



**CSTD**

COMMISSION ON  
SCIENCE AND TECHNOLOGY  
FOR DEVELOPMENT



**BUILDING DIGITAL COMPETENCIES  
TO BENEFIT FROM EXISTING AND EMERGING  
TECHNOLOGIES, WITH A SPECIAL FOCUS ON  
GENDER AND YOUTH DIMENSIONS**

**Introduction of the Report of the Secretary-General**

**Shamika N. Sirimanne  
Director, Division on Technology and Logistics, UNCTAD  
Head of the CSTD Secretariat**

15 May 2018



UNITED NATIONS  
UNCTAD

# Opportunities and challenges offered by digital technologies

- Digital technologies have the potential to transform economies and improve the living standards
- Development gains are not automatic
- The impact depends on the readiness of countries—hard and soft infrastructure
- Building digital skills and competencies is critical



# Many forms of “mismatch”

**85-90% jobs in Europe will require ICT skills by 2020**

**By 2030 3-14% of global workforce will need to switch occupational categories**

**Large numbers of young people are entering labour markets in developing countries**

**In OECD countries more than 1/3 of the labour force has low ICT capacity;**

**56% of population has no ICT skills**

**Schools lag behind in the adoption of digital skills**

**500 m Chinese and Indian youth will join the workforce in the coming decades;**

**11 m young Africans to join the workforce each year for the next decade**

# Considerable *Gender Gap*

Gap in the use and access to digital technologies between men and women

12 % less likely to use internet

Under representation of women in ICT specialized occupations

Female employment remains in low-growth occupations

Under representation of women in STEM fields

Lack of access to formal education

Cultural barriers

Girls less able to “do” science

Lack of integration of arts into STEM





# Pyramid of digital skills

**Creation of  
new technologies**

- Sophisticated programming skills
- Knowledge of complex algorithms

**Creative use and  
adaptation of  
technologies**

- Computing skills
- Familiarity with algorithms

**Basic use**

- Basic understanding of technologies, software and applications
- Knowledge of digital rights, privacy, security and permanence of data
- Ability to collaborate, communicate and create using technologies

**Adoption**

- Basic education and literacy
- Familiarity with technology devices and services

# Complementary skills

- Digital skills are not enough to adapt to the changing labour markets demands
- Increasing demand to strengthen unique human skills that cannot be easily replaced by machines, computers and robots:

complex problem solving; sense making; social intelligence; computational thinking; novel and adaptive thinking; cross-cultural competency; new media literacy; transdisciplinary; design mindset; cognitive load management; virtual collaboration; critical and logical thinking ; creativity; soft skills for digital entrepreneurship

# Strategies to build digital competencies

1. Incorporating digital competencies in the education system

2. Enabling environment  
(investing in digital infrastructure+  
Policy and institutional development)

3. Collaboration among stakeholders

# 1. Incorporating Digital Competencies in the Education System

## Formal Education



Digital competencies as part of education goals



Education policy to promote the use and adoption of digital skills



Training at the primary, secondary, and tertiary school level

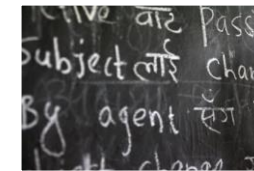


Teacher-training strategies

## Vocational training and lifelong learning



Vocational training in digital skills for job opportunities



Training in coding, data analysis and e-business



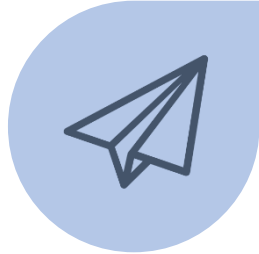
Emphasis on flexibility and life-long learning



Opportunities for public-private partnerships



# Emerging Technologies for Digital Competence



**Massive Open Online Courses (MOOCs)**  
potentially extend access to high-quality educational content to anyone, anywhere



**Open access to scientific literature and educational resources**



**Technology-mediated teaching and learning (e.g. Big Data and Artificial Intelligence, IoT)**  
potential for virtual classrooms to transform remote learning into an interactive and engaging experience

## 2. Enabling environment: investing in digital infrastructure, policy and institutional development

Selected National Strategies aimed at increasing digital competencies



Digital Bulgaria  
2020



Innovation and  
Skills Plan



National ICT  
Master Plan



National Digital  
Competencies  
Initiative



Revised National  
Broadband Policy and  
Broadband Strategy



Digital Uganda  
Vision



Digital Skills and  
Inclusion Policy



Federal Open  
Data

# 3. Collaboration among stakeholders

- Public private partnerships (e.g Portugal, UK)
- Collaboration among countries (e.g. Uganda-South Korea)
- Multistakeholder collaboration (e.g. CSTD)

# Policy Recommendations

## MEMBER STATES



Adequate infrastructure



Include digital competencies in formal education curricula



Encourage women to enroll in STEM fields



Support stakeholders in providing digital skills training

Foresight on ICT trends

## INTERNATIONAL COMMUNITY



Collaboration to create initiatives that aim at building digital skills



Identify infrastructure requirements needed for digital skills



Promote the use of digital methods



Strengthen the Gender Advisory Board with respect to building digital competencies



Foster international cooperation to build linkages in academia



Support the provision of training programmes for policy makers related to technological change



Support technological capacity building efforts in developing countries



Support countries in their efforts to identify future trends in capacity-building needs

## CSTD



THANK YOU

<http://unctad.org/cstd>



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