INNOVATION AND TECHNOLOGY FOR
YOUTH EMPLOYMENT

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1. Innovation and Information and Communications Technology for Sustainable Youth Empowerment and Socioeconomic Development

The following chapter examines the challenges and opportunities of using ICT as an enabler of socioeconomic development by decreasing youth unemployment in civil societies. Despite a series of innovative initiatives conducted by corporations and governments at the grassroots and macro levels on the use of ICT in education and improvement of skill sets amongst youth in preparation for entering the workforce, youth unemployment peaked at an all-time high in 2009, exacerbated by the current global financial crisis and recession. While it is difficult to counterbalance economic events, further collaboration between policymakers and corporations can assess and align the wide-ranging types of initiatives to strategically alleviate youth unemployment on a global scale. The current cohort of youth is the largest cohort ever, and will be critical to the sustainable development of this planet. ICT offers tremendous potential to enable sustainable employment opportunities for youth.

On August 12, 2010 the UN launched the International Year of Youth to promote youth development and the achievement of the UN Millennium Development Goals, with a series of events over a period of twelve months. The United Nations, for statistical purposes, defines “youth” as those persons between the ages of 15 and 24 years. The 1.2 billion youth in the world in 2009 represent 18 percent of the world’s population. Globally, almost 90 percent of youth live in developing countries, especially in Asia-Pacific and Africa. Despite urbanization and the rapid growth of megacities, most of the world’s youth continue to live in rural areas.

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On the other end of the spectrum are developed nations such as Japan, Germany and the United States, which are dealing with ageing populations while facing rising youth unemployment. The United States produces 70,000 graduates in engineering annually versus 600,000 engineering graduates in China. Today, U.S. students rank 25th out of the 29 developed nations for preparedness in math and science. The undesired decline in science, technology, engineering, and mathematics (STEM) students has led to an unfilled demand for ICT jobs and a very competitive environment for non-IT-related jobs. As a result, the IT industry has started to fill its demand for highly skilled software developers and engineers in emerging countries such as India, China, Russia and Brazil. Governments of developing nations and corporations such as GE, Intel, Microsoft and SAP have put programs in place to increase the number of technology and engineering students.¹

The current financial crisis has hit youth unemployment in both the developing and developed nations. According to a United Nations report released in August 2010, labor market trends for young people have taken a drastic turn for the worse since 2007. Based on current estimates, the global youth unemployment rate rose from 12.1 percent in 2008 to 13.4 per cent in 2009.² Of the world’s estimated 211 million unemployed people in 2009, nearly 40 percent were under the age of 25.³ As a result, about 81 million young people

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¹ GE Foundation: Developing Futures in Education; http://www.ge.com/foundation/developing_futures_in_education/index.jsp
were unemployed in 2009 – the highest figure ever. In 2008, 152 million young people, accounting for 28 percent of the young global workforce, lived in extremely poor families with a daily income of under US$1.25.

On average, youth were 2.8 times more likely to be unemployed than adults at the global level before the economic crisis, according to the International Labor Organization (ILO). This ratio showed little change in 2009. The most affected regions were the developed countries and the European Union between 2008 and 2009. Youth unemployment increased in Europe by 4.6 percentage points, in Central and South-Eastern Europe (non-EU) and CIS by 4.5 percentage points, and in Latin America and the Caribbean by 2.2 percentage points. While the Middle East and North Africa had lower percentage point increases, both continued to be among the regions with highest youth unemployment rates.

Across the Organization for Economic Co-operation and Development (OECD) area, unemployment among 15- to 24-year-olds has historically been just over double that of people aged over 25. But in 2008, the gap widened further. In the face of surging youth unemployment, the OECD is advising governments to provide income support to young workers and to set up apprenticeship schemes for low-skilled youth. The OECD estimates that unemployment among young people is set to keep rising in the months ahead.

In developed countries, recent job market entrants and graduates were among the most affected group during the financial downturn; for example, in Spain, young people were

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6 OECD (May 1, 2010): OECD Observer, p.6; http://www.oecd.org/employment
disproportionately affected by soaring unemployment. According to Eurostat, youth unemployment in Spain climbed as high as 37 percent. This is double the E.U. zone average of 18.5 percent.\(^7\)

In Africa, youth already accounted for 60 percent of the unemployed workforce in 2005. By 2015, Africa’s youth population is expected to increase by 36 million, while the labor force is expected to grow by 22 million, reaching a total of 135 million. Overall, a lack of decent livelihood opportunities is one of the driving forces behind violence and organized crime in developing nations, and increasingly in developed countries. Youth employment therefore represents a global economic and security issue.

