

# Gender Dimensions of the Digital Divide

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# Definition of Gender Equality and ICT

*Equality in:*

- *ICT access,*
- *Knowledge and*
- *Use as measured by:*
  - *Technology fluency;*
  - *Mastery of analytical skills,*
  - *Computer technology,*
  - *Information and communications concepts;*
  - *Ability to imagine and design innovative uses for technologies across a range of problems and subjects; and*
  - *Ability to find and use information and knowledge to improve one's life and expand one's choices*

# What is Gender Dimensions Of The Digital Divide?

- Access to computers and Internet
- Discrepancy between Internet usage rates and % of female Internet (ICT) users
- Digital exclusion is part of a broader division contributing to social and economic exclusion of people

## Categories of statistical information

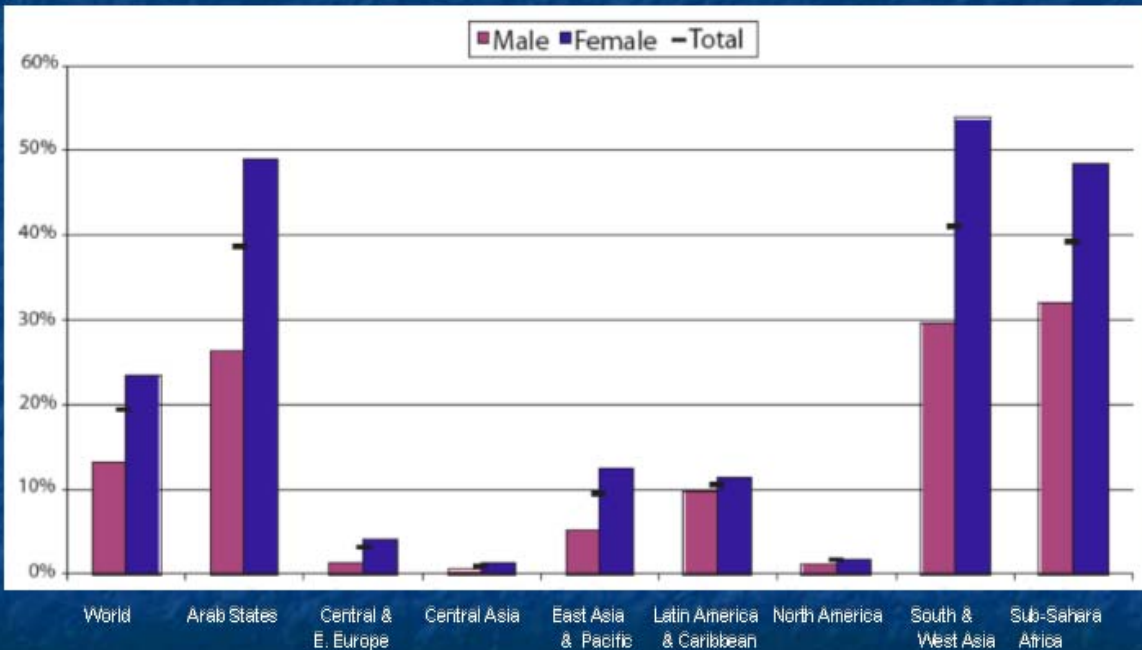
1. Access to and use of the Internet
2. Computer skills
3. Higher education graduates in computing
4. The ICT workforce

## Multiple aspects:

1. Economic
2. Geographic
3. Languages
4. Gender

# Gender: Illiteracy Rates (Regions)

## Adult illiteracy rates by region and gender



Source: UIS, Literacy database, June 2005

*Female illiteracy rate is prominent amongst all the countries, the most being S and W Asia, while the least is in N. America and Central Asia.*

US, UK, Germany, Italy, Japan, South Korea, China, and Mexico

Cover 68% of world Internet users in 2002  
Present diverse patterns of Internet diffusion



# A digital gender divide?

- US: bridging the gender gap in internet use
- Europe: a different situation from the US
- Little reduction in the gender gap between 2003 and 2006

# Women graduates in computing

% of Population with a high level of computer skills, according to sex and age, 2006

Country	Computing	Law	Life Sciences
Australia	<b>27</b>	<b>57</b>	<b>57</b>
Germany	<b>16</b>	<b>49</b>	<b>58</b>
Ireland	<b>34</b>	<b>64</b>	<b>64</b>
Italy	<b>23</b>	<b>59</b>	<b>68</b>
Korea	<b>34</b>	<b>38</b>	<b>52</b>
Netherlands	<b>9</b>	<b>62</b>	<b>59</b>
Norway	<b>18</b>	<b>51</b>	<b>60</b>
UK (2003)	<b>26</b>	<b>59</b>	<b>85</b>
US	<b>27</b>	<b>50</b>	<b>60</b>

