The Digital Divide as A Complex and Dynamic Phenomenon

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PROGRAM

- Resources and Appropriation Theory
- A complex and dynamic model of access
- Motivation and access
- Physical and material access
- Digital skills and access
- Usage and access
- Effects of (non)inclusion
- Inequality in the information and network society
- Main conclusions
eInclusion or Digital Divide Research

• Research, and even more public opinion has a narrow technical orientation: access is limited to physical access and skills to operational skills

• The naive idea is that the digital divide is closed when everybody has a computer and Internet connection and is able to operate them.

• In fact the deepest digital divide appears just then: the ‘second level divide’ that is about skills and usage

• So the digital divide is a complex phenomenon that is dynamic as divides change.

• Unfortunately, digital divide research is too descriptive and it lacks theory.
Resources and Appropriation Theory
Complete causal model of Resources and Appropriation Theory

Personal categories
- Age/generation
- Sex/ gender
- Race/ ethnicity
- Intelligence
- Personality
- Health/ability

Positional categories
- Labor
- Education
- Household
- Nation

Access

Resources
- Temporal
- Material
- Mental
- Social
- Cultural

Participation in Society
- Economy
- Social networks
- Space/geography
- Culture
- Politics
- Institutions

Technological properties of ICT (hardware, software, content)

Motivation Access

Material Access (computer/internet possession)

Skills Access
- Strategic
- Informational
- Instrumental
- Digital Skills

Usage Access (different applications)

Next Innovation

Primary causal or sequential relation

Secondary causal or sequential relation

Sequential part
Four Successive Kinds of Access

- **Usage**
  - Frequency
  - Diversity

- **Digital Skills**
  - Content creation
  - Strategic
  - Information/Communication
    - Formal
    - Operational

- **Physical and Material Access**

- **Motivation**
The Digital Divide and the Multifaced Concept of ‘Access’

1. Motivation to Use Computers and the Internet: ‘Motivational Access’


3. Digital Skills: ‘skills access’

4. Usage Opportunities: ‘usage access’

Access problems gradually shift from the first to the last kinds of access (the ‘second level divide’).
1. Motivation

- Some people don’t like computers (some elderly, some women, some macho male manual workers)
- Computer anxiety and technophobia still exist (10-20% of the population in high tech countries)
- About 10% of dropouts from the Internet (have stopped using it)
- Huge spread of use: from working with computers and the internet all day and for all kinds of activities to very infrequent use: motivation is the main driver
- Motivation rises with the diffusion of digital media
2. PHYSICAL ACCESS

INCREASING GAPS DURING THE 1980S AND 1990S OF:
INCOME, EMPLOYMENT, EDUCATION, AGE, RACE

DECREASING GAPS OF
- GENDER

AFTER 2000 DECREASING PHYSICAL ACCESS GAPS
FOR ALL CATEGORIES IN THE DEVELOPED COUNTRIES

However, even in the Netherlands (94% internet penetration in households) about 15-20% in fact have no access, a.o because they do not use the household connection (mainly elderly people, low educated and illiterate people and migrants)
Evolution of the Digital Divide of Physical Access in Time

Situation
Developing countries

Situation
Developed countries

First tipping point
Second tipping point

Timeline

Stratification
Normalization
Holland
Poland
Internet Access Households EU 2006-2010
3. Digital Skills: 6 Types

**Operational Skills**: actions required to operate a digital medium (‘button knowledge’)

**Formal Skills**: handling the formal structures of the medium; here: browsing and navigating

**Information Skills**: searching, selecting and evaluating information in digital media, e.g. search engines

**Communication Skills**: mailing, contacting, creating online identities, draw attention and giving opinions

**Strategic Skills**: use the digital medium as a means to achieve particular professional and personal goals

**Content-creation Skills**: make contributions to the Internet with a particular plan or design
Measuring Digital Skills at the UT-GW Media Lab

Quota samples of 300+ people from the Dutch population subjected to a test of 9 Internet tasks of using public services (1,5 hours)

78% of operational tasks, 78% of formal tasks, 58% of information tasks and 28% of strategic tasks successfully completed;

Significant differences among people with different age and educational level, not gender

Young people between 18 and 30 are superior in operational and formal skills but not in information and strategic skills

People above 55 perform relatively bad in all skills, when operational skills are absent; when not they perform as good or even better than young people
Popularization of Internet Use in the Netherlands (UT Trendreport 2011)

• Currently the lower educated are using the Internet for more hours a day in their leisure time than higher educated people

  Average hours a day:

  Low edu: 3,7
  Medium edu: 3,0
  High edu: 2,5

• Difference between males and females declines:

  Males (16+) 3,2
  Females (16+) 3,1

  Employed: 2,8
  Unemployed: 3,6
  Unfit to work 3,7
  Pensioners 2,3
## 4 Usage: Top 10 Internet Applications
### Netherlands, 2011
(with significant differences by seks, age and education)

