

---

## Index

- Academic institutions, 208–209
- Access to information technology. *See also* Affordability; Content of digital resources; Electronic literacies; Rural areas comprising a broad array of factors, 46–48, 50, 51, 58, 199, 213 contact with other users affecting, 156–157 cost of computers and operating software, 32, 47, 62–63 cost of Internet access, 52 cultural barriers to, 45–46 educational level and literacy affecting, 56, 57–58, 59 lack of linguistic diversity, 92–96 physical access as only one aspect of, 118–119 race and ethnicity as a factor, 37, 55, 57–58 socioeconomic factors, 29, 37, 49–52, 54–58, 59
- Access models. *See* Conduits model of access; Devices model of access; Literacy model of access
- Affordability cost of computers and operating software, 32, 47, 62–63 cost of Internet access, 52 plans to develop low-cost systems, 65–69
- African Americans
- Internet access rates for, 7, 55, 56, 57–58 television diffusion rates for, 37
- Africa, sub-Saharan, 19
- Agency of International Development (USIA), 5
- Agre, P. E., 187–188, 211, 212
- Amazon.com, 64–65
- American Standard Code for Information Exchange (ASCII), 203
- Antiglobalism movement, 192, 193–195
- Apprenticeship and mentoring, 121
- Arabic language computing, 59, 101–102
- ARPANET, 24
- ASCII, 203
- Asian Americans Internet access rates, 56 school computer use by, 130–131
- Associational technologies. *See* Information and communication technology (ICT); Networks
- Audiovisual media, 27, 87
- Automobile industry information-based capitalism influencing, 15–16
- Bangladore, India, 60, 85
- Bateson, Gregory, 110
- Behavioral change, 211–212
- Beijing, China, 61

- Beijing Normal University, 143
- Bilingual programs, 135
- BITNET, 24
- Blind persons  
access to information technologies,  
28, 90, 169
- Bolter, Jay David, 115
- Bonding social capital, 155
- Bourdieu, Pierre, 153
- Bourguignon, Francis, and C.  
Morrison, 20
- Brazil, 9, 164  
Committee for Democratization of  
Information, 125–127  
low-cost computer development  
project in, 65–66  
Sampa.org project in São Paulo, 87,  
165–166
- Breese Foundation, 166–167
- Bridging social capital, 155
- Broadband access, 58, 69
- Brown, J. S., A. Collins, and P.  
Duguid, 124
- Bulletin boards, 105–107, 117,  
187
- Bush, George W. (administration), 12,  
217n.1
- Bush, Vannevar, 26, 113
- Cable television, 33–34, 73
- California, 9. *See also* Los Angeles;  
Oxnard; Riverside  
the 2001 energy crisis, 35
- Capitalism. *See also* Market  
mechanisms  
global capitalism, 12–13, 15–18  
information stage of, 12–13, 38–39
- Castells, Manuel, 9, 13, 21–22, 34,  
93, 218n.3
- Catalytic effects of information  
technologies, 212
- Censorship of Internet content, 183,  
184
- Children’s Partnership study, 88,  
89
- Chile, pilot program in, 142
- China, 9, 23  
Beijing Normal University, 143  
educational technology projects in,  
142–144  
Internet access in, 61–62  
Internet surveillance by, 197  
restrictions on Internet use in,  
182–183, 185
- Chinese language, 61
- Christensen, C. M., 64–65
- Citizen feedback interactive  
programs, 172–173, 177, 179–181
- Civil society, 185–187
- Class analysis, 209–210
- Class stratification  
and classroom computer access,  
129–137  
income inequalities, 18, 20–24  
and Internet diffusion, 54–55, 56  
role of the English language in,  
100–101, 102
- Clinton, William (Bill), 1
- Coding biases, 203–204
- Cognitive Academic Language  
Proficiency, 117–118
- Collective identity, 93–95, 104–105
- Comitê para Democratização  
Informática (CDI), 125–127
- Committee for Democratization of  
Information, Brazil, 125–127
- Communication. *See also* Computer-  
mediated communication (CMC);  
Language; Multimedia; Online  
communication; Print media  
symbolic, 22  
technology-mediated vs. face-to-face,  
146, 148–149, 159
- Communication technologies. *See*  
Information and communication  
technology (ICT)
- Communities, 153, 186–187  
assessing the information needs of,  
90–91  
data base development for, 91  
Internet content production by,  
91–92

