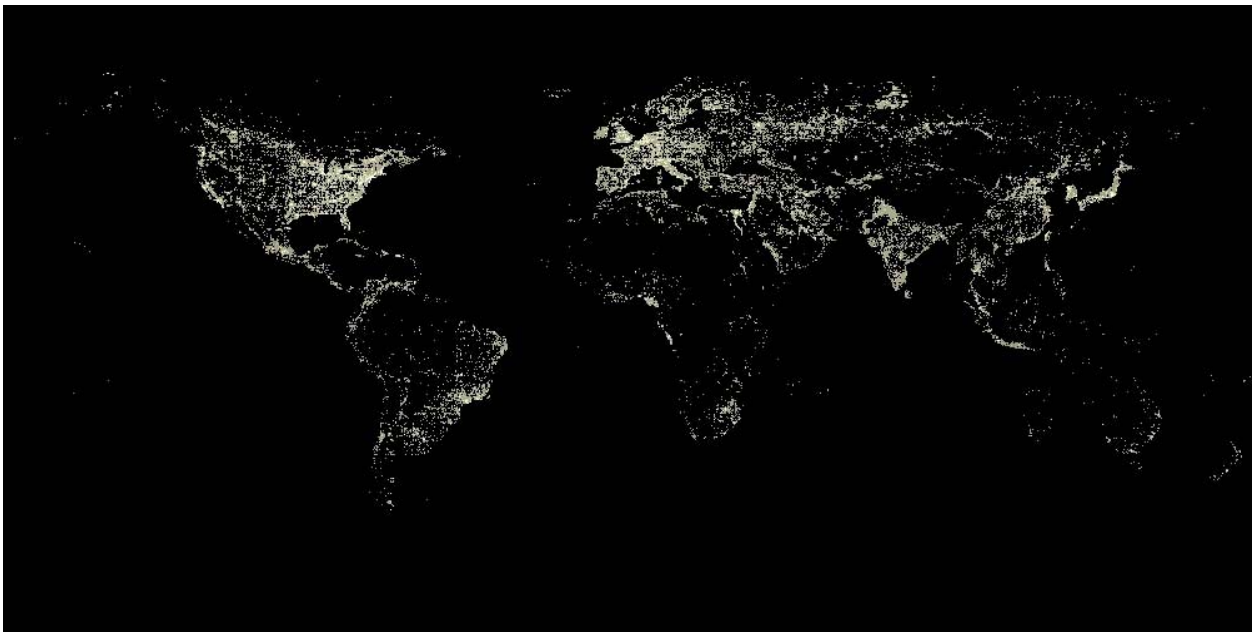

Figure: Nighttime Lights of the World
Source: This image was created in 2003 by the Defense Meteorological SatelliteProgram (DMSP), Operational Linescan System (OLS). http://sabr.ngdc.noaa.gov/ntl/?2003&global

The image above, which was realised from a composition of pictures taken by different satellites, shows the lights of the world at night time. Some densely illuminated areas – like the East Coast of North America and Western Europe - immediately catch the viewer's eye, in sharp contrast with some totally dark areas, some of which stretch over whole continents. Africa seems to disappear from this map and its coasts are hard to spot. Dark areas, which spread over the densely-populated African continent, are a sign that an entire "universe" of individuals, families, communities, and even whole countries - disconnected because they are not part of the economic grid - are excluded from the access to new technologies.

Looking at the "Nighttime Lights of the World" map in more detail, which indicates the presence and use of electric power in the form of sources of light, it appears that within the geographic borders of the African continent, there is an inhomogeneous concentration of glowing points. Thus, rather than Africa, it would be more appropriate to refer to "different Africas", which are characterised by different geographical situations, but also by different cultural, political, economic and social contexts. Developing countries, as well as the African continent as a whole, are fragmented; they are characterised by different paces of development and by great internal conflict, which cannot be understood and labelled by means of commonplace definitions.

With regards to ICTs, this states of affairs begs the question as to whether the Internet and new technologies are a chance for development or whether, on the contrary, they further contribute to the exclusion of Africa from this process?

