ISSUES IN CURRICULUM AND LANGUAGE EDUCATION

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ICT AND DEVELOPMENT

Folorunso Oluyomi

Introduction

Over the past two decades, Information and Communication Technologies (ICTs) have evolved dramatically in transforming societies, cultures and economies. The world has witnessed changes brought about by the rapid advancement of technologies in the ICT ecosystem such as social media and the Internet. Mobile technologies and broadband connectivity, already pervasive in developed countries, are being rapidly deployed in developing countries and emerging markets. Social networks have made profound changes and impacts on the ways people interact with one another and with their governments. Open government data and cloud computing, coupled with consumerisation of mobile devices, have further enriched the ecosystem.

Indeed, it is not surprising that the 2030 Agenda for sustainable development has embraced the spread of ICTs and global interconnectedness as having great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies. The Industrial Revolutions in Europe and America, generally and specifically, have been premised on technological breakthroughs. During the late 1990s, ICT was the largest contributor to growth within capital services for both Canada and the United States (Harchaoui 2002). Similar trend has been observed with the economic development of China, Korea, Taiwan, India, South Africa, and other emerging economic powers (Fuss and Waverman 2005).

Information and Communication Technology offers the promise of fundamentally changing the lives of much of the world's population. In its various forms, ICT affects many of the processes of government and business, how individuals live, work and interact, and the quality of natural and built environment. The development of internationally comparable ICT statistics is essential for governments to be able to adequately design, implement, monitor and evaluate ICT policies (Madueme 2010). ICT has now been accepted as one of the main driving forces behind organizational competitiveness in the present day business environment. Presently, ICT is having dramatic influence on almost all areas of human activities and one

of the areas of economic activities in which this influence is most manifested is the banking sector. The banking industry is one of the critical sectors of the economy which makes invaluable contributions to the pace of economic growth and development of nations (Ajayi 2003; Madueme 2010).

ICT4D

Information and Communication Technologies for Development (ICT 4D) refers to the use of ICTs in the fields of socio-economic development, international development, and human rights. The theory behind this is: more and better information and communication furthers the development of a society. ICT4D is an initiative aimed at bridging the digital divide (the disparity between technological "have" and "have not" geographical locations or demographic groups) and aiding economic development by ensuring equitable access to up-to-date communication technologies. Indeed, Information and Communication Technologies (ICTs) include any communication device-encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video-conferencing and distance learning.

Aside from its reliance on technology, ICT4D also requires an understanding of community development, poverty, agriculture, health-care, and basic education. This makes ICT4D an appropriate technology, and if it is shared openly, an open source appropriate technology. ICT4D can assist disadvantaged populations anywhere in the world, but is usually associated with applications in developing countries. It is concerned with directly applying information technology approaches to poverty reduction. ICTs can be applied directly, benefiting the disadvantaged population, or indirectly, by assisting aid organizations, non-governmental organizations, governments, and/or businesses, to improve socio-economic conditions.

Having the right trade environment can facilitate the development of ICT. Likewise, ICT can foster, enable and facilitate trade. The relationship between trade and ICT can be viewed from three angles: trade in ICT (e.g. international telephone calls), trade in services to which ICT is a critical input (e.g. outsourcing data entry or computer programming services), and ICT as a general facilitator of other types of trade (e.g. a farmer using text messaging to check export prices). These three angles are collectively referred to as "ICT-related service trade".

ICT provides economic opportunities to both urban and rural populations. One common contribution is that it increases productivity and

makes the market work more efficiently, although the magnitude of the impact on economic growth is likely to be different. The fact that virtually most new mobile customers in the coming years will be in developing countries, and more specifically in rural areas, means that ICT platform is reaching population with low levels of income and literacy. As a result, ICT is becoming the largest distribution platform of providing public and private services to millions of people in rural and poor areas. Market information, financial services, education and health services had largely been unavailable in those areas in the past due to lack of connectivity of any kind. Now the wireless platform is promoting new economic and social opportunities at all levels for the poor population in developing countries. The United Nations through its UN Development Programme actively promotes ICT4D as a powerful tool for economic and social development around the world.

Besides the limitations of existing telecom infrastructure in developing countries, the principal constraints in adopting and using ICT applications, especially for small businesses, include lack of capacity to assess returns and costs of using ICT, and a shortage of and inability to retain ICT-skilled labour. In some countries, business associations assist with needs assessment for businesses to invest in ICT, advise them on technology choice, and provide common business applications at low cost to small businesses.

