

AN OVERVIEW OF THE EASTERN CAPE ESKILLS COLAB TRAINING AND AWARENESS PROGRAMMES

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Abstract: This paper covers an overview of Information Communication Technology (ICT) training drives currently being undertaken in the Eastern Cape province of South Africa. ICT is both a driver and enabler of changing people's lives. For example, it changes the way people communicate, study and do business. Mobile phones and internet are becoming more available even in the most under developed regions and the hardest to reach communities. While the use of these ICTs is creating a wealth of new opportunities, it may include risks created by other users who use ICTs in an unethical manner. Therefore there is a need to make people aware of the opportunities and dangers or risks that comes with the use of ICTs. This paper seeks to unveil the path that the Eastern Cape e-Skills CoLab (EC e-Skills CoLab) has taken to provide training, aligned towards the fourth industrial revolution (4IR), around the province. The CoLab has embarked on a number of training and awareness campaigns ranging from basic Computer Literacy, Cyber Security, Internet of Things (IoT) and Robotics. Training is provided for basic computer users (e.g. learners, teachers), sector users, ICT practitioners, and e-Leaders. Each of these user groups has its own training model that has targeted a specific focus. For example, learners are given training and workshops on both Cyber Awareness and Robotics, whereas ICT practitioners are provided with training ranging from Cyber Security to IoT. The aim of the paper is to present and share the overview of e-skills experiences on number of ICT training that the EC e-Skills CoLab has rolled out.

Keywords: Digital skills, Awareness, ICT, Training, Eastern Cape.

1. Introduction and Background

The fourth industrial revolution (4IR) is a collective term for technologies and concepts of value chain organization which draw together cyber-physical systems, the Internet of Things (IoT) and the Internet of Services (IoS), together with other emerging technologies, such as cloud technology, big data, predictive analytics, artificial intelligence, augmented reality, agile and collaborative robots and additive manufacturing [1]. The opportunities within the 4IR are seen in the potential rise in income and quality of life, improvement of efficiency of products and services and the opportunity to open new markets and drive economic growth. Already there is a move and high expectation towards the development of technological platforms for the quadrilateral engagements between government, business and citizens, even those in disadvantaged communities, for inclusive growth [2].

South Africa (SA) has an inter-ministerial team leading the 4IR strategy. This team recognises that the technological shift towards 4IR makes it more difficult for unskilled and semi-skilled individuals to get jobs as there is a large disruption and large-scale change of many industries and a shift in how we live and how we do things. However, SA still has the obligation to participate in this digital revolution through the increased involvement and collaboration of all stakeholders' i.e. academic institutions, government, private sector and the South African society [3]. The responsibilities of each of the aforementioned stakeholders is complementary: academic institutions and the private sector have the responsibility to align to jobs of the future whose largest growths are envisaged include healthcare, information technology, engineering, science, accounting, data analysis, education, management, creative industries, building and related artisan professions. The government has the responsibility to protect the South African society and ensure that there

is sufficient awareness and investment into futuristic job-related opportunities which emerge from innovation and technology investments by existing and emerging industries [3].

Eastern Cape has a population of about 7 million people; a majority (95.4% or 6.7 million) were born within the province. Nearly two-thirds (65.1% or 1.2 million) of the Eastern Cape population stay in formal dwellings, a little more than a quarter reside in traditional dwellings (26.6% or 471 699) and less than a tenth (7.4% or 130 885) live in informal dwellings [4]. In addition, the Eastern Cape Province also has the highest illiterate rate in South Africa with 10.4 % of youth unable to read or write [5]. However access to information and the ability to communicate can be an empowering social process which can improve the Eastern Cape situation. Any ICT has the potential to empower [6]. There is an increase in the use of mobile phones and internet access even in the marginalised areas. However, even where there is connectivity and basic access to internet, not everyone understands what it can do for them. To some people a mobile phone is only used to make phone calls. People still need awareness on how to use a mobile other than to make a call and access all the kinds of information and services through the internet or mobile phones [7].

Most of the young people in rural areas may not know some of the ICT applications that are available today that they can use to look for jobs, apply for schools and even taking online courses in the comfort of their own homes. There should be awareness on how ICT devices and information can be used to improve lives. It is therefore important for entities such as the Eastern Cape e-Skills CoLab (EC e-Skills CoLab) to contribute towards progressive change through providing relevant ICT digital skills (or e-skills) awareness and training programmes for the empowerment of the marginalised communities. Empowerment “refers to the process by which those who have been denied the ability to make strategic life choices acquire such an ability” [8]. The majority of the population in the Eastern Cape is rural, therefore the main audience of the EC e-Skills CoLab programme is marginalised communities.