The Internet has brought about an intensification of social relations at a global scale: it has connected distant places and it has opened up the possibility for individuals to benefit from cultural and educational experiences that are separated from their spatial and temporal dimension. This aspect, which is a typical feature of modern society and which sociologist Antony Giddens defines as desembedding [1], can be easily observed when considering Computer-Mediated Communication (CMC), which sets social relations in a context other than the local one. Internet brings about a new virtual spatial dimension, which ironically reproduces some spaces of exclusion connected to an "old", physical notion of territoriality which can be

found, for example, in countries in the South of the world. Here again, the context factor is of paramount importance: it gives strength to "models of planning and development of new technologies embedded in those countries where these technologies will be actually used" as well as to policies aimed at encouraging "technological production and innovation in the countries concerned, which cannot be reached without a stronger investment in training" (Comunello, 2005).

This said, for an isolated and backward continent like Africa, Internet and new technologies carry an enormous potential for connection, interaction, training, and development.

1.2 Information technologies in Kenya

Finding information and data on new technologies in Kenya has been particularly arduous. International organisations' databases and websites contain but little information. The available figures that were most useful for this study were national aggregate data on Internet usage, mobile telephone subscriptions, and the presence of Internet hosts. Institutional government websites did not help much in this regard either: they seem to lack all information on the presence, access, and use of PC's and e-mail on a national scale, as well as on the access and use of the Internet on a smaller territorial scale. This lack led researchers to establish personal contacts with local experts of new communication and education technologies, who were mostly university professors. This approach bore its fruit: a Kenyan professor who collaborates with the MIT on a mobile learning project in Kenya indicated some Internet resources that had not been found previously. These indications led to the identification of two websites that contain a substantial wealth of information:
1. www.cck.go.ke (Communications Commission of Kenya)
2. http://www.researchictafrica.net (*Research ICT Africa!* is a network of African researchers)

The report published by the "Communication Commission of Kenya & International Development Research Centre" in 2004 shows some interesting data about information technologies in the country. It is assessed that in 2002/2003, in Kenya, there were about 400,000 Internet users; in other words, 1.27 people every 100 used the Internet. In 2006 this data has grown up to 7.98 people every 100. Compared to the situation of some African countries, this figure appears to be lower than Benin, Egypt, Sudan and Zimbawe, while is higher than some Eastern Africa countries like Uganda, Tanzania, Ethiopia and Somalia. (ITU, 2006)

The use of new technologies in a country like Kenya is a phenomenon which mainly involves young affluent and well-educated people and which is concentrated in urban areas.

A national survey carried out by the Institute for Development Studies of the University of Nairobi helps build a picture that, though it is not exhaustive, surely provides a good indication on the use of new technologies in the country (Omosa & McCormick, 2004). This study analyses the availability, the accessibility, and the use of communication services in Kenya's rural areas. In particular, it focuses on household-based services. The data it contains are of a special interest thanks to their uniqueness and their territorial scale, which allows to put our case study – which is located in a rural area of the country – into context.

The survey is based on a questionnaire that was administered to a sample of 1,139 families living in rural areas of the country. When we compare some data in the report with the few national data found in other sources, the impression is that rural areas have been depicted in a worse way than we would have expected. In any case, this study still is a precious source providing an invaluable overall picture.

This survey led to the collection of the following data concerning the computer as a tool: 42% of the sample know what a computer is and two thirds of them saw a computer for the first time in a shopping mall, a bank, or at the workplace; the remaining one third saw a PC for the first time in public premises such as schools, hospitals, and offices. Only as few as 9% of the population

who knows what a PC is also has the basic knowledge required to use it (about four people out of ten).

Let us now analyse the reasons why these people have never used a computer. About 40% reported they were illiterate [2]; 25% declared they did not have enough knowledge in order to be able to use it; another 25% said that this tool was not readily available, that it could not be found easily and that is was too expensive; finally, 10% claimed they did not feel a need for it.

If we try to draw a profile of those who have access to the use of a computer, it appears that they are usually males aged under 55 (people over 65 have never used a computer) with a high educational level (83.3% of them have university education) and high income.

Let us now have a quick glance at the Internet. Less than one person out of ten (8.6%) knows what Internet is: 21% of them used it at least once (1.8 out of 100 people). Among those who have used it at least once, two thirds are able to access it unaided (1.2 out of 100 people). People living in rural areas live on average about 22 kilometres away from the closest Internet access point but this value reaches, in some cases, a peak of 142 Km.

This survey contains another particularly interesting piece of information: little less than 12% of those who use the Net do it for educational purposes: that is 2 people out of 1000.