- involvement of important to technology access, 4, 5, 163, 199–202
- learning communities, 120–121, 124
- virtual communities, 146, 159, 160–162, 187
- Community Digital Initiative, 164–165
- Community informatics, 162–163, 169
- Community involvement in technology access, 4, 5, 163, 199–202
- Community news services, 87
  - Sampa.org project, 87, 165–166
- Community Radio Internet project, Sri Lanka, 170–171
- Community technology centers, 75, 76, 127, 169
- Community Technology Centers Network (CTCNet), New York, 127
- Community technology projects
  - community technology centers, 75, 76, 127, 169
  - complementing community centers, 166–167
  - computer kiosks, 1, 85, 91, 163, 179
  - mapping and connecting community resources, 162–163, 165–166, 169
  - social capital promoted through, 163
  - telecentros*, 75, 76, 77–79, 199–201
- Computador popular* (people's computer) development project, Brazil, 65–66
- Computer education, 9, 125–129, 137–138, 179. *See also* Skill-levels in information technologies
- Computer-enhanced education, 129–135
- Computer kiosks, 1, 85, 91, 163, 179
- Computer literacy, 111–113, 134–135
- Computer-mediated communication (CMC), 24, 25, 27–28, 172
  - literacy in, 117–119
- Computer technology. *See* Internet; Personal computer
- Conduits model of access. *See also* Teledensity
  - broadband connectivity, 58, 69
  - diffusion of conduit services, 33–34, 57–58
  - electrification, 13, 34–35
  - Internet diffusion, 50–51, 59, 60
  - teledensity, 33, 34–35, 35–37, 50–51
- Connectivity. *See* Conduits model of access; Internet access
- Content of digital resources. *See also* Economic development information; Internet; Language content of digital resources
  - assessing needs community-level needs for, 90–91
  - censorship of or restrictions on, 182–184, 185
  - digital content, 47, 81
  - need for diversity in, 83–84
- Corea, S., 210–211
- Costa Rica, technology access program in, 142–143
- Cost of information technology. *See* Affordability
- Critical pedagogy, 123–124
- Critical theory of technology, 209–210
- Crossnational comparisons
  - computers per capita, 63
  - costs of Internet access, 52
  - economic stratification and inequalities, 18–21, 22, 23–24
  - electrification, 34–35, 49–52
  - Internet access and diffusion, 49–52, 82–84, 181–185
  - native language Web pages, 97
  - telecommunications infrastructure, 70–71
  - television diffusion rates, 37

- Cuban, L., 41, 123
- Cultural barriers to access, 45–46
- Cummins, J., 117
- Cyber cafés, 59, 75, 76, 77
- Cyberhood*, 166–167
- Cyberpessimism, 159, 160
- Cyberspace, 161. *See also* Internet
- de Castell, Suzanne, and A. Luke, 40–41
- Dell Computer  
as a model information-based technology company, 16–18
- Democratization, 172. *See also* Political association online  
Internet diffusion and, 181–185
- Design issues in information technology, 203–204  
to ensure greater access, 211 (*see also* Social inclusion)
- Desktop interface  
office-based design of, 203
- de Soto, Hernando, 174–175, 177
- Developed countries. *See also* Europe; United States; *and by country*  
high GDP in, 19  
income stratification within, 21–22  
Internet access in, 52–58  
OECD countries, 50–52, 98–99
- Developing countries. *See also* Brazil; China; India; Sri Lanka  
access to public documents and data a need of, 173–174  
computers per capita in, 63  
income stratification in, 22–24  
information needs of, 84–85 (*see also* Economic development information)  
low GDP in, 18–20  
uneven development effects in, 59
- Devices model of access, 11–12, 31–32. *See also* Personal computer  
radio diffusion, 31, 33–34  
telephone diffusion, 33, 34–35, 35–37, 50–51  
television diffusion, 31, 33–34, 37
- Dhar, India  
rural technology project in, 85, 91, 171–172, 179–181
- Diamond, L., 185–186
- Digital content. *See* Content of digital resources
- Digital divide, 1, 11, 199, 210, 222–223n.15. *See also* Access to information technology  
in classroom computer access, 129–135  
comprising an array of inequality variables, 6, 199, 213  
as a concept bipolar or too simplified, 6–8, 46, 209  
devices conception of, 12, 217n.1 (*see also* Devices model of access)  
at the international level, 82–84, 138 (*see also* Crossnational comparisons; Language content of digital resources)  
in Internet access, 51, 52, 53–58  
in personal computer ownership, 63
- Digital resources. *See* Information and communication technology (ICT)
- Dikhanov, Yuri, and M. P. Ward, 20–21
- Dimaggio, P. J., 199, 207, 208, 214
- Disabled persons. *See also* Health-related information and networking  
access issues of, 57, 89–90  
blind persons' access, 90, 169  
use of the Internet, 28–29
- Disadvantaged. *See* Developing countries; Low-income populations; Minorities
- Disease prevention software, 85
- Distance education. *See* Internet-based education
- Districtwide intranets, 179–181
- Domains on the Internet  
global statistics on, 81–84  
shared accounts, 59
- Dot-com businesses, 11

