Women and Girls in Science and Technology

Case for Women and Girls in Science, Technology., Engineering and Mathematics (STEM)

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Presentation Outline

- Gender Equity: Inclusion of Women and Girls
- Women and Girls for STEM: Personal Experiences
- Gender-sensitive approach for Women and Girls in STEM
- Concluding Remarks

Gender Equity: Inclusion of Women and Girls

Globally, women are 21% less likely to own a mobile phone than men

In sub-Saharan Africa, it is estimated that only half the number of women are using ICT compared with men

200 million fewer women than men are online, and the gap could grow to 350 million within the next three years if action is not taken

Photo: CTA

Even in developed economies, women now account for fewer than 20% of ICT specialists

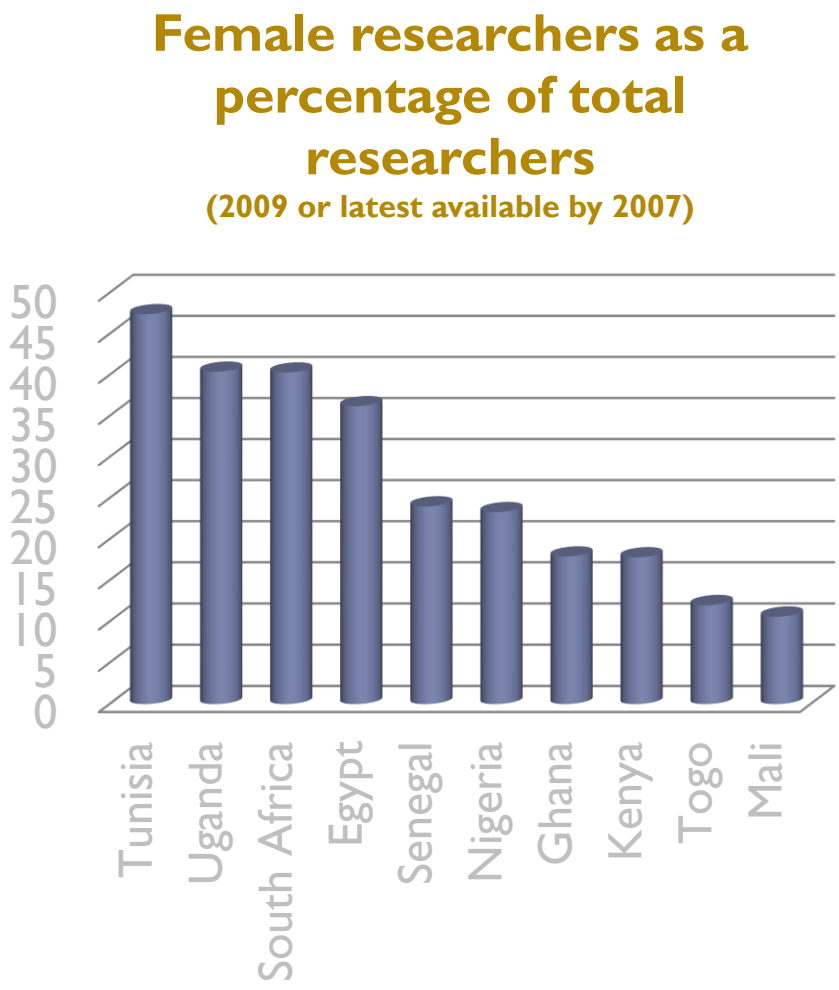
By 2015, it is estimated that 90% of formal employment across all sectors will require ICT skills

Broadband Commission. Doubling Digital Opportunities. Enhancing the Inclusion of Women & Girls In the Information Society, September 2013

Gender Gap in Science and Technology

- Women account for a minority of the world's researchers in science (UNESCO Institute for Statistics, Dec 2012)

- Average percentage of women in science research in Africa is 34.5%



Snapshot of women and girls in STEM

- Uganda Gender in Education Sector Policy (2009) seeks to eliminate all gender disparities in education, training and sports
- Uganda Business, Technical and Vocational Education and Training (BTVET) Strategic Plan 2011 – 2020
  - Gives female BTVET graduates preferential access to BTVET Instructors Training
  - Targets 35% of female enrolment in industrial training programmes
- Makerere University Female Scholarship Initiative provides 70% support for STEM students
- Higher Education Students' Loan Scheme introduced in 2013 expected to result in increased female enrolment in STEM
- SESEMAT initiative seeks to retool Secondary Science and Mathematics Teachers
  - Address limited uptake of science subjects and mathematics by girls
  - 914 senior women teachers and 4,911 teachers have benefited since 2011

However, biases still remain in families, schools, and workplace against female students in science and technology