1.3 Access to education in Kenya: related problems

In a study on the decrease of primary school enrolments carried out in 2003, some Kenyan researchers emphasised that inside the country's educational system, the situation is fraught with several problems and is at a standstill (Bedia, Kimalub, Mandac & Nafulad, 2003). Some factors of importance that were mentioned were the unvarying number of school repeaters, high dropout rates and, most seriously, decreasing primary and secondary school enrolments rates. The percentage of children who do not access the educational system, the so called "children out-of-school", was still as high as 36% in 2002; it decreased to 23% only as late as 2005 (UNESCO, 2005a).

In the last part of the last century, several factors in Kenya led to a decline in the importance attached to school education as a tool to combat poverty. Moreover, the country's educational system is far too complex to be analysed in detail in this paper. In their study, the Kenyan researchers pointed out that, from the mid 1980's, the involvement of the population in training and education started decreasing. In this respect, two elements were identified as carrying a specific importance: the reform of school curricula of 1984-1985 and a policy of distribution of resources within the educational system implemented in 1988 [3], which encumbered families with a series of costs that had until then been paid by the government. This policy, as a result, discouraged families from sending their children to school.

Besides these two important elements concerning educational policies, the Kenyan researchers also pointed out some other factors that could play an important role in the outcome of the policies adopted, such as pedagogical visions, school management practices, teachers' motivation and training, and the strength of the teachers' organisations.

The level of teachers' training appears to be have a significant bearing on primary and secondary school enrolment rates; it seems to be even more important that the problem of the high number of pupils in each class, which is caused by a lack of teaching staff. The Kenyan average is of one teacher every 40 pupils (UNESCO, 2005a), but the number of pupils rises in rural settings. Policies aimed at giving teachers the chance to acquire a higher level of competences could therefore have a concrete effect on access rates with regards to primary and secondary education.

In Kenya, although the government elected in 2002 launched a policy supporting teachers' training and refresher courses, there are still no training courses free of charge. Often, teachers

do not have the means to upgrade their skills and improve their professional position, since this would carry excessively great costs for them. In a rural context, financial problems are made worse by logistical problems, which make it difficult for them to actually attend the courses because the few existing training centres are located in urban areas.

1.4 Cultural differences

Designing a distance educational project for an environment located far away from the one where it originates raises the important and sensitive issue of cultural dimensions, which deserves consideration during the project design and the monitoring phase. As with other terms of the social sciences, there is no universally accepted definition of "culture". This issue calls for much wider speculation than that provided in this contribution, where we shall adopt one of the most common definitions used to identify this phenomenon and its complexity.

The globalisation of knowledge is a truly momentous issue, whose dark side often turns into "fear" of cultural standardisation. The question here is how to preserve cultural identity and local traditions in the course of this process.

Instead of localising it in a given country, we shall consider "*culture as a set of attitudes, values, beliefs, and behaviours charred by a group of people, but different for each individual, communicated from one generation to the next*" (Matsumoto, 1996). Thus, enhancing the project's cultural dimension means including a wide variety of factors and welcoming different expressions of diversity right from the start of the design phase.

The project will go even further: it will aim at identifying the critical factors that could help distinguish the different components of the culture of a group or of an individual.

In this regard, a study by Geert Hofstede (1980) on IBM employees during the 1970's proved quite useful. Hofstede identified five factors for assessing cultural difference: power distance, uncertainty avoidance [4], individualism vs. collectivism, masculinity vs. femininity, and long-term orientation vs. short-term orientation. In the Gwassi teachers' training project, focus was placed on two of the critical factors highlighted by Hofstede, which are also deemed important to analyse this specific case: gender features and the individualism vs. collectivism.

In Africa, literacy levels as well as access to primary and secondary school and to university education reveal considerable gender differences to the detriment of women. In Kenya, only 3% of potential candidates enrol at university and only as few as 30% of them are women. Moreover, collectivism appears to be a crucial element, since it is a distinctive feature of local everyday practices and of the preservation of local knowledge. In Kenya, *harambee,* that means "working together" in Swahili, is almost a philosophy of life. This aspect seems to be vital for the success and the progress of training and education projects: varied experience shows that the "African way" to the ownership and the use of media regards collectivism as a key factor. Two telling examples are the increased use of the radio as an educational tool and the sprawling of community computer centres, as related also in the UNESCO report "Using ITC for develop literacy" (UNESCO, 2006).

