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ICT education for development – a case study

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Abstract

“Information and communication technologies for development (ICT4D)” is a general term that is used to define the applications of ICTs for the socioeconomically disadvantaged groups. In other words, the ICT4D is applying information technologies for poverty reduction purposes. Today the concept is far more evolved from when it started just as the ICT industry. Especially along with the Internet now the possibilities for collaboration have significantly increased. Since information and communication technologies will be shaping the future, the jobs acquired in the ICT industry will be even more valid. On the other hand while the need for professionals is increasing, the number of well trained professionals is not accumulating with the same acceleration rate, due to the high costs and accessibility problems. This paper focuses on a unique and successful project called SPARK (Youth Movement in Informatics). SPARK is a partnership of UNDP, Cisco and Youth for Habitat Association. This project aims to improve the level of information technology expertise among youth using the Cisco NetAcad e-learning platform, while simultaneously encouraging volunteerism. Moreover, SPARK aims to support young people to develop their social capacities and helps them participate in the new information-based global economy through the peer education model on advanced information technology and networking skills. Through the case of SPARK, this paper also emphasizes the importance of the ICT education for development and poverty reduction and illustrates the impact it makes on people's lives.

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1.0. Introduction:

A research by Empirica and IDC EMEA Government Insights anticipate that the EU labour market may face an excess demand of 384,000 ICT practitioners by 2015. This number is according to the “back to normal” scenario. The same gap elevates up to 669,100 according to the “turbo knowledge economy” scenario^[1]. The number of ICT professionals in Europe was 4.7 million in 2007 and is forecast to be between 4.95 and 5.26 million in 2015 depending on five foresight scenarios. Accordingly the e-skills gap, or unfilled vacancies, will amount to between 1.7% and 13% of the existing occupations by 2015. [1]

At the same time millions of Europeans face being locked out of the jobs market in five years time due to their lack of ICT knowledge, according to a new report which claims 90% of jobs will require computer skills. The report indicates that training for advanced ICT skills will grow significantly over the next three to five years which highlights the importance of certification for ICT professionals. [2]

On European E-Skills Conference in 2006, the first message emerged was that it is crucial for the EU to rapidly adopt a long-term e-skills agenda to promote competitiveness, employability and workforce development, reduce e-skills gaps and be in a better position to address global competitive challenges.[3]

All the above mentioned data indicate the growing need to learn on ICTs both on the bare fact that global job markets sees it as a necessity to acquire a job and that there will be an immense need for advanced ICT professionals. Yet one has to take into account that ICT education varies from basic ICT literacy to networking

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professionals. These trainings of different levels of ICT knowledge have one thing in common; most of them are highly costly and not easy to access. ICT literacy, even in the most basic level, is vital for development since the global economy sees it as a necessity.

1.1. History of ICT4D

The concept of Information and Communication Technologies for Development (ICT4D) started around mid 1950s. The history of ICT4D can roughly be divided into three periods. [4]

- ICT4D 0.0: mid-1950s to late-1990s. During this period (before the creation of the term "ICT4D"), the focus was on computing / data processing for back office applications in large government and private sector organisations in developing countries.
- ICT4D 1.0: late-1990s to late-2000s. The combined advent of the Millenium Development Goals and mainstream usage of the Internet in industrialised countries led to a rapid rise in investment in ICT infrastructure and ICT programmes / projects in developing countries. The most typical application was the telecentre, used to bring information on development issues such as health, education, and agricultural extension into poor communities. More latterly, telecentres might also deliver online or partly online government services.
- ICT4D 2.0: late-2000s onwards. There is no clear boundary between phase 1.0 and 2.0 but suggestions of moving to a new phase include the change from the telecentre to the mobile phone as the archetypal ²application; less concern with e-readiness and more interest in the impact of ICTs on development; and more focus on the poor as producers and innovators with ICTs (as opposed to just consumers of ICT-based information).