Country	Age 16-24		Age 25-54		Age 55-74	
	Men	Women	Men	Women	Men	Women
Germany	<b>59</b>	<b>29</b>	<b>42</b>	<b>21</b>	<b>16</b>	<b>4</b>
Ireland	<b>24</b>	<b>24</b>	<b>26</b>	<b>18</b>	<b>6</b>	<b>3</b>
Italy	<b>39</b>	<b>25</b>	<b>28</b>	<b>13</b>	<b>7</b>	<b>1</b>
Netherlands	<b>20</b>	<b>4</b>	<b>14</b>	<b>3</b>	<b>4</b>	<b>1</b>
Norway	<b>69</b>	<b>38</b>	<b>53</b>	<b>30</b>	<b>18</b>	<b>12</b>
UK	<b>51</b>	<b>35</b>	<b>40</b>	<b>22</b>	<b>18</b>	<b>6</b>
EU(25 countries)	<b>47</b>	<b>29</b>	<b>33</b>	<b>17</b>	<b>11</b>	<b>3</b>

# Gender Involvement In ICT?

- **Digital Inclusions facilitated by websites:**
  - Early users were disproportionately affluent, male, white, better educated, and from developed countries
  - 10% of world population online
  - 88% of world Internet users from developed countries
  - 29% of world Internet users from the U.S.
- **Assisted self-learning:**

Inclusion work done by the magazine to assist acquisition of ICT skills,

provision of information,

creating opportunities for women to become more familiar with internet
- **Socially embedded learning**
- **Built on explicit feminist politics**
  - **Fight gender discrimination**
  - **Empower women in their careers**
- **Targeted toward a very specific sub-category of women: those who work in ICT roles**
- **Strong motivation for these women to join**
- **Strong cases of community building**

*Networks for women in ICT: A safe haven from men?*

# Gender differences at age 15: PISA (Program for International Student Assessment) on performance, attitudes and ICT usage

## PISA: A Three-yearly Global Assessment

- Examines the performance of 15-year olds in key subject areas
  1. students attitudes to learning,
  2. beliefs about themselves
  3. learning strategies
- Collects contextual data from students, schools, parents and systems to identify policy levers
- Coverage in PISA 2006
  - 57 countries
  - samples between 3,500 and 50,000 15 year old students in each country
  - 4692 students in Norway
  - Total = 400,000 students

# Key Differences Between Performance and Attitudes Towards Learning

- Performance differences between males and females
  - Reading: Females outperform males in all countries
  - Math: Males outperform females in the majority of countries;
  - Science: No gender differences overall;
- Differences in attitudes to learning
  - Math: Females much less confident in themselves as Math learners (they are more anxious about learning Math)
  - Science: Males report slightly higher academic confidence
  - Computers: Males report more frequent use of computers and more confidence in the more demanding computing tasks

# An Example From PISA (Program For International Student Assessment) 2006

- Science and gender
  - Overall in PISA 2006 science
    - No performance differences
    - Students were positive about science both in general and as a school subject and not entrenched gender differences
    - In a minority of countries there are gender differences in favor of males...
    - Germany, Iceland, Japan, Netherlands, United Kingdom
- Further, in some countries females are performing well, but reporting comparatively less positive attitudes to science.

# Evidence from PISA on gender differences

- Vary from subject to subject and from country to country.
- Gender differences in attitudes to learning do not reflect gender differences in actual performance
- The study suggests that in some cases students may not choose to pursue studies in certain areas, even though they have the ability