In a poor environment, online training can be a tool for development that involves the community as a whole in a process of learning and growth. The project aims to become firmly established in the local community, thus triggering a virtuous sustainable and self-generating cycle [5]. Project designers cannot simply work "from the outside" when planning to create a space where culture can be expressed. On the contrary, they should be actively involved in the shared identification of meanings and objectives; they should venture to the limits of ethnographic research and be immersed in the local social context, thus becoming true actors of the project.

To this end, it is important to use some research and project tools that can help prevent any possible failure caused by an incomplete and mediated knowledge of local culture and of the

local context. Some of these tools are: participatory observation; needs analysis; studies of expectations and perceptions; teamwork; creation of a local project team with different skills to work closely with the Italian team; constant monitoring.

2 Distance training of teachers in a rural area in Kenya

2.1 Project context

Nyandiwa is a fishing village situated on Lake Victoria in the Gwassi district - South Nyanza region, west Kenya. This is an extremely isolated rural area, which is believed to be one of Kenya's poorest regions. Transport and communication infrastructure is insufficient or missing altogether: there are few dirt roads, public transport is virtually non-existent and there are no telephone lines or electricity supply. In this region, largely ignored by international aid operations, the overall poverty rate is between 64% and 74% (KNBS) and life conditions are further worsened by political instability, a devastating drought that has hit the region in the last few years, and continued human rights violations.

In the Nyandiwa area, a local development programme has been running for a number of years now, involving local institutions, the multipurpose IKSDP - Italian Kenyan Scout Development Project- centre, and the Italian non-profit institution *Fondazione Brownsea*. So far, three projects have been realised in the field of education: an educational exchange programme between local and Italian schools; the establishment of a polytechnic school for vocational training; an IT education project, which led to the creation of a sun-powered computer service and the launching of computer literacy courses.

Recently, a broadband satellite Internet connection has been installed in the Centre. This is a vital means of communication for the local community. In the framework of this local development programme, the need to put this new technology to use has inspired a pilot e-learning project to train teachers working in the schools participating in the educational exchange programme.

2.2 Strategic issues

This project aims at promoting a "bottom-up" use of new technologies, so that they could become the engine of community growth and start processes that would eventually reduce the area's isolation. In particular, the aim is to create a Community Learning Centre to offer an increasing variety of computer literacy courses as well as training and continuing professional development courses with the aid of new technologies. This objective is in line with the declarations made by Kenya's Education Ministry in the *ICTs in Education Options Paper* (2005), which considers the creation of the Community Learning Centre as a great training opportunity for all those local communities that do not have easy access to training programmes as well as a key asset in support of the "in-service" government training programme aimed at primary and secondary school teachers.

The reference frame discussed in this paper, together with the explorative field research conducted with a group of 20 local teachers help us understand, on one side, the importance of the teachers' training with the use of new technologies, and on the other that the project's objectives cannot be met with an intervention only at the formative level.

New technologies are valid tools to start and carry out this transformation. School education, teledensity, and computer penetration levels among families and in schools are internationally considered to be *development indicators* needed to achieve development in the broader sense of the term (Cerabino, 2005). However, the use of the Net and of new technologies for education rests heavily on some material prerequisites, on sufficient cultural capital, that is, widespread computer literacy, technological skills, and technological socialisation and on sufficient social capital, that is, network building capacity.

Focus is placed on the need to develop a culture of knowledge enabling not only "formal" but also "effective" access. New technologies cannot be implanted from the top in deprived and disadvantaged contexts; in order to be effective, they need to come as part of projects, actions, and policies based on specific local needs by means of a "bottom up" process. It is therefore paramount to start from local practices and involve all the actors concerned (at institutional and non institutional levels) in the specific contexts where such projects and policies are implemented.

The issue is not only to identify which digital technologies produce the smaller gaps - for example PC, mobile telephones, land telephone lines, broadband - but also to recognise other aspects such as the role played by the technology used; what is actually done with it; the nature of the tasks that are carried out; the way the decision-making process works; the people who benefit from project activities; finally, the way in which activities, actors, and tools are connected.

In this perspective we should promote the use of new technologies by developing participation and interpersonal interaction, thus leading to the creation of shared practices at a local level and enhance local knowledge and competences in order to create an internal engine for development, which should be as independent as possible from the influence of external actors while, at the same time, maintaining a strong relationship, collaboration and dialogue with international agencies.