ICT planning and implementation should be closely linked to a country's overall economic development and poverty reduction strategy. There is need to encourage a comprehensive assessment of key pillars of the ICT sector to avoid projects or programmes that promote e-government without proper infrastructure in place, expand broadband without developing applications and content, or that develop IT industries without a pool of skilled labour.

ICT Development Index (IDI)

The ICT Development Index (IDI) ranks and compares the level of ICT use and access across the various countries around the world. In 2014, the International Telecommunication Union released the latest ranking of the IDI, with Denmark attaining the top spot, followed by South Korea. The top 30 countries in the rankings include most high income countries where quality of life is higher than average, which includes countries from Europe and other regions such as Australia, Bahrain, Canada, Japan, Macao (China), New Zealand, Singapore and the United States; almost all countries surveyed improved their IDI ranking this year.

ICTs as an Enabler

In one sense, ICTs are simply tools. Like any tools, they can be either well-situated or not to the task at hand. Just as a hammer is ideal for pounding a nail, but less useful in changing a light bulb, the value of a specific ICT to development cannot be answered in the abstract, but depends on whether it is suited to the project at hand, whether the project provides sustainable incentives for those involved, and whether the people implementing the project have skills necessary to exploit the ICT effectively.

In another sense, however, ICTs are tools unlike any the world has ever seen. Because ICTs can be applied to a tremendously diverse range of human experiences, they are transforming virtually every sector of society and the economy. Digital break-throughs are creating new possibilities for improving health and nutrition, expanding knowledge, stimulating economic growth and empowering people to participate in their communities.

ICTs are also multifunctional and rapid innovations in technology are making ICTs both less expensive and easier to use, thereby bringing the power of ICTs within the reach of a greater number of people. These qualities make ICTs highly relevant to the developing world. For example, the defining feature of ICTs is their ability to help people collect, manage, store, retrieve, and distribute knowledge. Knowledge management is critical in the global economy, where success often depends on the ability to acquire knowledge quickly, use it effectively, and disperse it to the right people rapidly and inexpensively. ICTs can help level the playing field in this regard between firms in the developing and developed world, thereby enabling developing nations to compete more effectively in the global economy.

ICTs and Social Development

Perhaps the most impressive examples of ICT's potential to promote development have occurred in the context of development projects targeting social inclusion and cohesion, that is, projects that provide excluded communities with greater opportunities to participate in community life. Because many of the challenges facing traditionally underserved communities result at least in part from inadequate access to knowledge and information, ICTs can help surmount these challenges by making it easier and less expensive to collect, analyse, and disseminate information to the people who need it. The Internet in particular is creating nearly endless opportunities for individuals and communities in developing countries to obtain knowledge and communicate with others.

ICTs have tremendous potential as enablers of social development. Although the multifunctional flexible nature of ICTs means that they can be applied to virtually any development goal, areas in which ICT has already proven effective include healthcare, education, and environment/sustainable development.

ICTs are increasingly being used to deliver healthcare services in the developing world, especially to patients in remote areas where healthcare services are scarce. Examples include using ICTs for remote consultations between patients and physicians as well as remote diagnosis and even treatment; data collection for both research and diagnostic purposes; "real-time" collaboration between physicians and health researchers in different parts of the world; improving the speed and effectiveness with which nations and organizations respond to epidemics; and streamlining and improving healthcare services generally. ICTs are also being used to deliver healthcare services to remote rural areas where more traditional healthcare services are scarce.

Although ICTs cannot replace the vital teacher-student relationship, ICTs are increasingly being used as a tool to supplement traditional curricula and teaching methods and to open new opportunities for skills training. For instance, ICTs are being used to provide low-cost access to online curricula and other resources; enable distance education for students in remote areas or who for various reasons cannot physically attend school; and provide technical and vocational training.

Many environmental challenges in the developing world are the result of failures to alert policy makers of risks and the inability to quantify the seriousness of environmental hazards until it is too late. ICTs allow researchers and environmental agencies in developing countries to tap into global data networks and information resources, which enable policy-makers in these countries to make better and more informed choices. ICTs are being used to monitor environmental conditions and collect and analyse data; coordinate responses to ecological threats; and identify polluters who might otherwise go undetected.