# We Explore The Digital Divide for Several Reasons

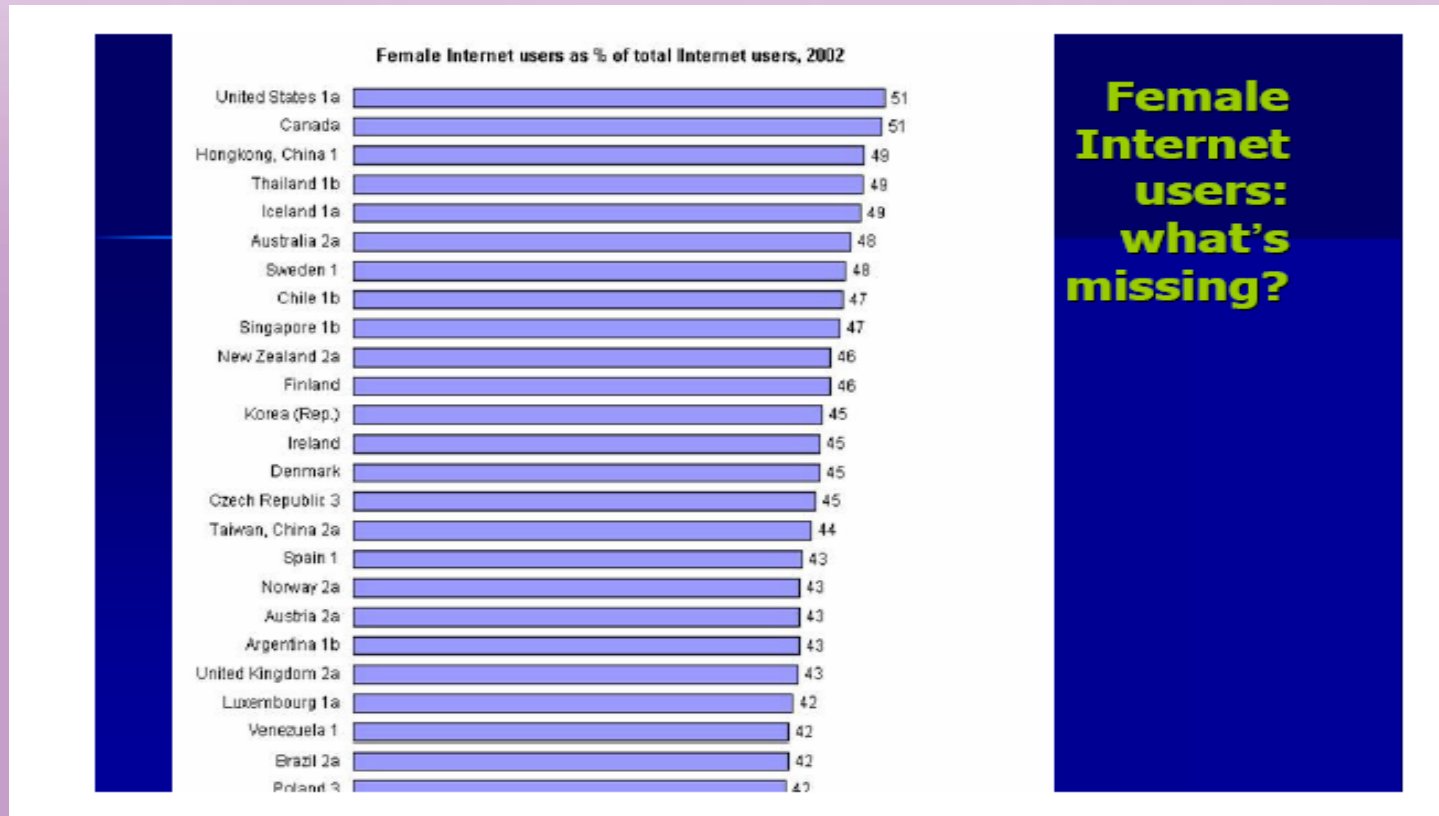
## Segregation in IT Employment

- In the USA women make up:
  - 9% of mid- to upper-level IT engineers
  - 28.5% computer programmers
  - 26.9% systems analysts
  - 85% data entry workers.
- If the current number of women computer programmers in Western Europe were to double to 94,000, women would still constitute only 7% of the total workforce.
- Based on the compilation of the best possible dataset on ICTs by gender, a quantitative analysis of the gender digital divide finds women at a disadvantage. Access, location of use, patterns of use, frequency, intensity and type of use are all areas of concern.
- Gaps in ICT literacy, education and training pose specific challenges for women.
- A study found that while the gender divide tends to be generally smaller in countries with high Info states, its relationship with the overall digital divide is at best tenuous. This provides credence to the need for policies designed specifically for women rather than to rely on generic e-strategies.

# Qualitative Analysis Worth Considering

- How do **socio-cultural customs, infrastructural and access barriers** restrict women from accessing and using ICTs?
- Do women have the **education, training and skills** required to function in the Information Society?
- How severe are gender disparities in **ICT employment**? Why do they occur?
- Are there gendered differences in access to and control over **financial resources** which affect participation in the information society?
- What are appropriate **media and content** for women and girls? Are they available? Do women and men have different communications patterns?
- What are the gendered patterns of risk to **privacy and security** brought about by the new ICTs?
- What is the extent of women's representation and participation in **ICT policy and governance**?
- What is the **impact** of ICTs on women and girls? Can ICTs contribute to gender equality and women's empowerment?