2. Eastern Cape e-Skills CoLab

The EC e-Skills CoLab based at Walter Sisulu University (WSU) is the provincial presence of National Electronic Media Institute South Africa (NEMISA), a state owned entity reporting to the Department of Telecommunications and Postal Services (DTPS). It has a primary focus on ICT for Rural Development, particularly the OR Tambo District Municipality (one of the national broadband pilot sites), other rural / semi-rural districts, as well as the two provincial metropolitan areas. There are eight other provincial e-Skills CoLabs distributed throughout South Africa also tasked with increasing the human resource e-skills base of the country to stimulate socio-economic development and increase equitable prosperity as per the National Development Plan (NDP) and other related policies [3]. The main programmes for the delivery include:

- Multi-stakeholder Collaboration (advocacy and awareness; partnership formation)
- e-Astuteness Development (Course, curricula design; access to training; delivery of training)
- Knowledge for Innovation (monitoring and evaluation; environmental scans; non degree and postgrad research) [3].

The EC e-Skills CoLab is part of the Eastern Cape (provincial) ICT Working Group, co-chaired by the Eastern Cape Premiers Office and the Eastern Cape Socio Economic Consultative Council (ECSECC). This is a solid platform to form collaborations with many provincial and local government stakeholders as it assists us in understanding provincial ICT needs, identifying ICT partners and centres, and also more critically, it is the provincial

platform where updates on the aforementioned broadband rollout in OR Tambo District Municipality are presented.

The EC e-Skills CoLab also contributes to empowering the previously dis-empowered groups by providing additional ICT training opportunities. For many youths in Eastern Cape such opportunities are critical as finding a way to sustain their lives and that of their families through skills development for employment is a top priority. Youth is aware of the opportunities that ICTs and basic literacy can provide for them. But because of limited access opportunities this youth is unable exploit these great ICT opportunities. Therefore in its capacity to intervene the EC e-Skills CoLab has come up with a number of awareness and training models to support and empower marginalised communities.

There are also a number of other government developmental agencies which have a mandate to developing the South African society, especially the youth. An example of such agency is the National Youth Development Agency (NYDA) which provides jobs database, entrepreneurship development programme, NYDA grant programme and mentor registration, some geared towards ICTs [9]. However, this paper focuses on giving more details on specific awareness and training interventions by the EC e-Skills CoLab. The next section provides the framework which the EC e-Skills CoLab training is based.

3. The NEMISA Digital Skills Framework

Building capacity of digital skills, especially towards the 4IR skills, is not limited to basic digital literacy which is an enabler to “perform tasks, to solve problems, to communicate, to manage information, to collaborate, to create and share content and to build knowledge, in all areas of everyday life and for work” [3]. This is illustrated in the NEMISA digital skills framework where basic digital literacy skills underpin sector user digital skills, ICT practitioner skills and e-digital leadership skills [3]. The various training programmes implemented in the nine CoLabs are aligned to the NEMISA digital skills framework. As such, the narrative below will be aligned to it. Briefly, sector user skills are generic (for business or office use) or specific (for a particular sector or profession) while the application of ICT practitioner skills are needed for different operation of ICT systems e.g. research, maintenance and managing them. Finally e-leadership skills, to ensure more efficient and effective performance for different types of organisations [3]. The following sections describes the different ICT training programmes, linked to the aforementioned user groups, implemented within the Eastern Cape Province.

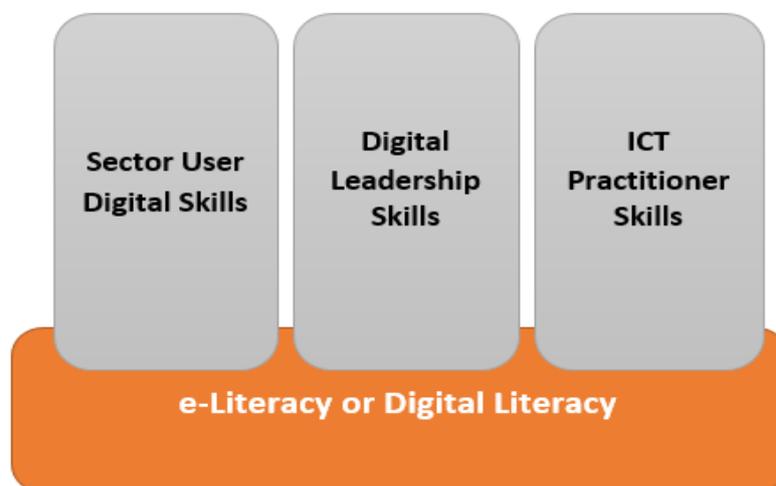


Figure 1: Digital Skills Framework [3]