1.2. Turkey's Situation in ICT and Development

Half of Turkey's population is in the 0-24 age bracket. 33,5 % of Turkey's present population are in the 15-34 age group.[5] This demographic profile combined with information on employability and income suggests that Turkey's youth, especially economically disadvantaged and unemployed young people, do not have access to the intellectual and economic opportunities which are available to their peers in other countries. On the other hand the IT market reached a revenue of 27,5 Million dollar in 2009 and the market is expected to grow 8% in 2010.[6] Since the IT market is expanding, there is a gap of skilled networking professionals globally. This expansion is and will be even more visible in Turkey as the rate of growth for the market is higher than Europe. There is an obvious need for the need for skilled IT and networking professionals

The rate of ICT literacy in Turkey by 2009 is around 30 %, and it is mostly composed of people of higher education and are employed.[7]. This is because information technologies education is mostly given in higher level of education and in vocational schools. The ministry of education has 33,500 computer labs countrywide, where there are a total of 58,982 schools and 21.117.017 students (in a country of more than 70 M people).[8] The imbalance between supply and demand requires youth to inquire ICT education from outer sources. For a country that has the rate of poverty as 17.00 % and the rate of rural settlement around 35% these expenditures can be out of the question. Since people need to be better skilled to enter in the workforce and ICT skills are vital for finding a job, ICT education is crucial for personal and economical welfare.

2.0. Youth Movement in Informatics: SPARK

2.1. Purpose

Youth Movement in Informatics (SPARK) is a social responsibility project implemented by August 2006 by Youth Association for Habitat (YfH) in partnership with Cisco Systems, United Nations Development Programme (UNDP), Turkish Informatics Foundation (TBV) and Istanbul Technical University (ITU). The project

aims to improve the level of IT expertise among youth while encouraging volunteerism. On the other hand SPARK aims to support and empower young people to develop social capacities of youth and help them to participate in the new information-based global economy to realize their full potential through peer education model on advanced IT and networking skills.

SPARK is a *unique* example which brings together information technologies, social responsibility and volunteerism. In SPARK young volunteers teach young people valid and up-to-date knowledge of IT. While the economically disadvantaged youth is prepared for the ever growing IT industry and given a chance to get a better hand in the global job market, volunteerism is also encouraged.

2.2. Implementation steps

SPARK is based on volunteerism. Volunteer instructors are trained by “Master Instructors” who are also volunteers who are more advanced and experienced in teaching and in IT informatics, via Cisco NetAcad e-learning system. They receive IT Essentials course, which consists of basic hardware and software information as well as some introduction to networking skills. Later on, each Volunteer Instructor that is trained takes the initiative to open a Cisco NetAcad IT Essentials course in their city, municipality or neighbourhood. In each case the volunteers are encouraged to take the initiative to obtain a computer lab and gather participants. For this they encounter local partners. These partners vary from municipalities, governorships, universities to high schools and local NGOs. The volunteers are also expected to do the announcing of the courses in their local settlements and gather participants.

The duration of the ITE course is about 70 hours and the instructor decides how to programme this time along with the participants, regarding the regulations of the lab they are using. The NetAcad graduates can take a fast track course and become volunteer instructors.

Volunteers are encouraged to open “instructor trainings” locally so that they can sustain the teaching process in the future. Each class consists of 10-15 people depending on the demand. Each participant receives a certification of graduation from SPARK, signed by Cisco, UNDP and YfH presidents.

The overall organization of the project is done by YfH Association and supported by Cisco and UNDP.