Report of Uganda on the Implementation of the Beijing Platform for Action (1995) and the Outcome of the Twenty Third Special Session of the UN General Assembly (2000), June 2014

Gender Mainstreaming in STEM

- Gender mainstreaming in STEM brings a gender perspective into the activities of STEM-based organisations/institutions

- Gender mainstreaming in STEM means:
  - Recognising that STEM involves diverse processes that are open to the influence of gender
  - Being aware that STEM organisations have a key role to play in creating gender equitable societies
  - Developing mechanisms to ensure that STEM is responsive to women as well as men's needs, perspectives and concerns
  - Mainstreaming a gender perspective in all STEM organisations' processes and activities
    - Policy making, R&D priority setting, budget allocation, HR management, community needs analysis, benchmark indicators, etc.

Gender, Science and Technology: An Asia & Pacific Gender Mainstreaming Training Manual, UNESCO, 2003

Women and Girls for STEM: Personal Experiences

Women and Girls for STEM

School Visits Program, Uganda National Council for Science and Technology (UNCST)

- Aims to raise awareness of students about role of science and technology in development and in their daily lives
- Seeks to help students understand and appreciate careers in science and technology

Bishop Tarantino students engaging in the game of probability with the bag and balls

Students at Bishop Tarantino developing a digital code to share a message

Women and Girls for STEM

- CEDAT organised first Technovation Challenge in 2014

- CEDAT partnering with ResilientAfrica Network (RAN) to expand participation in 2015:
  - Busitema University
  - Kisubi Brothers University College
  - Makerere University
  - Mbarara University for Science and Technology
  - Gayaza High School
  - Kyambogo College School
  - Lira Town College
  - Makerere Modern Secondary School
  - Maryhill High School

Global program for secondary school and university students that teaches app development & entrepreneurship

- No prior programming experience
- Community development solution

Women and Girls for STEM

Civil Society in Action: WOUGNET

- Women of Uganda Network (WOUGNET) is a non-governmental organization initiated in May 2000 by several women's organisations in Uganda
  - to develop the use of information and communication technologies (ICTs) among women as tools to share information and address issues collectively

- WOUGNET's vision is a society in which women are empowered through the use of ICTs for sustainable development

WOUGNET Activities

Information Sharing and Networking

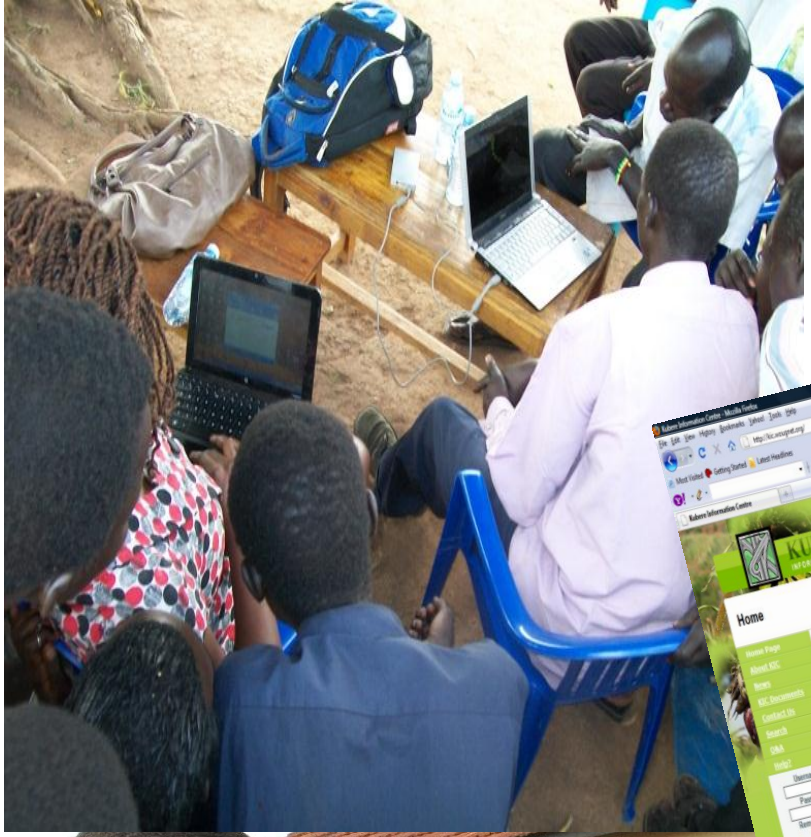
- Provide relevant information to urban and rural women and youth, as well as facilitate sharing of experiences for purposes of improving quality of lives.
- Online and offline channels: email, web, social media, mobile phones in particular SMS, crowdsourcing, print materials, community radios and information centres

