ICT in Education for Digital Transformation

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Agenda

- Importance of ICT in Education
- Intel's Role for ICT in Education
- Recommendations

Digital Transformation (Digital Economy)

- High-speed and high-quality Broadband
- Digitization (both government and private sector)
- Digital Skills (ICT in Education)

Why Invest ICT in Education

•ICT in Educations is key for Digital Transformation.

•Government are already using billions of US dollars each year for classical education systems. They usually **ineffective, inefficient and inconsistent** if not updated and improved by technology.

•T**he classical system cause more differentiations, inequalities in opportunities**. Rich always learn more and better than Poor; they receive bigger share from the Pie.

•Digital learning can help to **close the gap** in Digital Divide.

• ICT based education is for the future generations, gives them **new skills and intelligent knowledge**.

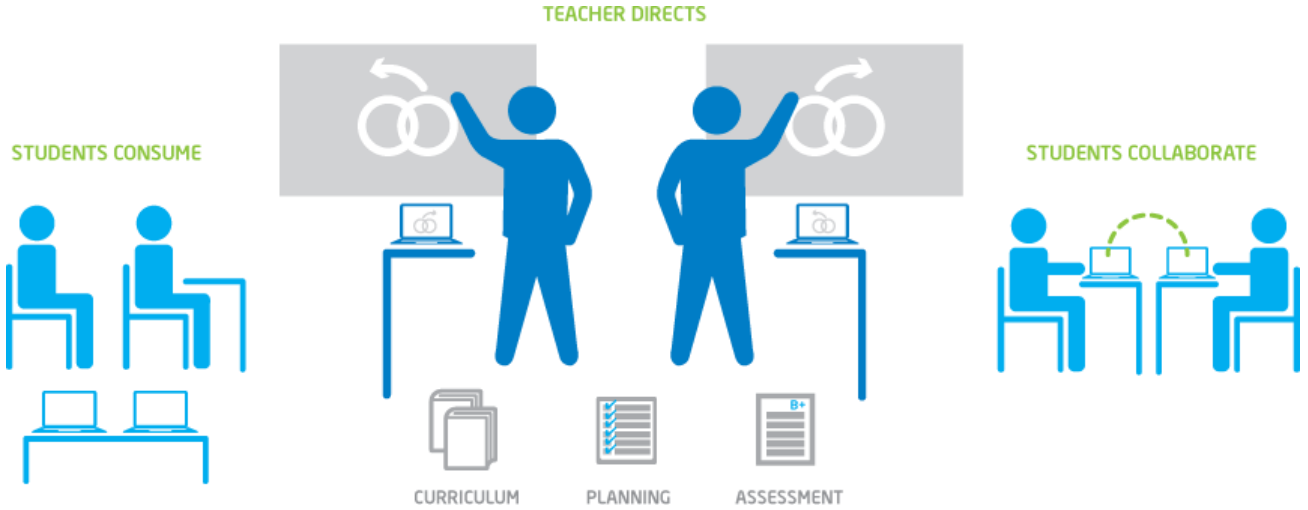
• With e-content, they learn as they play and they play as they learn. Whatever learned stays with them since they enjoy the learning process – **Good learning experience**

•Education Transformation is in reality an Education Based ICT Transformation. Students will teach digital skills to their friends – families; **whole society benefit**, not just students.

Shifting the Learning Paradigm

Traditional Teacher-Centered Classroom
Lecture-based knowledge dissemination. Limited use of technology.

Transitional Teacher-Centered Classroom
Lecture-based knowledge dissemination. Technology used for collaboration.



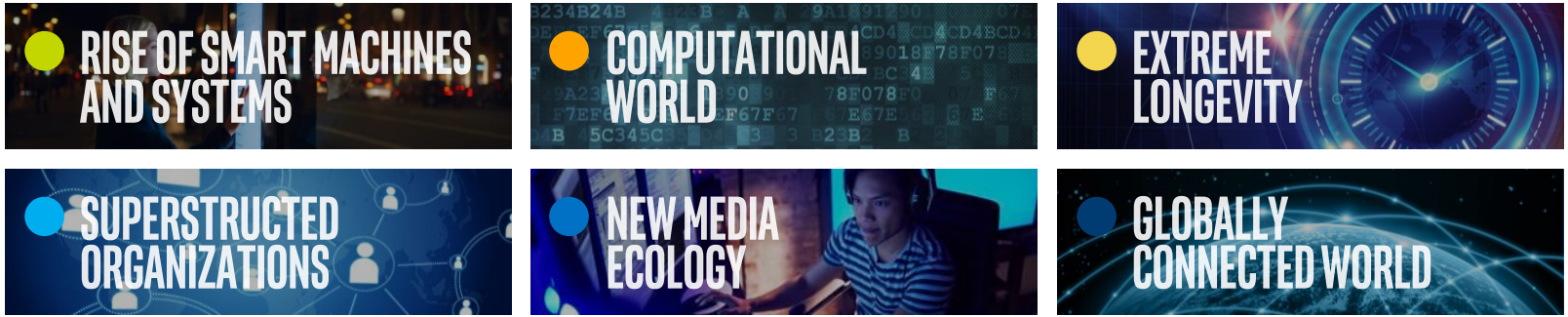
Evolving toward **STUDENT CENTERED CLASSROOM**