<table>
<thead>
<tr>
<th>Application</th>
<th>% Daily or weekly Use</th>
<th>M / VF</th>
<th>AGE</th>
<th>EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 E-mail</td>
<td>96</td>
<td>-</td>
<td>-</td>
<td>HME</td>
</tr>
<tr>
<td>2 Search systems</td>
<td>91</td>
<td>-</td>
<td>16-35</td>
<td>HE</td>
</tr>
<tr>
<td>3 Internet banking</td>
<td>77</td>
<td>M</td>
<td>36-55</td>
<td>HE</td>
</tr>
<tr>
<td>4 News services</td>
<td>59</td>
<td>M</td>
<td>-</td>
<td>HE</td>
</tr>
<tr>
<td>5 Free surfing</td>
<td>64</td>
<td>M</td>
<td>16-55</td>
<td>HE</td>
</tr>
<tr>
<td>6 Online Paper Broadcasting</td>
<td>64</td>
<td>M</td>
<td>16-35</td>
<td>HE</td>
</tr>
<tr>
<td>7 Social Networking</td>
<td>53</td>
<td>V</td>
<td>16-35</td>
<td>-</td>
</tr>
<tr>
<td>8 Product search</td>
<td>34</td>
<td>M</td>
<td>36-55</td>
<td>-</td>
</tr>
<tr>
<td>9 Auctions/eBay</td>
<td>32</td>
<td></td>
<td>16-35</td>
<td>HME</td>
</tr>
<tr>
<td>10 Online gaming</td>
<td>29</td>
<td>V</td>
<td>16-35</td>
<td>LO</td>
</tr>
</tbody>
</table>
## Use of Internet Applications 2010 EU/Poland

(percentage of Internet users, *Eurostat*)

<table>
<thead>
<tr>
<th>Application</th>
<th>EU Average</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication (all)</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>Information search products, services</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>Internet banking</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>Online newspapers and magazines</td>
<td>34</td>
<td>17</td>
</tr>
<tr>
<td>Health information</td>
<td>34</td>
<td>25</td>
</tr>
<tr>
<td>eCommerce</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>Government information</td>
<td>28</td>
<td>18</td>
</tr>
<tr>
<td>Gaming and Downloading</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>Web Radio and TV</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>Search Jobs</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>
4. Usage Access

Probability of a **usage gap**: the higher educated will use the advanced applications of the new media for career and study, while the lower educated will use the simple ones (electronic shopping, paying, simple messaging etc.)

This refers to the **education** usage gap

However: in the Dutch trendreport (UT), the **age and gender** usage gap were still stronger in 2011

Cause: information and strategic skills, the social positions occupied and socio-cultural preferences

Familiar to the **knowledge gap thesis** (differential knowledge derived from the mass media).
<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>PERCENTAGE OF ‘YES’</th>
</tr>
</thead>
<tbody>
<tr>
<td>After an online application considering a vacancy I have obtained a job</td>
<td>19</td>
</tr>
<tr>
<td>Via the Internet I was able to buy a product cheaper than in a shop</td>
<td>80</td>
</tr>
<tr>
<td>Via the Internet I was able to sell or exchange something I otherwise</td>
<td>63</td>
</tr>
<tr>
<td>would not have lost</td>
<td></td>
</tr>
<tr>
<td>Via the Internet I have discovered which political party I would like to</td>
<td>37</td>
</tr>
<tr>
<td>vote for</td>
<td></td>
</tr>
<tr>
<td>Via the Internet I have run into an association I became a member of</td>
<td>22</td>
</tr>
<tr>
<td>(such as a sports club, a cultural association, a trade union or a</td>
<td></td>
</tr>
<tr>
<td>political organization)</td>
<td></td>
</tr>
<tr>
<td>Via the Internet I have acquired one or more friends that I have really</td>
<td>32</td>
</tr>
<tr>
<td>met later.</td>
<td></td>
</tr>
<tr>
<td>Via a dating site I have made an appointment with a potential partner</td>
<td>14</td>
</tr>
<tr>
<td>Via the Internet I have discovered which medical illness I had</td>
<td>27</td>
</tr>
<tr>
<td>Via the Internet I have booked a profitable holiday trip</td>
<td>60</td>
</tr>
<tr>
<td>Via the Internet I have ever reached a discount on a product</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 2. Percentage of Internet users in the Netherlands giving positive answers to potential advantages of Internet use in 2011. Source: van Deursen and van Dijk, 2011.
Who Benefits Most?

Figure 4. Average number of positive answers to 10 potential advantages of Internet use in the Netherlands in 2011. Source: van Deursen and van Dijk, 2011.
Economic Stakes

In our recent (2012) report *Control Alt Delete* we observed that the Dutch working population experienced a productivity loss of 19 billion euro’s per year by loosing 7,6% off working time to:

- Not properly working computer technology (54%)
- Inadequate digital skills (46%)

Together these costs are more than all hardware, software, IT advise and electricity costs together!

Business managers do not realize the gain of better digital skills.
The Picture to be Prevented: The Tripartite Network Society

The Information Elite

The Participating Majority

The Unconnected and Excluded

--- Media Network Link

--- --- Social Network Link
Conclusions

- The digital divide is a very *complex* problem with many causes and consequences.
- The digital divide is a *dynamic* problem with a continually shifting focus: from a lack of motivation and physical access to a lack of skills and divergent uses.
- The motivation and physical access problems will be solved soon, but skills and usage disparities will grow.
- They tend to amplify, not reduce longer existing social, economic and cultural inequalities.
- Reduction of skills and usage gaps primarily requires education and training of all kinds and emancipatory cultural policies.