# Female Internet Users as % of total Internet users, 2002



# What are the major divides in computer and Internet access and use?

## I. Sociocultural aspects to access

- Gendered roles and sociocultural customs limit access and use
- Gendered patterns of ICT use
- Using ICTs to change culture

## 2. Education, training and skills

- Literacy
  - 2/3 or 771 million illiterates globally
  - Access to education, particularly S&T education
- Barriers to participation in technical education and training
  - ICTs can promote education for women and girls
    - Flexibility
    - Comfort with individual online learning
    - Can be tailored to their needs and interests
    - Can spark interest in technology subjects
  - Fair use



### 3. Employment: IT sector

- Horizontal segregation in S&T employment
- Vertical segregation
- Work-life balance
- Telework
- Harassment and stereotypes
  
- SMEs/Call Centres
  - Vertical segregation
  - ICT-based enterprises: intensive vs extensive
  - Start-up funding can be difficult: venture funding to micro-credit

### 4. Cost

Major barrier to use by women

Lower levels of access to credit, training, labor and financial resources

## 5. Media and content

- Availability of content pertinent to women's interests, activities, responsibilities
- Language of content
- Readability/accessibility of format

## 6. Privacy and security

- Cyber-stalking over email or internet
- Unauthorized distribution of images
- Increase in amount and violence of pornography (“extreme” pornography)

## 7. Policy and governance

- Inclusion of gender concerns/access issues in national IT planning
- ICT policy is NOT gender neutral
  - Affected by
    1. gender constraints
    2. access to resources
    3. geographical location



# Impact/Empowerment Of Gender Dimensions Of The Digital Divide

- Positive effects on self-esteem, income, networking, social status, political participation at all levels.
- Need to understand and measure gender dimensions of digital divide and impacts of ICTs on the lives of women, to ensure women as equal partners in information society.

# Additional Questions Pertaining To The Divide

- How are mobile “**webphones**” affecting the divide?
- How does the digital divide play out at multiple levels?
  - global, national, community, individual
- What are the consequences – and policy suggestions – of falling through the net?

# Framework for Analyzing the Digital Divide

<b>Access</b>	<b>Use</b>
<b>Technological Access</b>	<b>Digital Literacy</b>
<ul style="list-style-type: none"><li>➤ ICT infrastructure</li><li>➤ Hardware, software, bandwidth</li></ul>	<ul style="list-style-type: none"><li>➤ Technological skills</li><li>➤ Social and cognitive skills</li></ul>
<b>Social Access</b>	<b>Social Use</b>
<ul style="list-style-type: none"><li>➤ Affordability</li><li>➤ Awareness</li><li>➤ Language</li><li>➤ Content /Usability</li><li>➤ Location</li></ul>	<ul style="list-style-type: none"><li>➤ Information seeking</li><li>➤ Resource mobilization</li><li>➤ Civic engagement</li><li>➤ Social movement</li><li>➤ Social inclusion</li></ul>

# Evaluation Of The Digital Divide Are Determined By:

- Trends of the digital divides
- Patterns of digital divides in terms of socioeconomic status, gender, life stage, and geographic location
- Draw data from
  - National representative surveys conducted by government agencies
  - Reports issued by International Telecommunication Union (ITU), United Nations Development Program (UNDP), and Organisation for Economic Co-Operation and Development (OECD)
  - Supplement with scholarly data

# Numbers & Percentages of Population Online

Source: <sup>a</sup>: NUA, [http://www.nua.ie/surveys/how\\_many\\_online/](http://www.nua.ie/surveys/how_many_online/), 2003; <sup>b</sup> ITU, 2002

Country	Pop. Online in 2002 (million) <sup>a</sup>	% of pop. online in 2002 <sup>a</sup>	Pop. online in 2001 (million) <sup>b</sup>	% of pop. online in 2001 <sup>b</sup>	# of PC in 2001 (million) <sup>b</sup>	% of female users 2002 <sup>b</sup>
<b>U.S.</b>	166 (Apr)	59	143	50	178	51 (2001)
<b>U.K.</b>	34 (Sept)	57	24	40	22	43 (2001)
<b>Korea</b>	26 (July)	54	24	52	12	45
<b>Japan</b>	56 (June)	44	56	44	44	41 (2001)
<b>Germany</b>	32 (Aug)	39	31	37	32	37 (2001)
<b>Italy</b>	19(Aug, 01)	33(Aug, 01)	16	28	11	37 (2001)
<b>China</b>	58 (Dec)	4.8	34	2.5	25	39
<b>Mexico</b> 8/20/2008	-	-	3.6	3.6	7	42