Research-Based Model for Transformation

- Strategic, comprehensive, based on global research
- Provides student-centered, personalized learning
- Emphasizes 21st century skills and rigorous academic standards
- Supports government objectives: equality, job skills, school participation, others
- Aligns strategic planning and ICT integration in classrooms based on best practices

NEW DEMANDS REQUIRE NEW SKILLS

DRIVERS OF CHANGE



REQUIRED SKILLS

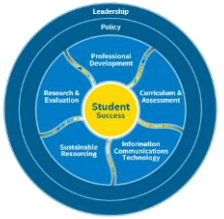
Novel & Adaptive learning

Computational thinking	Design mindset	Cognitive load management
New-media literacy	Cross-cultural competency	Sense making
Virtual collaboration	Transdisciplinary	Social Intelligence

Future Work Skills 2020 ©2011 Institute for the Future for University of Phoenix Research Institute.
http://iftf.org/uploads/media/SR-1382A_UPRI_future_work_skills_sm.pdf

Establishing Goals

Transformation Starts with a Vision of Success



Achievement

- Higher rates of attendance and graduation
- Improved test scores

Equity

- Increased enrollment of girls overall and in STEM classes
- Connecting learners who would not otherwise be included
- Reduce the achievement gap between highest and lowest performing students

School Culture

- Higher levels of student engagement
- Increased attendance
- Decrease in behavior problems
- Increased teacher satisfaction

Societal Impact

- Increased alignment with workforce needs
- Increased female participation and achievement in society
- Increased active citizenship and lifelong learning
- Greater cross-cultural understanding

5G for Future Education

- 5G will enter the classroom and bring new ways of learning to students and what could be described as a revolutionary wirelessly connected educational environment.

- Augmented Reality, Virtual Reality and Virtual Presence will mean that students will be immersed in a more visual and interactive learning experience where students and teachers may not necessarily be in the same location.

- Teachers and lecturers will be able to gain an instant view on individual student needs via feedback on student activity and will be better equipped to deal with their needs.

- This will create new demands on educational IT networks where both fixed and wireless networks in both licensed and unlicensed radio bands will need to be fully integrated – delivering a totally seamless service to educational organisations and students.

- This future “Smart Classroom” will require 5G and technologies.

(Ref: GSA 5G Verticals Series http://gsacom.com/paper/5g-verticals-education)

Education Transformation in Action

Global Momentum

ARGENTINA

AUSTRALIA
DIGITAL ED

BRAZIL
UCA PROGRAM,
PERNAMBUCO

INDIA

MACEDONIA

MALAYSIA
TERENGGANU STATE

PORTUGAL
MAGELLAN
PROGRAM

SPAIN
ESCUELA 2.0

TURKEY
FATIH PROJECT & KOCAELI STATE

UAE
SMART LEARNING

USA - MANY
STATES AND
DISTRICTS

VENEZUELA
CANAIMA PROJECT

Intel® Learn Easy Steps

Intel's digital literacy program provides simple, practical, and relevant instruction in basic technology skills that enhance an individual's opportunities for social engagement and economic self-sufficiency.

Intel Global Girls and Women Initiative

Empower millions of girls and women through education and technology to advance economic opportunity

Education Access

Drive awareness and action to expand education opportunities for girls

STEM & Tech Careers

Inspire more girls and women to become creators of technology

Technology Access

Connect girls and women to new opportunities through technology access, digital literacy and entrepreneurship

Building upon the foundation: Investing in our own talent and supply chain diversity

Inspire Girls and Women to Become Creators of Technology

- Use of hands-on “Maker” and coding activities
- Exposure to peer mentors and role models
- Connecting technology and engineering careers to real world applications and positive social impact

Examples of Programs and Partnerships:

- Girls Who Code
- NCWIT AspireIT
- Robotics programs
- Hermanas: Diseña Tu Futura
- Compugirls
- TechGYRLS
- Intel Computer Clubhouse Network Start Making! program
- Intel International Science and Engineering Fair and the Intel Science Talent Search*
- EPICS program
- Higher Ed Scholarships and fellowships