3.1 Basic digital literacy skills

To date the EC e-Skills CoLab has collaborated with different partners within the province in order to roll out basic digital literacy programmes. The greatest success has been achieved through partnership with the Eastern Cape Department of Education (EC DoE), in rolling out the end user computing, basic programming and cybersecurity throughout the province. Currently, the main end user computing course is the eSkills4All, an interactive end-user computing course offered to teachers at functional EC DoE ICT centres. eSkills4All is locally created by Active Digital Education (ADE). Its modules include the introduction to ICT, word processing, spreadsheets, presentations, internet and email. Its strongest features include its delivery using South African English and voice overs, the use of South African examples and characters and presence of interactive activities. There are also number of exercises in the course and the interactive activities promote self-learning. eSkills4All is accredited by both Vaal University of Technology (VUT) and the South African Council of Educators (SACE) [10].

In the Eastern Cape, the EC e-Skills CoLab has rolled out the course to EC DoE teachers and community members. This programme has the potential to reach hundreds of teachers at the EC DoE centres distributed throughout the province. The course has shown so much success as it produces a number of e-skilled teachers who can pass on the ICT skills to students they teach every day. When you are skilling a teacher you are skilling the nation. The costing to roll out the course is shared; the EC e-Skills CoLab funds the course licensing and provide training for EC DoE facilitators while the EC DoE provides the infrastructure, internet, technical support and remunerates in-house facilitators.

The EC e-Skills CoLab has also piloted basic programming training in collaboration with the EC DoE. So far, this training has been conducted with learners from townships schools. An example of training which has been conducted is Lego Robotics Coding, where learners are taught the basics of how to programme robots and opportunities within this field. Lego Mindstorms is a hardware software platform produced by Lego for the development of programmable robots based on Lego building blocks [11]. Initially the training was open to learners with an ICT background, through Computer Application Technology (CAT) or Information Technology (IT) subjects. However it was extended to learners who do not have this background in order to encourage them to consider software development as a career. The intention is to extend the training to rural regions, especially those without basic computer laboratory. Fortunately the increased prevalence of mobile devices amongst learners provides them with the means to learn new things that can improve their lives other than being only actively involved in social media.

Increased ownership of mobile devices actually encouraged the EC e-Skills CoLab to embark on cyber awareness training for learners where they are taught about the dangers of being on cyber space as they are actively using these connected devices. During the cyber awareness sessions held by the EC e-Skills CoLab so far, it is evident that the young people or school children are mainly using their mobile phones for social media activities. Learners have limited awareness of other opportunities that they can get through the use of ICTs and internet e.g. online applications to gain admissions at tertiary institutions and online job searching techniques and platforms. The EC e-Skills CoLab awareness training also emphasises the dangers of being on the internet e.g. when shopping online and social media because there are a lot of scams online. Examples are given of how people get defrauded while using e-commerce sites, which teaches learners on the dos and don'ts on the cyber space. These awareness programmes are an eye opener for learners.

The EC e-Skills CoLab also rolls out other programmes with other partners in the Eastern Cape Province in its endeavour to empower rural communities. In addition to the aforementioned eSkills4All course, some communities opt for the eSkills4Communities

course which is similar to the eSkills4All course but has more limited duration. The course contents of eSkills4Communities is the same as that of eSkills4All, the difference is only duration where the latter takes less time to complete [10]. As mentioned earlier, there is high unemployment rate in the Eastern Cape, lack of e-skills is also a major cause of unemployment. When people lack basic computer skills it becomes difficult to employ them. The certification they receive after course completion helps them to become employable.

The cyber awareness sessions have also been extended to youth and adults in disadvantaged communities as a lot of people are unaware of the dangers of being actively involved in the cyber space. While similar to cyber awareness training to learners, this training also equips adults with additional skills that will help them in utilising ICTs for the betterment of their lives. Community members are also made aware of the dangers of being in a cyber space and how they can use ICTs to do other things other than making calls and being only involved in social media activities.

3.2 Sector Users

There is also a growing interest among the sector users. The training in this category helps with specific skills for individuals, for example, for film and television production operations or social media and marketing for SMMEs. The training showed a lot of growing interest amongst a number of SMMEs in the Eastern Cape Province. The CoLab had partnered with Makana Apps Factory based at Rhodes University in association with Eastern Cape Information Technology Initiative (ECITI) [3].

Another example of a training provided for sector users was a seminar on Speech Technology in Agriculture. The seminar was aimed at anyone with an interest in providing digital opportunities for stimulating rural development. There were delegates from business, government, farming community and students. In this seminar the challenges in the implementation of voice-based-services for rural communities were discussed using already existing projects of this nature [3]. Example of such project is the Aloe Project which uses a voice-based system so that aloe harvesters and farmers could interact easily around yields and the whereabouts of aloe drums. Post evaluation seminar showed that the attendees found the seminar very worthwhile [3].