It is evident that youth issues should be an integral part of the development agenda and policies. The stability of governments, the growth of economies, and the development of social sectors are directly impacted and driven by the well-being of youth. In addition to job creation, stronger measures are needed at the workplace level to shield youth against informal and insecure work arrangements with low earnings and little social protection. According to ILO estimates, more than 100 million new jobs need to be created within the next twenty years to provide sustainable employment for the rising number of young people in developing countries. The ILO also states that an intensified focus on youth at the international level has brought a greater understanding of youth labor markets and led to the development of a growing number of national action plans for youth employment as well as other youth-specific policies and programs at the national level.

Career opportunities for young people determine the quality of their living conditions and shape overall socioeconomic development. During the II Latin America and Caribbean – European Union Forum (LAC-EU), ECLAC’s Deputy Executive Secretary, Antonio Prado, observed that the lower the educational level of youth, the more difficult it is for them to access quality and highly productive jobs, especially in the case of young women.\(^8\)

Improving the skill sets of youth before they enter the job market helps improve their employment opportunities and the quality of their living conditions. A cross-country comparative study by the National Center for Reading Education and Research of the University of Stavanger in Norway showed that basic skills and educational level are closely related, and both can affect employment. Lundetræ, Gabrielsen and Mykletun (2010) examined whether basic skills in terms of literacy and numeracy predicted youth unemployment while controlling for educational level. Stepwise logistic regression showed that in Canada, Italy, Norway and the USA low basic skills predicted youth employment.\(^9\) Today’s knowledge society demands more than basic skills. It requires analytical skill as well as ICT skills.

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8 Speech of Antonio Prado ECLAC’s Deputy Executive Secretary during the II Latin America and Caribbean - European Union Forum (LAC-EU) in Lima, Peru http://www.eclac.cl/cgi-bin/getProd.asp?xml=/prensa/noticias/comunicados/2/38472/P38472.xml&xsl=/prensa/tpl/i/p6f.xsl&base=/prensa/tpl/top-bottom.xslt

Education is a key pillar to fostering youth employment. Considering the large youth population, youth employment remains a critical element of sustainable development and should be a top priority on every government’s agenda. We believe that ICT represents an opportunity for governments to enable socioeconomic development. ICT can help improve education, prepare youth with the skill sets to find employment in a knowledge-based economy and provide career opportunities in the ICT sector itself.

Currently, almost 16 million people are employed in the ICT sector in OECD countries. They represent close to six percent of total OECD business sector employment. ICT specialists account for three to four percent of total employment in most OECD countries. This share has risen consistently with a rising demand for ICT specialist skills across the economy. ICT-using occupations make up over 20 percent of total employment in most countries, and have remained quite stable. OECD predicts that the role of the ICT sector as an employer will continue to grow and widen in reach, as the growth in energy-efficient and intelligent energy systems, buildings, logistics and transportation systems leads to an accompanying growth in ICT-related jobs throughout all industries.10

Before examining the opportunities and innovative practices that are already in place, it is important to understand the limitations and challenges that governments, organizations, businesses and educators face when using ICT to improve education and career opportunities for youth.

In developing countries, challenges often start with access to education and access to basic technologies such as computers and the Internet. In a study undertaken for the Institute for the Study of Labor (IZA) in Germany, Chinn and Fairlie (2010) used panel data from 161 countries to analyze the use of computers and the Internet in the developing world and to explore determinants of cross-country disparities. The study found evidence that income, human capital, the youth dependency ratio, telephone density, legal quality, and banking sector development are associated with technology penetration rates. The main factors responsible for low rates of technology penetration in developing countries are disparities in income, telephone density, legal quality, and human capital. The results further indicated a fairly rapid reversion to long-run equilibrium for Internet use, and a somewhat slower reversion for computer use.11