# Common Patterns Of The Digital Divide

- Digital divide is persistent
- SES, gender, life stage, & geographic location significantly affect Internet access and use
- These phenomena can be mutually reinforcing
- Now, PC is the primary method of getting online
- Internet primarily used for communication (emailing) and information seeking

# Social Affordances of Technologies

- PC-based vs. Mobile Internet
  - PC-based digital divide is wider than the mobile-based divide (“webphone”)
  - Use patterns of PC-based and mobile Internet are different
    - “The Mobile-izing Japanese: Miyata, Boase, Wellman, Ikeda
- Expansion of broadband connections has affected Internet use in Korea
  - Koreans are the heaviest Internet users worldwide (59 hours/month)
  - More streaming audio and online game

# Issues and Questions

The Internet and Mobile-ization – To what extent will webphones supplant – or supplement – PC-based Internet

The Internet and Empowerment - To what extent does the Internet help people to enhance social, cultural, and human capital at the individual level?

The Internet and Community - How does the Internet facilitate local and global community building and civic involvement?

The Internet and Networked Individualism – To what will the Internet support the shift away from bounded groups to networked individuals?

The Internet and Inequality in the Larger Social-Institutional Context - Under what circumstances could individuals and groups benefit from the Internet, especially women, minorities, elderly, and those in the Third World?



**Teacher education should (and can) play a leadership role locally, nationally and globally in moving toward digital inclusion**

# Why Should We focus On The Digital Divide?

- In many developing countries, gender gaps that accompany the introduction of newer ICTs are dramatic
  - Less than 10% of Internet users in Guinea are women
  - Less than 20% in Nepal
  - 32% in India
- But gender gaps persist even in developed countries with higher ICT usage rates

# The Digital Divide Is Not Prevalent Everywhere?

Some countries with very low overall Internet usage do not experience a gender divide

- In Mongolia (1.7%), the Philippines (13%) and Thailand (10.4%), female Internet usage exceeds male
- Iran (1.6%), South Africa (6.5%), Latvia (7.2%) at or close to 50%

• Gender trends in use and access do not necessarily change as Internet usage increases:

- Mexico: steady at 42% over 5 years
- Thailand: Men did not gain in Internet use (48%)
- Venezuela: Internet penetration tripled, women's access increased 2%

# Why Do We Care About the Gender Divide?

- Women play a major role in socio-economic development,
- They have rights to information as well,
- They have concerns about increased marginalization.

## **Gender, ICT Indicators and the Knowledge Society**

- ICT indicators can't be separated from larger conditions of Gender Equality in the Knowledge Society:
  - Participation in science, technology and innovation,
  - Ability to participate and contribute = base conditions of gender equality.

# Digital Divide/Knowledge Divide

- First Analytic International Study Compares Developing & Developed Countries
- No Single Digital Divide – Multiple Divides
- Digital Divide Not Always Narrowing, Even in Developed Countries
- Divide Between Developed & Developing are Increasing
- Size-Percentage Paradox:
  - As % of Internet Users Increases:
    - Digital Divide May Also Increase
    - True for Within Countries & Between Countries



# **Bridging the Digital Divide**

- Exploring the Multiplicity of ICTs
- Promoting Internet Access at Public Places
- Providing informal mentoring
- More cost-effective than formal training

# Overview of the countries across the world..

Several conclusions have been made as a result of the overview of a few countries..

- **Digital divide narrowing between developed countries**
- **To some extent, the Internet expands in similar ways in other developed countries as it does in the U.S.**
- **With a time lag - the profile of users outside North America looks similar to that of North American Internet users a half-decade earlier**
- **However, not all aspects of the digital divide narrowing within countries:**
  - Increasing socioeconomic divide in UK, Germany
  - Increasing gender divide in Italy

Developed and Developing Countries Digital divides – widening and deepening.

Different dynamics in different countries

Most countries lag behind the U.S. in PC-based Internet yet, they are quickly adopting mobile phones

Japan leading the development of mobile Internet

Korea the world leader of broadband connections

U.K.: world's highest rate of digital TV diffusion

Diverse manifestations along the fault lines of SES, gender, life stage, and geographic location

The Montesquieu Hypothesis:

Warm countries with gatherings in public places favor phones over PCs? (Catalonia, Italy, Israel)

# How does the World Summit on the Information Society (WSIS) Solve The Problem Of The Digital Divide

- *Work on removing the gender barriers to ICT education, training and promoting equal training opportunities in ICT related fields for women and girls.*
- *Promote teleworking to allow citizens, particularly in the developing countries, and small economies, to line in their societies and work anywhere, and to increase employment opportunities for women.*
- *Target young girls to increase the number of women in ICT careers*