Girls Who Code Video: http://www.youtube.com/watch?v=OVwrO1AxhJo

Intel® She Will Connect Program

Goal: Empower millions of girls and women through technology and bridge the Internet gap

- Innovative combination of digital literacy training, online peer networks, and gender-relevant content.
- Started in sub-Saharan Africa in 2014 and program have reached over 1.3 million women.
- Program to be delivered through partnerships with leading local NGOs and other organizations.
- Income generation opportunity: The face-to-face training enables women to access opportunities to increase their income

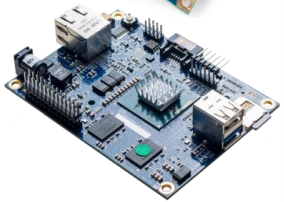
Intel® She Will Connect Video: http://www.intel.com/content/www/us/en/technology-in-education/she-will-connect-program-close-gender-gap-video.html

Intel® IoT Developer Kit:

The developer kit is optimized for rapid prototyping—a way to prove or enhance your ideas or turn them into products. The kit provides all the hardware and software you need to speed up prototyping and time to production.

Intel® IoT Developer Kit for Specific Boards

The kits provides all the hardware and software to speed up prototyping and time to production
Variety of boards that serve the full range of development audiences and projects.



- **Learn and Thinker: Teach making and coding, build for fun, or create one-off projects**
  - -Arduino 101*: First project, Basic automation, Wireless
  - -Intel® Galileo Board: Do more with Arduino, Expand programming knowledge, Linux

- **Prototype and Build Products and Commercial Solutions: Create a product, take your product to market, start a company, or teach engineering.**
  - -MinnowBoard MAX: Open-source hardware, Community supported
  - -Intel® Quark™: Low power, lightweight, Light industrial IoT, Always sensing
  - -Intel® Curie™ :Connected devices, Smart Toys, Wearables
  - -Intel® Edison: Consumer IoT, Light industrial IoT, High-performance wearables
  - -Intel® Joule™: Computer-vision, Mobile Robotics, Drones, Industrial machine vision
  - -Intel® Aero Platform for UAVs: Unmanned aerial vehicle (UAV) development
  - -Intel® Real Sense™ Robotic Development Kit: Robotic development

Intel® Galileo Board (IoT)

- Intel provided 50,000 Intel® Galileo boards featuring the new Intel® Quark™ technology to universities worldwide.
- Inspire students to develop innovative apps on Intel's Internet of Things
- We have shipped thousands of boards to universities that are integrating them into their curriculum.
- Many schools are using the boards in introductory embedded computing or microcontroller courses. Others plan to use the boards for senior level classes or to provide increased compute power for existing projects.

Digital Transformation of Education

- Connect all schools, classrooms with broadband.
- Provide interactive smart boards at classrooms.
- Provide subsidized internet devices for students and teachers.
- Educate all teachers and students regarding the use of ICT.
- Provide digital content for education
- Provide subsidized home broadband connectivity for low income student families.
- Provide public internet access at schools (community access centres).

Recommendations

- Develop Digital Transformation Plan (including ICT in Education for Digital Skills) with time bounded goals and an implementation plan.
- Obtain political Support (President, Prime Minister)
- Develop regional and national plans with time bounded goals.
- Provide coordination between Ministries (especially ICT and Education) and an implementation committee.
- Develop funding mechanism (Universal Service Fund and other sources)

How you can start!

- Organize a kick-off meeting with Ministry of ICT, Ministry of Education, Ministry of Development/Economy, Presidency/Prime Ministry, USF (Universal Service Fund department if exist) for a national plan.

- Consider to deploy/launch pilot projects and get political support.

Let's Work Together

- Transforming Education is a Necessity in Today's World
  - Develop 21st century skills, inspire 21st century citizens, expand opportunities for growth
  - The Intel® Education transformation model is a comprehensive approach that is delivering results around the world
  - Intel Education provides powerful, practical programs, technologies, and resources to help you achieve your vision of student success

More information:
www.intel.com/education

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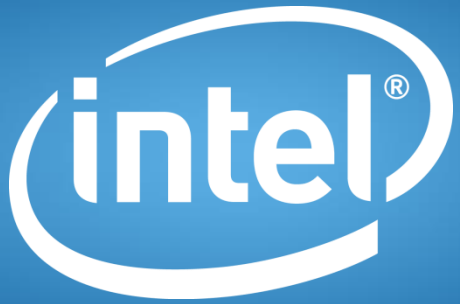
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