INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

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Contribution of the United States of America

to the CSTD 2017-18 priority theme on 'Building digital competencies to benefit from existing and emerging technologies with special focus on gender and youth dimensions'

1. Can you give examples of digital competencies projects/policies in your country and how they have contributed to benefit from existing and emerging technologies? What are the main challenges confronted while trying to implement these projects/policies in your country or region?

Digital competence seeks to address a multilayered issue in digital literacy which can encompass everything from learning basic computer use to computer science to coding to development of technologies, as well as, the digital divide. There are several barriers in the U.S. which include access to the internet and/or computers and incorporating digital skills into the education curriculum. What is important to stress is that community based approaches are required at multiple levels from a national strategy to local initiatives to the classroom environment.

Bridging literacy and digital literacy

To increase both literacy and digital literacy, Bexar County in San Antonio, Texas opened the first and only all-digital public library, BiblioTech, in the U.S. in 2013 which is focused on serving the lower socioeconomic community. The library lends e-readers and digital content to patrons. In addition, members with can download the cloudLibrary app to read eBooks from their personal device. BiblioTech also offers online databases and educational resources, a monthly enewsletter (BiblioTech In Motion), Story Time, and a book club in which participants can attend live (either in person or online via Google+ Hangout video chat), or view online (via a live feed or later on YouTube or the library's Google+ profile). Onsite patrons can use one of of the library's 48 iMacs, dozen iPads, two Xbox 360s with Kinect, and many touch-screen video tablets with interactive Kaplan Early Learning Company educational games. The second and third locations opened in 2015 and 2017, respectively.

The Pew Research Center report *Libraries at the Crossroads* suggests that the public wants libraries to teach digital literacy, and that library efforts can help the most vulnerable groups. According to the Pew report, 94% of respondents said libraries should "offer programs to teach people, including kids and senior citizens, how to use digital tools such as computers, smartphones and apps." A strong majority of all Americans—76%—say that libraries should "definitely" offer programs to teach people how to protect their privacy and security online. The Public Library Association started an initiative in 2013 to make libraries digital learning centers, DigitalLearn.org to teach novice computer users skills such as how to use email, navigate the internet, use PC or Mac operating systems, and search for jobs online.

Hour of Code

The Hour of Code started as a one-hour introduction to computer science, designed to demystify "code", to show that anybody can learn the basics, and to broaden participation in the field of computer science. The Hour of Code takes place each year during Computer Science Education Week in recognition of the birthday of computing pioneer Admiral Grace Murray Hopper. The premise is that every student should have the opportunity to learn computer science. It helps nurture problem-solving skills, logic and creativity. By starting early, students will have a foundation for success in any 21st-century career path. Partnerships include K-12, academia, nonprofits, and

The goal of the Hour of Code is not to teach anybody to become an expert computer scientist in one hour. One hour is only enough to learn that computer science is fun and creative, that it is accessible at all ages, for all students, regardless of background. The measure of success of this campaign is not in how much CS students learn - the success is reflected in broad participation across gender and ethnic and socioeconomic groups, and the resulting increase in enrollment and participation we see in CS courses at all grade levels. Millions of the participating teachers and students have decided to go beyond one hour - to learn for a whole day or a whole week or longer, and many students have decided to enroll in a whole course (or even a college major) as a result.

Besides the students, another "learner" is the educator who gains the confidence after one hour that they can teach computer science even though they may not have a college degree as a computer scientist. Tens of thousands of teachers decide to pursue computer science further, either attending PD or offering follow-on online courses, or both. And this applies to school administrators too, who realize that computer science is something their students want and their teachers are capable of.

Coding through Vocational Training

As the digital economy grows in the U.S., there are more opportunities to learn coding without obtaining 4-year college training. Dev Bootcamp offers intense short term programs in cities with a growing technology industry. Bit Source is retraining coal miners to become programmers. CodeTN is partnering with high schools to train students how to code at local community colleges.