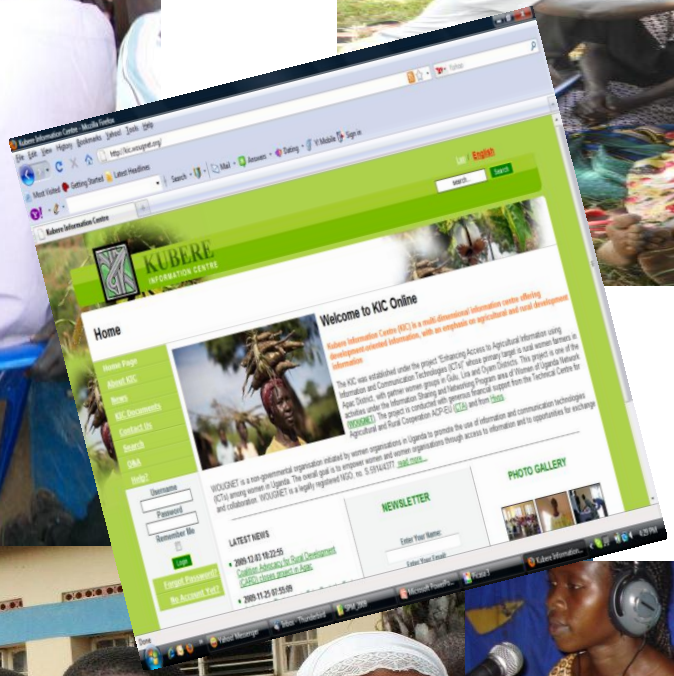
Technical Support

- Support women organizations and youth to access, utilize and apply ICTs in addressing within their activities
- Training, website design, research and piloting of innovative ICT applications

Gender and ICT Policy Advocacy

- Build capacity of network members to effectively influence the formulation and implementation of gender sensitive ICT policies and programs.
- Research for evidence based advocacy, engaging policy and decision makers, engendering national and local ICT policies and programs

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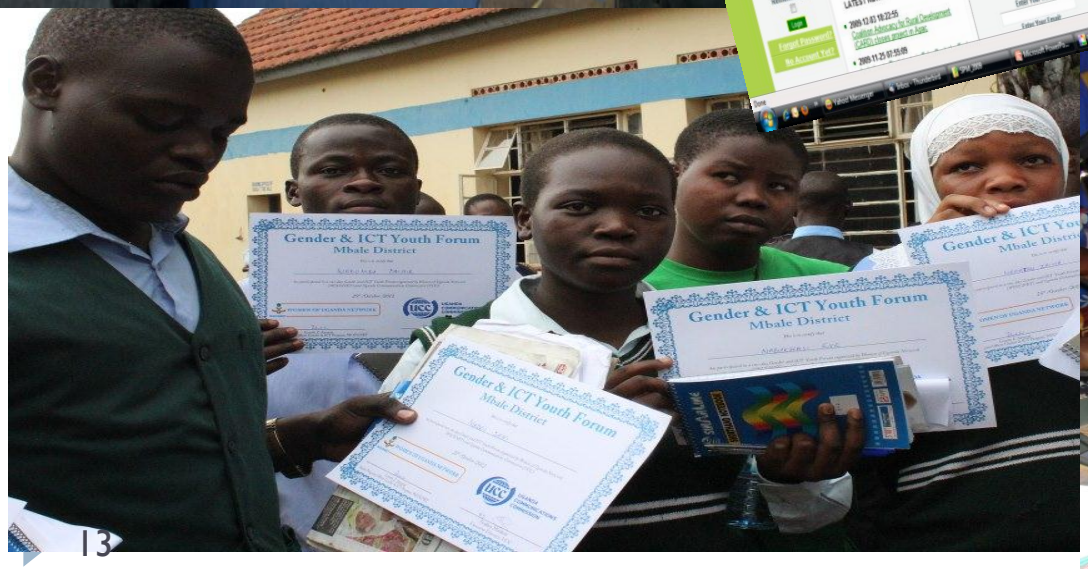
Gender & ICT Youth Forum
Mbale District

Addressing women's informal learning

- ICTs open up a key window to reaching out to women where they are
- Mobile phone ownership benefits to women include access to educational, health, business and employment *(GSMA 2010)*
- More than one billion people in developing countries have a mobile phone but not a bank account *(HBS Case 2011)*

Using technology to enhance educational opportunities

- Mobile phones can help address such barriers via:
  - Sensitization campaigns on the need/benefits for women and girls education
  - Delivery of education apps via the phone that can enable learning from home
  - Monitoring of service delivery in the education sector to report on girls/women in school, girls not reporting to school, availability of teachers and teaching materials, etc.