Based on a recent case study of an ICT-in-education project at the St. Julie Model School in rural Uganda, Hosman (2010) concluded that “long-term human capacity building must be recognized as paramount for the adoption of ICT because supplying technology alone will not create a need for its use, nor will it solve underlying problems.” The St. Julie Model Primary and Secondary School, located in rural Buseesa, Uganda, boards and educates children mainly from the poor Kibaale district, which is characterized by a severe lack of roads, infrastructure and electricity. In 2007, the school started the installation of a computer lab funded by grants from Catholic Church-affiliated organizations. Originally, the school had two goals: to enable its students to sit for a national-level computer studies

exam by the year 2010; and to develop the students’ technology skills to help them get a job or eventually fund further education. The school worked with Inveneo, a San Francisco-based nonprofit company that provides innovative ICT solutions to rural and remote locations in the developing world. Inveneo proposed to outfit the computer lab with 20 computers that operate on a 12-volt battery system recharged by the school’s existing solar power setup. The computers each required approximately 18 watts of power, compared with the approximate 200 watts required to power a normal desktop computer. The school invested in IT hardware and upgrades in solar technology to power the equipment.

But St. Julie School had to revise its goals as a result of a needs assessment conducted in the aftermath of these infrastructure upgrades. To obtain the Uganda Certificate of Education in computer studies, students had to pass a national testing program, covering both theory and the practical use of computers. In the school’s estimation, and based on feedback from graduating students, it was felt that the extensive knowledge of theory was less useful to students than the acquisition of basic computer skills. Also, the time spent studying theory meant that students would be unable to study accounting or commerce, areas in which the school had strong expertise, and areas potentially critical to future employment opportunities for students. A further complication was the fact that the school was unable to obtain Internet access. With no reliable phone network in their region and a satellite Internet connection prohibitively expensive, the students would not have been able to train for the Internet-related portion of the national exam. Consequently, the school ended up pursuing a more pragmatic approach by teaching its students hands-on computer skills, which would be of use regardless of whether students decided to pursue employment or further studies upon graduation from St. Julie School. Based on the economic and technical constraints in which educational institutions in developing countries often operate, Hosman recommends gaining an understanding of how technology can enable and expand human capabilities before beginning ICT-in-education initiatives in a developing country.\(^\text{12}\)

ICT should be considered an important tool in creating employment opportunities for youth. But ICT expertise itself is typically not sufficient to ensure long-term satisfactory performance in the workplace. ICT education for youth needs to be accompanied by life skills education, including competencies such as making informed decisions, solving problems, thinking critically and creatively, communicating effectively, and building interpersonal relationships. Compared with older people, youth face particular employment and entrepreneurship challenges, as they are likely to have more limited business networks and contacts. Yet mastery of ICT tools such as social media networks may play a significant enabling role in helping to offset some of the traditional challenges that youth face in employment opportunities.

2. ICT as a Job Creator

The World Bank Report “Information and Communications for Development 2009: Extending Reach and Increasing Impact”\(^\text{13}\) examines how ICT impacts economic growth in developing countries. The report states that for every 10 percentage point increase in high-speed Internet connections there is an increase in economic growth of 1.3 percentage points. The mobile platform is considered to be the single most powerful way to reach and deliver public and private services to hundreds of millions of people in remote and rural areas across the developing world.

The World Bank recommends that governments work with the private sector to accelerate the rollout of broadband networks and provide access to low-income consumers. According to the report, broadband also provides the basis for local IT services industries, which create youth employment and promote social inclusion. The World Bank estimates that IT services are an untapped market opportunity for developing countries, with less than 15 percent of the potential global market for IT services industries currently being exploited. In 2007, this market represented nearly US $500 billion. The editor of the World Bank Economist report, Christine Zhen-Wei Qiang, recommended that governments encourage the development of local IT services industries through policies and incentives directed at entrepreneurs and the private sector, and through investments in skills and infrastructure.

Some developed countries have already set in place initiatives that use the digital economy as a job creator. The new economic strategy for Europe – Europe 2020 – identified the ICT sector as one of the key drivers for the smart, sustainable growth necessary to lead Europe out of the crisis. The current value added by the European ICT industry is estimated at 600 billion euros (4.8 percent of GDP), with ICT services accounting for 80 percent.\(^\text{14}\) ICT is recognized as an enabler of socioeconomic changes through its ability to advance and increase the competitiveness of knowledge-based economies.