Federal initiatives are being implemented in rural areas as automation jobs are driving the need for workers to develop advanced computer skills. The Eastern Kentucky Concentrated Employment Program (EKCEP), Inc. is a non-profit program that receives funding through the Workforce Innovation and Opportunity Act. With the Eastern Kentucky Concentrated Employment Program (EKCEP), Inc. serving as the strategic community and regional lead, TechHire Eastern Kentucky is bolstered by a consortium of tech and tech-related employers who will work closely with workforce development, higher education, economic and regional development, and with each other in a unified effort to secure, guide, and deliver accelerated training, work-based volunteer internship activity, on-the-job training placements, and ultimately provide potential hiring opportunities for Eastern Kentuckians for a sustainable career in the digital economy within the region. TechHire Eastern Kentucky is an innovative, first-of-its-kind effort in Kentucky's Appalachian region that is designed to develop training and employment opportunities for workers in the new digital economy. The Appalachian Regional Commission (ARC) is a regional economic development agency that represents a partnership of federal, state, and local government. Funding from ARC, provides the opportunity for companies like Interapt to partner with local community colleges to receive information technology training.

Digital Divide

At a time when 90% of college applications are submitted online, children without access to high-speed Internet are deprived of the tools, skills, and educational opportunities critical for success in the 21st century.

Our nation's digital divide is particularly severe among many of the people HUD serves, including:

- Families earning less than $25,000 per year,
- Individuals without high-school degrees, and
- Communities of color.

Currently, less than half of our nation's poorest families have a wired Internet subscription at home, and more than 60 million Americans lack basic digital literacy, according to the Federal Communications Commission.

ConnectHome is a public-private collaboration to bridge the digital divide for families with school-age children who live in housing and urban development-assisted housing. ConnectHome creates a platform for community leaders, local governments, nonprofit organizations, and private industry to join together and produce locally-tailored solutions for narrowing the digital divide. Through these stakeholders' specific commitments to provide free or low-cost broadband access, devices, and digital literacy training, ConnectHome extends affordable access to low-income families, ensuring that high-speed Internet follows our children from their classrooms back to their homes.

2. Can you provide examples of digital policies/projects/initiatives to benefit from existing and emerging technologies specially focused on gender and youth? How have the policies benefited women and youth? What are the particular challenges confronted in implementing these projects?

For Inspiration and Recognition of Science and Technology (FIRST) Robotics is a non-profit that was founded by the inventor of the Segway, Dean Kamen. The mission of FIRST is to inspire young people to be science and technology leaders and innovators, by engaging them in exciting Mentor-based programs that build science, engineering, and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership. FIRST Robotics holds annual international high school robotics competition. Teams of high school students, coaches, and mentors work during a six-week period to build game-playing robots that weigh up to 120 pounds (54 kg). Robots complete tasks such as scoring balls into goals, flying discs into goals, inner tubes onto racks, hanging on bars, and balancing robots on balance beams. The game changes yearly, keeping the excitement fresh and giving each team a more level playing field. While teams are given a standard set of parts, they are also allowed a budget and encouraged to buy or make specialized parts. The FIRST Robotics Competition (FRC) is one of four robotics competition programs organized by FIRST, the other three being FIRST Lego League Jr. (Jr. FLL), FIRST Lego League (FLL), and the FIRST Tech Challenge (FTC).

Black Girls Code (BGC) is a not-for-profit organization that focuses on providing technology education for African-American girls. Kimberly Bryant, an electrical engineer who had worked in biotech for over 20 years, founded Black Girls Code in 2011 in hopes of rectifying the underrepresentation of the female and African-American demographic in the technology industry. The organization offers programs in computer programming, coding, as well as website, robot, and mobile application-building, with the goal of providing African-American youth with the skills to occupy some of the 1.4 million computing job openings expected to be available in the U.S. in 2020.

Codetrotters is the first and only coding school in Puerto Rico and the Caribbean and are committed to training the next generation of coders and innovators. They began as a Fellowship program, connecting the best talent with global startups, so as to expose their talent to something other than traditional big tech. It was a successful program until it became difficult for them to identify the skills global startups were looking for. That's when they decided to launch the Codetrotters Academy two years ago, to develop the talent as well as to connect said talent with opportunities. Since then, they have graduated more than 100 students and have placed many of them in tech companies and startups both local and in the US. Their student population is very diverse between the ages of 14-65 years of age. Their students have various motivations to learn to code: some are entrepreneurs and want to learn to develop their own product, others want to learn how to communicate better with their developers, others are unemployed or underemployed and are looking to do a career change into the tech industry. They won the Tech Hire community designation. TechHire enables employers to fill entry-level, career-path, skilled tech jobs, by hiring trained job seekers with the ability to do the job - but who are overlooked by typical hiring practices and/or underrepresented in the IT field.

3. How can the science, technology and innovation community contribute towards overcoming these challenges? Can you give any success stories in this regard from your country or region?