The strategic issues project stakeholders are now working on are:

1. Encouraging the active involvement of local players and institutions in order to identify some suitable professional development courses that could possibly be offered to teachers. One key issue concerns course certification and its recognition by the local educational system. In this regard, some important contacts have been started with local educational authorities and with Maseno University in Kisumu [6], which already offers some residential training courses for primary and secondary school teachers in the region.
2. Creating an international network of people to transfer technological and methodological knowledge and skills to local staff. Some support and training interventions have already been started by the *Centro di Produzione Multimediale* of the University of Milan Bicocca and by the Italian cultural association *Elimu*. This objective is key to ensuring project sustainability.
3. Creating a local team that could eventually work autonomously as the project progresses. The team will be composed of people with different professional expertise and female participation will be guaranteed. The team will be the engine of project development and will promote the dissemination of project activities and outputs in the area.
4. Providing computer literacy courses for a higher number of teachers.
5. Enhancing Internet infrastructure as well as technological infrastructure. This will involve installing more PC stations and solar panels in the IKSDP Centre.
6. Taking full advantage of local best practices. The joint participation of project staff from Kenya and Italy to the *e-learning Africa 2007* conference set this process in motion.

3 Conclusions

Drawing a conclusion of the work done so far, some aspects ensuing from our case study deserve particular attention. This work does not claim to deliver ready-made technological and educational solutions. On the contrary, it intends to illustrate a variety of different dimensions that generate and, at the same time, stem from the digital divide. Also, it aims at identifying some useful tools to develop a training project in technology for teachers. An attempt has been made to define the space between technology, individual, and culture, starting from a bird's eye view of global processes concerning the digital divide, with a special focus on the African continent, narrowing down to an analysis of the social, educational, and technological conditions of a rural community in Kenya. Following this move from global to local, the contrast

between the broad and unspecific nature of the former and the specific and detailed character of the latter can be somewhat bewildering.

Rural areas in Africa are still generally excluded from the social, cultural, and technological progress experienced by modern society. Nevertheless, we have noticed some burgeoning changes in the penetration and the use of new technologies. For ICTs to have a significant impact on individual lives as well as on local culture and everyday practices, it is important not only to know and observe these changes, but also to promote them, learning to manage them and give them a direction.

To this end, it is vital, on the one hand, to develop a network infrastructure and, on the other hand, to strengthen knowledge, competences, as well as organisation and management skills in local communities. This will guarantee sustainable development, exchange of experience, and dissemination of best practices.

A local work team was formed, monitored and supported by a group of experts, and it was involved in the decision-making process right from the start; the public sector was involved and a network of local stakeholders was developed; finally, contents and objectives were defined through a participatory process. All this with a common objective: promoting a bottom-up process to give shape, impart meaning to and infuse life into this project "from within".

Endnotes

[1] English sociologist Antony Giddens defines the disaggregation of social systems as the removal of social relationships from a local context and their translation in a different time and space.

[2] According to UNESCO figures on illiteracy in Kenya, in 2004, 24.4% of illiterates were found among adults (aged over 15 years) and 19.3% among young people (aged between 15 and 24 years). The illiteracy rate grew in rural areas and among older population.

[3] In the article called *The Decline in Primary School Enrolment in Kenya*, the authors claim that the main reason for declining school enrolment rates in the 1990's was the introduction of a different system for the allocation of expenses. In 1988, the new system cut government funds for teachers' salaries and charged the costs of school uniforms, stationery, textbooks, and school materials in general to families. Moreover, families are expected to contribute to the maintenance of school premises through *harambee* (community). The introduction of a formal policy of cost sharing by families in 1988 replaced a previously existing informal system whereby families already had to bear some costs. The real change was the reintroduction of school fees – that had been abolished in the past – that are paid to receive the materials listed above.

[4] It is the attempt to avoid uncertainty and it relates to the tolerance shown by a given society towards uncertain or ambiguous situations.

[5] Ranieri (2004) deems self-generativity as a key factor when selecting macro teaching strategies for e-learning. In this case, self-generativity has a broader perspective. It does not only aim at promoting the creation of a professional community among the end users of training programmes, but it focuses on the project in its entirety.

[6] The Maseno University is located in the town of Kisumu, Kenya's third largest city. It has promoted and hosted a workshop called "Maseno University BreakOut Workshop: ICT in Higher Education" that was held in the framework of the international conference *e-learning Africa 2007*.

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