The 2010 UN Report “A Digital Shift”\(^\text{15}\) also concludes that ICT will provide new job opportunities for youth. The UN report further states that young people have started to provide some leadership in the ICT industry, especially in the Web 3.0, mobility and social media sectors. The authors of the UN report recommend integrating technology throughout academic curricula so that technology becomes part of every discipline, including the humanities, instead of being restricted to computer sciences.

http://go.worldbank.org/W02S3588U0


3. ICT as an Enabler of Entrepreneurship

In addition to improving career opportunities, ICT has also created opportunities for youth to start their own business. ICT tools, especially mobile technologies, helped develop entire new business models, such as establishing micro-markets in disadvantaged areas by ordering goods and services in bulk using mobile phones. ICT further helps to connect local manufacturers of goods and services with global markets.

More and more initiatives are combining microfinancing, education, and ICT to help entrepreneurs in emerging markets to create sustainable businesses. For example, the enterprise software provider SAP partnered with the international not-for-profit organization PlaNet Finance, which offers support, services to microfinance institutions (MFIs). Their first joint project helps approximately 3,000 female shea nut harvesters in rural Ghana improve market access and improve their livelihoods. According to SAP, the project goals are to increase the women’s income from shea nut harvesting by 30 percent, to decrease the cutting of shea trees by 40 percent and to reduce distress sales of household goods by 50 percent. A team will train the women in after-harvest nut treatments and improved techniques for shea processing. The shea harvesters will be equipped with mobile phones to better handle logistics and manage orders. A Web-based information hub will connect them with national and international buyers.16

To date, micro-financing opportunities for youth to start a business vary by country. A survey on microfinance activities in Latin America and the Caribbean, conducted by the Inter-American Development Bank (IDB) in 2008, concluded that there is rapid growth in the sector, but with enormous variation among countries.17 An analysis of financial revenues as a percentage of average gross loan portfolio – used as a proxy for effective interest rates – showed a regional average close to 30 percent. Some countries, including Bolivia and El Salvador, had rates of less than 25 percent, while two countries, Mexico and Paraguay, had rates of over 40 percent. Based on the study results, IDB stated that a wide range of factors, including country-specific economic characteristics, the competitive environment, the regulatory environment, and institutional efficiency determine a country’s average microfinance interest rate – and thereby determine the opportunities to start a business for the country’s youth.

In China, ICT and the increasing popularity of e-commerce has played a critical role in helping youth launch entrepreneurial ventures. According to the China Higher Education Student Information and Career Center, just 0.2 percent of China’s 5.6 million college graduates chose self-employment after graduation in 2008, relative to the average 1 percent of their peers in developed countries. But Taobao.com, which provides an online web portal for individual sellers and buyers, and is China’s largest e-commerce website, is offering a previously unavailable avenue for youth in China to pursue entrepreneurship. According to the most recent annual report on China’s Internet market by Alibaba Group (Taobao’s parent company), by June 2010, some 65 million Chinese individuals and 12 million enterprises had opened e-shops on the website. About 70 percent of individual

sellers are aged between 21 and 30. Since 2009, the Yiwu Industry and Commerce Vocational College, located in east China’s Zhejiang Province, has been offering courses on starting up online businesses. Today, nearly 1,200 students at the college do business through Taobao, and many students are able to cover their living expenses through part-time jobs. While ICT is offering unprecedented opportunities to urban students in Zhejiang, one of China’s richest provinces, the Internet penetration rate in rural China is around half that in large cities.

4. ICT as a Skill Set Builder in Education and Training

UNESCO estimates that there will be more than 125 million students worldwide before 2020. At the UNESCO Education Leaders Forum, Gray, Anderson and Butler (2008) stated that, “Making education ‘fit for purpose’ for the 21st century has an e-dimension.” Gray, Anderson and Butler outlined that to improve the quality of education and training in the digital age, education systems and stakeholders need to be:

- **responsive** to the specific learning needs and wants of individuals in the sense meant when we talk of “personalization,” whilst at the same time responding to business “employability” needs in a rapidly changing global context;
- demonstrably **effective** in meeting the standards set by government and professional bodies to evaluate learners’ achievement and capacity to contribute to social and economic activity in their communities;
- **efficient** in the use of resources and operational management of the institutions and providers that will remain the engine room for education delivery for the foreseeable future, at a time of growing demand and pressure on public finance.

According to Resta and Patru (2010), the use of ICT in educational settings brings about important changes in student roles. Students shift from being passive recipients of information to active participants in the learning process. They shift from merely reproducing knowledge to producing original knowledge. Learning, once perceived as a solitary activity, shifts to being a collaborative activity.