WOUGNET's ICT Services

- **WOUGNET has integrated a variety of ICTs, including mobile phones, community radio and internet**

- Mobile phones used by women farmers and project staff to reach extension workers, participate in radio shows, and contact

- SMS campaigns conducted for 16 Days of Activism against Gender Based Violence and as pre-conference on 'ICTs and Poverty Reduction'. Messages also posted on WOUGNET blog.

- Voluntary social accountability committees (VSAC) monitor service delivery in their districts and fight corruption through reporting cases of poor service delivery

- Training on use of SMS to access market information from infotrade by sending text to 8555

Some Challenges of Mobile Services

- **Infrastructure**
  - Costs of ownership of mobile infrastructure, including mobile phones, radio sets, etc.
  - Availability and affordability of equipment for wireless networks
  - Affordable and available energy solutions (e.g. 'Kasana' phone that charges via the sun)
  - Affordable broadband Internet (e.g. due to on/off network for 'dongles', high cost of satellite bandwidth)

- **Services**
  - Costs of mobile services, e.g. airtime for phones and radio shows
  - Timing of radio shows, e.g. due to multiple roles of women
  - Gathering, repackaging and disseminating relevant information
  - Quality of service, e.g. poor unclear connection, dropping connection

Gender-sensitive approach for Women and Girls in STEM

Adapted from:
Toolkit for Mainstreaming Gender in Higher Education in Africa, Association for the Development of Education in Africa – Working Group on Higher Education, 2006.

Gender & STEM Support Initiatives in Education

- Need to improve the gender climate in primary and secondary schools as well as institutions of higher learning
  - Contributes to teaching and learning being relevant, useful and democratic

- Strategies
  - Train and support staff and students
    - Understand gender issues and their relevance to academic and vocational life in educational institutions

  - Increase the interest, understanding and appreciation of the relationship between gender, science, technology and development
    - Especially within the scientific and technical areas

Gender & STEM Support Initiatives in Education …/2

- Leadership of educational institutions should recognize and legitimize gender issues and their relevance to resolving development challenges

- Establish a gender policy to synchronize programs and activities for gender mainstreaming in STEM

- Conduct a gender audit on STEM teaching, research and community service at the institution
  - A gender audit should assess the situations of women/girls relative to those of men/boys. It may focus on the gender gaps in enrolment, retention and achievement. It may also focus on staffing of academics, management and administrative posts by men and women.

Gender & STEM Support Initiatives in Education …/3

- Support Programs for Staff and Students should be comprehensive - covering areas in teaching, research, service
  - Scholarships for postgraduate students and faculty to pursue courses in the areas of gender in their disciplines, particularly in science and technology
  - Provide short courses to all teachers and faculties on women/girls' and human rights, gender awareness, and gender sensitivity as part of continuing education

- Generate and monitor gender disaggregated data so as to ensure a gender-responsive climate for students
  - Enrolment
  - Social and economic background
  - Academic achievement
  - Accommodation and participation in extra-curricular activities

Gender & STEM Support Initiatives in Education …/4

- Mentoring, role models, coaching and networking have played a key part in the careers of women and girls in technology and female users of technology
  - advancing their academics and their onward careers
  - addressing feelings of isolation and marginalization often reported by women in academic settings
  - achieving a work/life balance - women often feel that they are forced to choose between a career or a family, or to put their career on hold.

Concluding Remarks

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Gender is a key issue in development

- Gender is not biological but it is a social construction

Nobel Laureate *Rosalyn Yalow*'s "stubbornness and determination" served her well not only in gaining her education, establishing her career, and running her household, but in the pioneering scientific work she did …. She lived a full life inside and outside of science

(Rosalyn Yalow, Nobel Laureate in Medicine, 1977)

Thank you for your kind attention!

Group Discussion

Group Discussion

- **Review your institution's program of supporting/training women and girls in STEM ….**
  - Is there need to address a gender gap in supporting/training of women and girls in STEM?
  - What policies are in place to address the under-participation of female staff and students? Are the policies inclusive, e.g., do they cater to needs of persons with disabilities?
  - What programs/initiatives could be put in place to address practical needs of the female staff and students?

Group Discussion

- **How can educational institutions address the following issues:**
  - Institutions should incorporate into their strategic plans inclusive goals of counteracting bias against women/girls in student recruitment and in staff hiring, promotion, and treatment.
  - Institution leaders should require evidence of a fair, broad, and aggressive search before approving appointments and hold departments accountable for the equity of their search process and outcomes
  - Institution leaders should develop and implement hiring and promotion policies that take into account the flexibility that teachers/faculty need across the life course, allowing integration of family, work, and community responsibilities.
  - University and other research/student grants or scholarships should make it possible to use grant monies for dependent care expenses necessary to engage in off-site or after-hours research-related activities or to attend work-related conferences and meetings.