3.3 ICT practitioners

There is a need to upskill the ICT practitioner's community, especially with introductory courses relevant in the 4IR. Examples of such courses are; Introduction to Cyber Security, Introduction to Internet of Things, CCNA1 and IT Essentials courses [12]. The increased exposure to cyber-attacks has created a growing need for cyber security skills and professionals. Therefore this awareness course build on cyber security and equip IT practitioners with new opportunities ranging from being safe on the cyber space to choosing cybersecurity as a career.

3.4 e-Leaders

E-Leaders workshop is one of the awareness campaigns provided by the EC CoLab, where managers and senior managers in ICT field are introduced to the 10 proven attributes and actions that future fit leaders have shown make the biggest difference to successful digital transformation. At the same time the experience is designed to bring about a greater self-awareness of the digital change each attendee needs to make themselves, in order to gain the competitive advantage they are looking for [13].

4. Implementation and Discussions

The EC e-Skills CoLab team plays an active part in the aforementioned training and awareness programmes. For each programme, an expert, another provincial CoLab or the host university WSU is consulted on the possibilities to assist with a session for a particular group of people. For example, courses for ICT Practitioners e.g. Introduction to Cyber Security and Introduction to Internet of Things are delivered by the accredited WSU CISCO academy, while the sector user course Digital Marketing for SMMEs is delivered by the University of Western Cape (UWC) CoLab.

As stated earlier that EC e-Skills CoLab focuses on ICT for Rural Development. Therefore there is a need to identify fully functional ICT Centres, especially in rural areas and townships to host the training sessions as there is limited programmes to teach communities on how to use ICT devices. In SA, there have been a lot of ICT Centres that have been donated by various organizations. These ICT Centres, either public or privately owned, usually allow the surrounding communities to access their resources. We have learnt that it is important to conduct technical audits of the ICT Centres prior to use as some lack maintenance. The use of existing ICT Centres means that the training is conducted on existing ICT infrastructure. A partnership is then established with the ICT Centre, sometimes to the extent of training the centre's personnel to become facilitators to a particular course.

The EC eSkills CoLab and the ICT Centres are responsible for the recruitment of participants who attend the training for free. The EC eSkills CoLab keeps record of all participants. This information is kept safe and can be used as data source for other ethnographic research. Participants are expected to commit to participate in the training programmes until completion.

5. Conclusion

As stated by Statistics South Africa, Eastern Cape is said to have high levels of unemployment rate. Most of these people lack basic skills such as computer literacy. Therefore the introduction of eSkills4All and eSkills4Communities courses by the EC eSkills CoLab has helped equip a lot of people with much needed basic digital skills. ICT practitioners and organisation leaders have also shown interest in the training programmes relevant to them e.g. Introduction to Cyber Security for ICT Practitioners because it teaches them about security measures to implement in their respective work spaces. There is an increase in the number of interested individuals in every training programme which the EC eSkills CoLab hosts; meaning people do find the courses helpful. Therefore South Africa needs more initiatives such as the one provided by the EC eSkills CoLab to help educate people about the benefits and risks of using ICTs.

References

- [1] Senge, P. and Carstedt, G. Innovating, Our Way to the Next Industrial Revolution. MIT Sloan Management Review, (2001), 42, 24-38. Retrieved from: https://cursea.ihmc.us/rid=1182804950453_151557719_7013/MITSloanManagRev_2001_42_24.pdf
- [2] Department of Telecommunications and Postal Services. <https://www.dtps.gov.za/>
- [3] Nemisa. <http://www.nemisa.co.za/>
- [4] Statistics South Africa. <http://www.statssa.gov.za/>
- [5] Daily Dispatch. Grim Stats for Literacy Rate, 2017, pp. 1-2. Retrieved from: <https://www.dispatchlive.co.za/news/2017-02-10-grim-stats-for-literacy-rates/>
- [6] IT for Change. ICTs for empowerment and social transformation, 2013. Retrieved from: <https://itforchange.net/icts-for-empowerment-and-social-transformation-a-note-prepared-by-it-for-change-for-actionaid-0>
- [7] L. Raftree, Bridging community development and technology, 2010. Retrieved from: <https://lindaraftree.com/>
- [8] N. Kabeer, Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and change*, 1999, 30(3), 435-464.
- [9] National Youth Development Agency. <http://www.nyda.gov.za>
- [10] Digital Education Group. <https://www.degsa.co.za/>
- [11] Lego Mindstorm Robotics. <https://www.lego.com/en-us/mindstorms>
- [12] CISCO Networking Academy. <https://www.netacad.com/>
- [13] Future Fit. <https://www.wwc.co.za/digital-leadership/>