Ensuring that technology skills are part of the curriculum to prepare the next generation of our workforce not only helps to open up career opportunities in the ICT industries, but in all industries, as basic computer skills are part of most job descriptions. In addition, technology innovations have disrupted the business models of many traditional industries and created jobs that require industry domain expertise and technology skills. Especially in Web 3.0 and

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social media, many of the innovators developed their business ideas in an early age, while in high school or at college. To date, the educational opportunities offered to potential young innovators in the developed world have largely been absent in the developing world.

5. Innovative Practices in Using ICT in Developed and Developing Countries to Create Career Opportunities for Youth

There are numerous ICT initiatives worldwide that are being undertaken by governments, corporations and associations. Some programs are global, many are nationwide, and an even higher number are local grassroots activities. Some of the initiatives that were initially created for developing countries, such as One Laptop per Child (OLAP), were later also adapted in developed countries. The OLAP computers – originally designed to bring low-cost computers to developing countries – are now also being used in U.S. public school classrooms.

The following is a selection of notable programs driven by global IT companies and organizations as well as innovative practices that use ICT as an enabler of socioeconomic development by creating opportunities for youth.

Education and technology access needs to start in early childhood to help eradicate poverty. UNICEF is working on a global study on child poverty in 48 countries around the world to try to understand what challenges children face in their lives. There is an important process that UNICEF is trying to adopt: to collect the data – do the research and analyze it – discuss the findings with children – adults, society – and find out what they would recommend as a response. These child poverty studies are then used to engage with policymakers and the public on what the issues and responses might be to address child poverty and disparities.

An example of a successful program to engage youth in ICT is Inspiring Young Minds, a global development partnership between UNICEF and British Telecom (BT) that began in 2007. Through the program, tens of thousands of young people in some of the most disadvantaged parts of South Africa, Brazil and China have gained access to technology and improved education. In Brazil, the program has supported and trained adolescents in five of the country’s largest cities on how to use a wide range of communication tools to improve the quality of education in their schools and communities, and to enhance their life decision-making processes. By supporting the creation of positive education environments, the program has helped children to acquire skills, pass exams, gain employment and play an active role in their communities.

In China, computers, Internet access, multimedia projectors and other educational materials were provided to rural schools with limited access to modern teaching aids and equipment. The provision of ICT to schools in poor rural areas has helped to improve access to high-quality education and promote digital inclusion. Equally importantly, through the Inspiring Young Minds program, poor rural schools that were once isolated have been connected with more advanced urban schools to share educational resources and to collaborate on learning projects that enhance children’s skills of inquiry, research, analysis and reporting. ICT is used to share educational materials, facilitate communication between children from

different backgrounds and allow them to learn from each other’s unique experiences, and bridge geographic and cultural gaps.

Another example of an initiative in a developing country is Digital Doorways. In 2002, the South African Department of Science and Technology and the Council for Scientific and Industrial Research launched the Digital Doorway project, equipping communities with free-standing multimedia computer terminals housed in rugged, waterproof kiosks. Through the “Digital Doorways,” children and youth have been able to equip themselves with ICT skills, and communities that were once excluded from online content have been able to access interactive educational software, reference materials, games, tutorials and other local content relevant to their needs. Since the success of the project in South Africa, Digital Doorways have subsequently been placed in schools and public spaces in Ethiopia, Lesotho, Uganda and other countries.

In addition to country-specific programs, there are a number of innovative transnational programs that help reduce youth unemployment by bringing ICT to educational institutions in cooperation with governments and private organizations.

Launched in the year 2000, Taking IT Global23 is a collaborative learning community, which provides youth with access to global opportunities, cross-cultural connections and meaningful participation in decision-making. The organization currently has partnerships with several U.N. agencies and dozens of international civil society organizations and foundations. It also works with several technology companies including Google, Microsoft, Adobe, Cisco Systems, and Hewlett Packard.

According to its research, student dropout and disengagement rates are at all-time highs, leading to billions of dollars in lost economic opportunities and crime. The Taking IT Global organization believes that global awareness and understanding across cultures is key to securing the future of our planet. The network therefore offers content and tools for educators to facilitate interactive learning experiences. It also facilitates learning experiences through workshops, webinars and e-courses. The organization also offers outreach and collaboration tools for events, networks, campaigns and causes. Its site offers research, development and best-practice sharing on youth engagement.