Table 1. SPARK Model

2.3. Education Method

The method of training is peer to peer training. This is a highly efficient way of teaching/learning since the instructor and the participants are close in age, experiences, educational level, and sometimes they may also overlap on several personal identities it is easier for them to bond and receive information. An obvious benefit of peer-to-peer training is that it improves the technical expertise of all concerned. [9] It is also an excellent opportunity for people to improve their presentation and verbal communication skills, which comes in handy as a skill in the job market. This way young instructors get a chance to experience before they begin their professional work life and gain confidence.³

Finally, since you don't really know how well you understand a subject until you try to teach it to someone else, delivering presentations is an excellent way for people to test themselves and clarify in their own minds how well they know the topic they're presenting. [9] The best way to learn is to teach. Such trainings also improve team work and help everyone in the group benefit.

There is also the fact that instructors take a responsibility towards other (young people) and make a difference in their local community and indirectly towards the development of their country. They also encounter a social environment where they are highly valued and respected by their peers.

Volunteer instructors also become Cisco Certified Instructors that is valid more than 165 countries around the world and be a part of a massive society. This also has an economical value, should they choose to use it in the job market.

2.4. Identification of beneficiaries

The beneficiaries of Spark are socially and economically disadvantaged young people currently excluded from the skilled segment of the labour market (unemployed, career-starter graduates, vocational high school students and graduates etc.) or young people in need of better skill sets to have a place in the labour force. The participants of the courses are chosen by the volunteers and/or local organization which will do the implementation. If the course is an instructor training course, the participants are evaluated by their basic ICT skills and their motivation and commitment to the project.

The participants of the ITE course are again chosen by the local organizations and volunteers but this time commitment to the project doesn't make an issue since the participants are not going to become instructors and give courses. The main issue this time becomes reaching the economically disadvantaged groups and empowering them with better skills, helping them with the great challenge in the job markets.

2.5. Methods of communication

This is done via two main routes. First and most effective one is the National Youth Parliament and City Youth Councils network. By regulations each municipality is supposed to have a youth council, encouraging the young people in the municipality region to participate in the democratic governance process. Most of the youth councils in the country unite under the National Youth Parliament (NYP) roof to affect the government and policies on youth. This network adds up to more than 40.000 young people and works very effectively. Especially in smaller cities the projects created by the youth councils touch the lives of many. SPARK finds most of its volunteers thru the NYP network who then reach the beneficiaries.

The other method of communication is the universities with social responsibility programmes. Spark as a social responsibility programme can be of interest to many young people. Some universities have social responsibility programmes in their curriculum and have it obligatory for the students to enroll and participate in one, before they graduate. Spark is recognized by the university boards and is an interest to students.

Knowing that social media is the strong vibe amongst young people today, and an important way of getting your message thru, Spark is also active in Facebook and its web page: www.bilisimdegenchareket.com

2.6. Partners of the Project

2.6.1. Youth Association for Habitat: Youth for Habitat is an international youth network that is established during the 1995 Copenhagen Social Development Summit with the participation of 300 youth organizations with diverse religious, racial, cultural and national backgrounds. Its main mission is to increase youth awareness for sustainable development and livable environment, and youth participation in decision making; to develop partnerships among youth; to enable youth to establish partnerships with the governments, local authorities and the private sector; to follow up and increase the participation of youth in the international youth related events of the United Nations, Council of Europe and European Union; to improve networking among youth groups; to increase access to ICTs and information; and to develop training programmes. The Association facilitates youth component of the Local Agenda 21 Programme in Turkey, the establishment and work of local youth councils and National Youth Parliament.[10]

2.6.2. Cisco: Cisco was founded in 1984, by a group of computer scientists from Stanford University. Since the company's inception, Cisco engineers have been prominent in advancing the development of IP- the basic language to communicate over the Internet and in private networks. Cisco has come up with many solutions in the market Cisco is the leader in the network solutions market. Cisco supplies the NetAcad free-of-charge for the SPARK Project.

2.6.3. United Nations Development Programme (UNDP) :UNDP is the UN's global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. They are on the ground in 166 countries, working with them on their own solutions to global and

national development challenges. As they develop local capacity, they draw on the people of UNDP and our wide range of partners. UNDP initiated the Spark project and now the implementation is being done YfH.