ICTs and Economic and Productivity Growth

An economy's ability to increase productivity is a powerful measure of its economic well-being. Gains in productivity allow prices, thereby creating real, non-inflationary income growth (wage increases funded solely by higher prices, by contrast, provide no net gain in consumer purchasing power and no real economic growth). Thus, the surest path to sustainable economic growth is for organizations to invest in assets that increase productivity.

Although, economists have long debated the relationship between ICTs and productivity, a growing body of data suggests that ICT investments, particularly when linked to fundamental organizational change, can have a substantial, positive impact on productivity. This impact goes beyond a direct return on investment. A recent study by the US Department of Commerce, for instance, concluded that information technology investments by U.S firms in recent years had a widespread and lasting impact on the revival of U.S productivity growth (U.S Department of Commerce, 2012), suggesting that ICTs when used effectively, can help organizations use resources more efficiently and become more competitive. However, another study by OECD (2013) concluded that while there are good grounds for believing that the use of ICTs are positively correlated to productivity growth, acquiring ICTs is not enough for countries to derive economic benefits. Other factors, such as the regulatory environment, the availability of appropriate skills, and the ability to spur organizational change, often have a substantial influence on the ability of firms to exploit the benefits of ICT.

While the utilization of ICTs in developing countries remains below expectations, case study evidence suggests that ICTs are beginning to provide a basis for productivity and economic growth of those countries. For instance, ICTs are being used in Africa, India, and other nations to create rural trading networks that connect local craft people directly with their customers.

The impact on economic growth of high-speed internet connectivity, and of ICT more generally, is aggregated through its impact on individuals, businesses, government and communities. It should be remembered that it always takes these economic agents some time to figure out how to best use the ICT that is available to them. In most cases, individuals, firms, and communities would have to make investments in "complementary capital" (e.g. worker training and skills, organizational or even institutional adjustments) to reap the full benefits of ICT. The effect might be amplified by the flexibility and willingness of the users of ICT to transform their work habits, update their skills and adopt the technology in economic activities. Whether this great potential to contribute to growth is realized will also depend on whether governments understand the opportunity and ensure that supportive conditions (e.g. providing high-capacity connectivity) are in place through regulatory and policy reforms as well as strategic investments and public-private partnerships.

ICTs as an Industrial Sector

While it is clearly in their application that ICTs hold the greatest potential for economic and social development, many governments are actively seeking to spur domestic economic growth by nurturing the emergence of local ICT industries. This is hardly surprising as the remarkable expansion of the ICT market place in recent years has generated millions of new jobs and billions in additional tax revenues, growth that has benefited nearly every region of the world. Many developing countries also perceive domestic ICT industry growth as an effective means to achieve related development objectives, including the ability to attract foreign direct investment, provide a basis for technology transfer, satisfy local market demand for ICTs, and generate further growth in upstream and downstream industries (such as marketing or financial services).

It is perhaps unrealistic to think that the ICT sector will account for a substantial share of economic activity in all or even most developing nations in the foreseeable future. Nevertheless, it is clear that many developing countries are establishing domestic ICT firms to service domestic and even regional users. Indeed, recent data from International Data Corporation suggest that a core group of developing countries in several different regions of the world have experienced impressive ICT industry growth over the past several years. For instance, in Asia, between 1995 and 2001, India experienced over 10 percent annual growth in the number of IT companies and over 13 percent annual growth in the number of IT industry employees. By 2001, India's IT sector had comprised about 15,000 firms, employing almost 550,000 people.

A recent edition of "Kenya Economic Update" observes that the ICT sector in Kenya grew at an average of nearly 20% per year from 1999-2009 (by contrast, Kenya's largest economic sector-agriculture-shrank by an annual average of nearly 2% per year). The number of phone subscriptions has grown from the equivalent of one per 1000 adults in 1999 to the equivalent of nearly one per adult in 2010; Internet usage rates for 2010 were around four per ten adults. Person-to-person mobile money transactions at the end of 2010 were equivalent to around 20% of GDP with two of every three Kenyan adults being users. The report's strongest claim is that "ICT has been the main driver of Kenya's economic growth over the last decade….. Since 2000, Kenya's economy grew at an average of 3.7 percent. Without ICT, growth would have been a lack luster 2.8 percent-similar to the population growth rate and income per capita would have stagnated". So ICTs were responsible for 0.9 of the 3.7% annual GDP growth, and for all of Kenya's GDP per capita growth. Put another way, ICTs were responsible for roughly one-quarter of Kenya's GDP growth during the first decade of the 21st century.