To date, Taking IT Global has reached more than 14 million since its launch 10 years ago. The initiative currently has 261 member countries and 2,295 participating schools, and it has been recognized by the World Economic Forum and Tech Museum of Innovation.

Microsoft, a worldwide leader in software, services and solutions, is a large supporter of education initiatives that bring ICT into classrooms. The company has supported education initiatives for many years in developing countries and underserved communities in collaboration with governments, educators, and NGOs; for example, one of Microsoft’s local impact programs offers English-language and ICT training to people who are struggling with unemployment in Bosnia and Herzegovina. The goal is to help job seekers to better compete in a labor market that has an unemployment rate of about 40 percent. In the first two years, more than 150 students took the course, half of whom went on to find employment.24

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23 Taking IT Global Web site; http://www.tigweb.org/about/
24 Microsoft, Microsoft Local Impact Map, Bosnia and Herzegovina; http://www.microsoft.com/About/CorporateCitizenship/map/app/default.htm#data=BAz23098zzz
Another example is Microsoft’s work to empower the youth in Latin America and the Caribbean, where 40 percent of the population is younger than 30 years old. The youth unemployment rate is twice as high as that of the adult population. In 2006, Microsoft became a partner of the Inter-American Development Bank (IDB) Youth Program, which supports the work of more than 9,000 not-for-profit organizations to respond to the needs of young people and promote their participation in the socioeconomic development process. As part of the partnership, Microsoft and IDB established the Youth Fund for Innovation and Social Action program across Latin America and the Caribbean. The program aims at broadening access to ICT and skills training for youth and developing their skills for better future employment opportunities. To date, three rounds of grants have been awarded, benefitting nearly 3,500 young people in Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Ecuador, Guatemala, Jamaica, Mexico, Nicaragua, Paraguay, Trinidad and Tobago, Uruguay and Venezuela.

Microsoft is also supporting the program through the Unlimited Potential (UP) initiative, providing software, participating in the development and implementation of an IT skills curriculum, and providing funding to support IT skills training. Over the long run, the expectation is that the Youth Fund will be able to train thousands of young people in critical areas such as entrepreneurship for business and social and civic engagement.

Elena M. Suarez, IDB Youth Office of External Relations at IDB, commented on the results and opportunities of youth empowerment programs: “Typically, young people have unfortunately been viewed as the problem or simply the beneficiaries or recipients of development efforts. What we have found is just the opposite: that young people, when given a chance, are part of the solution, and when given an opportunity do want to contribute and are contributing to the development of Latin America and the Caribbean.”

In 2003, Microsoft launched the Imagine Cup, an annual software design competition for students aiming to address global needs by creating a connection between people, information, and systems. Student teams compete in local and regional competitions to reach the finals, which take place in a different country each year. Imagine Cup is designed as a launch pad for graduates, an opportunity to use their creativity and brainpower to make a name for themselves in the technology industry. Numerous participants have secured an internship or job; many have started their own companies based on their Imagine Cup project.

While most of the current submissions and teams come from developed rather than developing countries, the overall goal is to design applications that can create a sustainable future and address concrete needs, such as water management.

25 Microsoft, Microsoft Corporate Citizenship, Youth Fund Empowers Youth in Latin America and the Caribbean, http://www.microsoft.com/About/CorporateCitizenship/map/app/default.htm#data=MXz23483zzz
26 IDB and Microsoft (2008): Fostering Social & Economic Development through the use of ICT and Capacity-Building Programs, partnership profile, April 2008
27 Microsoft Imagine Cup Web site; http://www.imaginecup.com/
In addition, Microsoft has established an IT Academy Program\textsuperscript{28} to provide educators, institutions, and communities with cost-effective solutions for teaching technology skills on an ongoing basis. It is a subscription-based membership program that encompasses access to Microsoft software, e-learning courses and an e-reference library. Instructors can use the Learning Management System (LMS) to track student progress, and develop their own IT skill sets with TechNet. Users can tailor their curriculum to obtain specific IT skills and certifications.