2.6.4. İstanbul Technical University (ITU) İstanbul Technical University “Bilgi İşlem Daire Başkanlığı” is a regional CATC of Cisco and is a partner to SPARK that supplies technical support to the volunteers and the project. They help form teaching contents and methods to supplying online questionnaires [11].

3. Cisco Networking Academies



Cisco Networking Academy is an e-learning programme that teaches valid and up-to-date technological knowledge and skills to the participants. It's active in more than 165 countries more than 9,500 academies with 500,000 students per year. Since Cisco is one of the innovators and the leaders in the market, it also is a player that sets most of the rules. NetAcad is a non-profit dynamic educational program that teaches students relevant technology skills. It helps increasing students' competitiveness in the global marketplace and opens doors to different employment opportunities. It builds ecosystem to help education preparing students for opportunities on the internet economy. IT creates

solutions globally consistent, locally relevant to transform ICT Education.

There are different levels of trainings in Cisco NetAcad. In Spark Project, IT Essentials courses are given. This is a 70 hours long course with many online exams and the course consists of PC hardware and software knowledge and an introduction to networking skills. Successfully graduating participants are skilled to be employed as PC support personnel, help desk technician or hardware configuration coordinator and such.

4. Impact Assessment

The project was initiated in 2006 and the main implementation began by the end of 2008. Since then, more than 1300 young people were trained. The project is still active in 22 cities in Turkey and in Baku, Azerbaijan. There are 50 volunteer instructors that are actively opening new ITE courses. By the end of 2010, CCNA courses are to be initiated and the training given will be taken to a more advanced level on networking skills.

An impact analyses is being done via web based questionnaire to all the graduates of SPARK since 2008. Also one-to-one interviews have been done with volunteer instructors to see the effect the project on their lives. Such interviews are being published via internet as “success stories” they are, to create an awareness and reach more people.

In all the interviews the volunteers stressed the difference SPARK made in their lives. This “difference” varied from person to person. One instructor, an undergraduate student in Computer Engineering in Galatasaray University, mentioned how she got a part-time job in IBM, how people were very impressed by her skills and that her superiors are encouraging her to continue learning and teaching in CCNA. Another instructor who is employed in a IT company mentioned that he takes his annual vacation days to go to the other side of the country and teach to disadvantaged youth. This volunteer instructor, at the age of 30, is motivated by the pleasure of being a “maestro”, making a difference in people's lives and witnessing the chance he himself creates.

Another instructor, again a student in computer engineering, is coming from a poor family and an ethnic background from eastern Turkey. He knows the challenges of living in the area and the necessity of a skill set to acquire a job. He has become a volunteer instructor to make a chance in the local community and the lives of his peers who don't have the opportunity to have university education.

All of the volunteer instructors are still in contact with their “students”, most of whom at their age. They are much respected for the fact that they put so much time in someone else's personal development. The volunteer instructors that the interview was made, indicated the bare fact that they were taking responsibility to make changes in the society, in the way that they were able to do, which is about information technologies, empowering their peers and at the same time setting an example to take initiative, take responsibility and make changes for self, local and communal development. Also all of them told about the significant satisfaction of helping others.

5. Conclusion

ICT education is a “must” for ever growing and ever changing global economy. Only in five years time regardless of the industry or the position, most jobs will require at least basic IT levels. That is why IT education has significant importance in development and welfare of people and communities. Yet exists the problem of the fact that ICT training is expensive and not easy to access. As a case SPARK brings valid technology skill trainings free of charge, which solves the problem of high cost. It also empowers youth encouraging them to volunteer and to take initiative. SPARK uses the Cisco NetAcad system which solves the problem of physical accessibility via e-learning. With only a computer and internet access these training can be taken everywhere. SPARK brings ICT education for development. The outcomes of the project clearly indicates that SPARK made changes in the lives of people by using information technologies.

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