Although, India, Kenya and other developing nations have been key beneficiaries of global ICT industry growth, the paths that these nations have followed have varied tremendously. To a large extent, this divergence mirrors the diversity of the ICT industry itself, which comprises many different sectors, each with its own unique characteristics. These include the hardware, software, service providers, and software-plus-services. Depending on their circumstances, some developing countries might be in a better position to leverage their local strengths and resources to competitive advantage in one ICT sector more than others. Indeed, it is relatively unlikely that any single developing country will excel in every sector of the ICT industry.

Accordingly, policymakers working to drive the growth of a domestic ICT industry should carefully evaluate their country's own resources and other sources of possible competitive advantage against the characteristics of each ICT sector to determine which areas, if any, are potential areas for long-term industrial growth.

ICTs and Governance

Like other organizations, governments are leveraging the power of ICTs to operate more efficiently and effectively. For instance, many governments in developed and developing countries are working to migrate paper-based documents and records into digital format, and are even beginning to "link up" databases of these records for use between various departments. These efforts are making governments more responsive and making it easier for citizens to access public records, information, and services through the Internet.

The use of ICTs to drive "e-Government" efforts can also provide an important "democratizing" function by giving people a new and powerful way to participate in government and interact with public officials. While these efforts can at times raise important civil liberties issues, particularly to the extent that they share personal information without the individual's knowledge or consent, ICTs can also make government processes more open and transparent to citizens.

Conclusion

In modern society, ICT is ever present, with over three billion people having access to the Internet. The most recent authoritative data, released in 2014, shows "that Internet use continues to grow steadily, at 6.6% globally in 2014 (3.3% in developed countries, 8.7% in the developing world); the number of Internet users in developing countries has doubled in five years (2009-2014), with two-thirds of all people online now living in the developing world".

However, hurdles are still at large. Of the 4.3 billion people not yet using the Internet, 90% live in developing countries. In the world's 42 Least Connected Countries (LCCs), which are home to 2.5 billion people, access to ICTs remains largely out of reach, particularly for these countries' large rural populations. This also includes the availability of telephone lines, particularly cellular coverage, and other forms of electronic transmission of data.

Favourably, the gap between the access to the Internet and mobile coverage has decreased substantially in the last fifteen years, in which "2015 is the deadline for achievements of the UN Millennium Development Goals (MDGs), which global leaders agreed upon in the year 2000 and the new data show ICT progress and highlight remaining gaps". ICT will continue to take on new form, with nanotechnology set to usher in a new wave of ICT electronics and gadgets.

ICTs have brought new opportunities to people of all ages and in all countries, enabling them to achieve more in less time and to discover new ways of communicating and relaxing. The use of ICTs has fueled astounding productivity and economic growth and has truly transformed the way people work, learn, and socialize. However, the benefits of ICTs have not been spread as equally as one would have hoped. This has led some to question whether ICTs have a meaningful role to play in bridging the divide between developed and developing countries. Have ICTs had a net positive impact for developing countries? Yes, they have been helpful to them, but they have been even more helpful to developed countries and it could well be that they have thereby actually decreased the competitive position of developing countries in world markets. Certainly, developing countries have no choice but to start using ICTs as well, just like other innovations like electricity or vaccines; but will they "reduce the gap"? There are sufficient reasons for optimism. According to a recent cross-country World bank study (covering 120 developing and developed countries over the period of 1980-2006), the growth benefit that telecommunications provides developing countries was of higher magnitude than that for developed economies for every telecommunications service (World bank 2006). This is probably because telecommunications services help improve the functioning of the markets, reduce transaction costs and increase productivity through better management in both the public and private sectors. These issues were more acute in developing economies than in developed ones. Therefore, developing countries gain more by resolving some of them through better access to telecommunications. However, this is not to state that the risk of "digital divide"

does not exist. For instance, as we move from simple voice and text messaging to more complex services and applications, the potential to benefit from ICT depends on factors where developed countries have comparative advantages but ICT offers leapfrogging possibilities and new opportunities at all levels.

Looking to the future, ICTs are not about computers, mobile phones, and the Internet, but about help, support, and training people in linking them and communities for communication, learning, and services. This will lead to improved well-being, increased work productivity, support for innovation, and impetus for inclusive growth.

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