The enterprise software leader SAP has a number of local and global initiatives in place to address the unequal access to information and communications technology, and the unequal acquisition of related skills. SAP believes that it is important to support the education of students so that they can play an active role in tomorrow’s economies. The focus is on the promotion of mathematics, science, information technology and youth entrepreneurship as well as literacy as a basic prerequisite for education. The company does this primarily through the SAP University Alliances program (www.sap.com/about/csr/universityalliances), which offers university faculty access to SAP software and educational resources to enrich their curricula. Students can use the software to learn the latest techniques in business process design and management. The program helps students gain practical experience and strategic planning skills that can be applied directly once they enter business life. In 2009, the program provided training to more than 200,000 students at more than 1,000 colleges and universities worldwide. SAP expanded the program to countries such as Greece, Hungary, Israel, Pakistan, and Portugal. To nurture the interest in science and technology early on, SAP supports the FIRST LEGO League (www.firstlegoleague.org), a global robotics design, scientific research and tournament competition. The FIRST LEGO League events help children explore their own creativity, and develop teamwork skills. In 2009, 290 employees served as First Lego League mentors, coaching 198 student teams – ages 9 to 16 – in 29 countries for the annual robotics competition. In addition, SAP conducts a number of research projects that use ICT as a tool to promote socioeconomic development in rural areas and emerging (micro) markets. For example, the SAP research center in CEC Pretoria, South Africa, contributes to the development of ICT solutions for emerging economies. SAP is also the foundation partner of the New Partnership for Africa's Development (NEPAD) and for the Information Society Partnership for Africa's development. Initiatives in South Africa include the Siyafunda Community Technology Centers and the Africa Drive program, a research and development project to implement innovative teacher development and e-learning programs.\textsuperscript{29}

6. Future Prospects for Innovation and Technology for Social Development

While ICT presents tremendous opportunities and innovative practices are already being implemented by governments, non-governmental organizations, civil societies and businesses, the challenge remains to strategically unlock ICT’s potential to lower youth unemployment across all developed and developing countries. The first step is to further advance education and training using ICT in all countries.

\textsuperscript{28} Microsoft Website: http://www.microsoft.com/education/MSITAcademy/about.mspx

Second, it is important to promote entrepreneurship and inspire young people to create business – and subsequently new jobs – especially in underserved and rural communities. ICT, in combination with microfinancing, can serve as a launch pad to develop the next generation of entrepreneurs. Business development workshops and ICT training workshops are important for youth, but such training must be complemented by the development of psychosocial competencies and interpersonal skills that help youth cope with managing their personal and budding professional lives in a healthy and productive manner.

Third, there is no overarching framework that empirically tracks the impact of existing initiatives to reduce youth unemployment globally, regionally or locally. It is important to set in place a framework that can, at minimum, achieve the following goals:

1. Develop a youth unemployment initiatives map that lists key government and corporate initiatives on the local, regional and global levels;
2. Create a global steering mechanism to help governments address the youth unemployment issue using existing joint resources;
3. Use ICT to measure the impact and effectiveness of existing programs on reducing youth unemployment.

In November 2010, Chris Hughes, one of the founders of Facebook, took a significant step in creating a global overview of charities by using ICT with the launch of the not-for-profit organization Jumo. The new site aims to index and evaluate nonprofits and charitable organizations using social media and user reviews. All types of individual charities can set up their own page on the Jumo site, helping them to better connect with their users. 30

It is important to connect global indexes and ratings of initiatives with policymakers, so that such initiatives can be analyzed and strategically scaled up to meet the UN Millennium Development Goals. At the United Nations Public Service Day on the role of public service in achieving the UN Millennium Development Goals in June 2010, Anderson stated that the most evolved e-governments use ICT and public-private partnerships to reach socioeconomic development goals. 31

Further studies are needed to assess the sustainability readiness 32 of governments with a special focus on youth employment. This includes an assessment of existing policies to nurture youth employment, as well as programs that are already in place, together with NGOs and private corporations. A global assessment of how governments develop and implement their sustainability strategy to meet the eight UN Millennium Development Goals (MDGs) will help

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32 Anderson defines sustainability as “a continuing process of refining and extending the life cycle of products, services, or environment to stimulate social and economic growth without depleting resources.”
to develop a global sustainability index to assess sustainability readiness – and measure the progress and impact of all initiatives.

Governments need to balance all of their social, economic and environmental engagements to drive growth and prosperity. While they can partly achieve this goal by setting the right policies in place, such policies should be complemented by the increased sustainability focus of Fortune 500 companies. The public and private sectors must join forces and exploit information technology to strategically reduce the impact of youth unemployment on all levels while creating an environment for sustainable development.

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