The Meyerhoff Scholarship Program was founded at the University of Maryland, Baltimore County (UMBC) in 1988 with a grant from the Robert and Jane Meyerhoff Foundation, under the guidance of future UMBC President Freeman A. Hrabowski III. It is focused on minority scholarship and awareness in the science, technology, engineering and math disciplines. The program has served as a model for fostering scholarship in the African American community.

Since 1993, the program has graduated over 1000 students. As of April 2016, the program has achieved the following results:

- Alumni from the program have earned 231 Ph.D.s, which includes 45 M.D./Ph.D.s, 1 DDS/Ph.D. and 1 D.V.M./Ph.D. Our graduates have also earned 107 M.D. degrees, as well as 247 master's degrees, primarily in engineering, and computer science and related areas. Meyerhoff graduates have received these degrees from such institutions as Harvard, Stanford, Duke, M.I.T., Berkeley, University of Michigan, Yale, Georgia Tech, Johns Hopkins, Carnegie Mellon, Rice, University of Pittsburgh, NYU, and the University of Maryland.
- Over 300 alumni are currently enrolled in graduate and professional degree programs.
- An additional 270 students are currently enrolled in the program for the 2016-2017 academic year, of whom 57% are African American, 15% Caucasian, 15% Asian, 12% Hispanic, 1% Native American.
- The program is having a dramatically positive impact on the number of minority students succeeding in STEM fields; students were 5.3 times more likely to have graduated from or be currently attending a STEM Ph.D. or M.D./Ph.D. program than those students who were invited to join the program but declined and attended another university.

In an effort to increased diversity in the technology field and recruitment, "Google will opened a "Howard West" on its campus in Mountain View, Calif., a Silicon Valley outpost where computer science majors can immerse themselves in coding instruction and tech culture. Twenty-five to 30 juniors and seniors from Washington-based Howard University spent 12 weeks at Google this summer, receiving instruction from senior Google engineers and Howard faculty and getting course credit for their studies, the Internet giant announced Thursday. The program is an outgrowth of Google's effort to recruit more software engineers from historically black colleges and universities, one of the ways Google is addressing the severe shortage of African Americans on its payroll, particularly in technical roles, where they account for 1% of the workforce. Google wants to expand the program to include other historically black colleges and universities, said Bonita Stewart, Google's vice president of global partnerships, who has worked with Howard University President Wayne Frederick to develop the framework. Google targets historically black colleges and universities because more than a third of African Americans receiving computer science degrees come from those schools, yet they rarely find jobs in Silicon Valley tech companies. The Howard West program is an extension of the Google in Residence program, which embeds Google engineers on the campuses of Howard University and other historically black colleges and universities to teach courses and get students up to speed on critical skills rarely taught in the classroom, such as how to ace a software engineering job interview."

"Google is trying to address the lack of access to technology in black and Hispanic communities with a new initiative called Code Next. Taking place in a lab environment, the program aims to introduce and promote science education in the lives of black and Hispanic kids. Code Next has been in the works since its pilot in January 2016. It was officially announced earlier this month that the initiative — with the help of the MIT Media Lab, The Unity Council and Kurani Design — will open its first 1,500-square-foot tech lab in Oakland, California. The program, funded by Google, is free for each participant. The projects, including designing, complex programming and 3-D printing, are driven solely by the participants. Partner organizations, such as Black Girls Code and local middle schools, will nominate students to join Code Next. Participants will own their technology creations, and they can share them with their community. The program will open its next location in Harlem, New York, in 2017. Google chose the two locations — Oakland and Harlem — "based on density of the target student population and commitment to [computer science] education at both the grassroots and partner levels," according to a news release. The company hopes to expand across the country in the years to come."

4. Could you suggest some contact persons of the nodal agency responsible for digital competencies projects/policies, particularly those related to gender and youth, as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

Thomas Koutsky tkoutsky@usaid.gov
USAID Digital Inclusion Team

Nicol Turner-Lee NTurnerlee@brookings.edu
Fellow, Center for Technology Innovation Governance Studies Brookings Institution

5. Do you have any documentation, references, or reports on the specific examples on digital competencies to benefit from existing and emerging technologies in your country or region?

National Telecommunications and Information Administration Broadband USA Adoption Toolkit

2017 National Education Technology Plan Update

Benton Foundation on Digital Inclusion

ConnectHome Playbook