- Dystopian view of information technology, 159, 169
- E-commerce Web sites, 168, 179
- Economic development information, 84–85  
diverse language access important to, 102–103
- Economic stratification  
across nations, 18–20  
within nations, 18, 20–24
- Education. *See also* Learning;  
Literacy  
bilingual, 93–94, 135  
democratization of the classroom, 184  
as a factor in information technology access, 59  
involving communities of practice, 120–122, 146  
mass education, 109–110  
social context of, 119–120  
social reproduction in, 123
- Educational level  
and Internet access, 56, 57–58, 59
- Educational systems, 141–142, 181
- Educational technology, 88, 124–125, 152, 221n.8. *See also* Internet-based education  
computer access in classrooms, 123, 129–135  
computer education, 125–129, 137–138, 179  
computer-enhanced education, 129–135  
in developing countries, 86–87, 138–144, 169 (*see also by country*)  
examples of, in the U.S., 135–138  
Internet access, 136–137, 140
- Egypt, 9, 47, 59–61  
educational technology programs in, 139, 144, 169  
English dominating the Internet in, 99–102  
Internet access in, 58–59  
Ministry of Education, 139, 141–142, 184  
Technology Development Center (TDC), 139–140  
21st Century Clubs in, 142, 169
- Electrification, 13  
crossnational comparisons of, 34–35
- Electronic archives, 218n.8
- Electronic elections, 177–178  
online voting, 222–223n.15
- Electronic literacies, 111, 118, 214.  
*See also* Literacy  
computer literacy, 111–113  
computer-mediated communication (CMC) literacy, 117–119  
information literacy, 113–115  
multimedia literacy, 115–116  
skill-levels in, 38, 39, 44–46, 220
- Electronic meeting halls, 187
- Electronic news media, 26, 187
- Elite groups, 55  
school computer use of, 131–134
- Elite universities, 147
- E-mail, 117. *See also* Computer-mediated communication (CMC)
- Enculturation, 120–122
- English language  
class stratification role of, 100–101, 102  
dominance of the Internet, 96–99  
as the global language, 94–96
- Enlaces program, Chile, 142
- Ethnographic research, 9–10, 47
- Europe  
Internet portals for the disabled in, 90  
European Computer Driving License, 169  
European Union, 218n.2
- Face-to-face vs. technology-mediated contact, 146, 148–149, 159
- “Falling Through the Net” reports, 54
- Falun Gong religion, 197
- Family-related online information, 88

- Feenberg, A., 209–210  
Female-headed households  
  Internet access rates for, 57–58  
Financial information online, 88  
Finland, broad Internet access in, 52, 53  
Foshay Learning Center, Los Angeles, 137–138  
France  
  low Internet connectivity in, 52, 53  
  Minitel system in, 53, 62  
Frankfurt school, 209  
*Fresa Project*, 135–137
- Gee, J. P., 39, 45  
Gender  
  Internet access and, 55, 61  
  literacy and, 46  
George Foundation, 85  
Germany  
  electrification in, 34  
Global capitalism, 12–13, 15–18  
Global English, 94–96  
GNP. *See* Gross National Product (GNP)  
Government  
  citizen access to public documents and data, 88, 173–177, 183–184  
  citizen access to resources of, 88, 172, 173–174  
  interactive citizen feedback programs, 172–173, 177, 179–181  
  providing electrification and infrastructure, 34, 35, 53  
  supporting access programs, 2–3, 5, 9, 53, 65–66, 75, 76, 78–79  
Granovetter, M., 155  
Graphics. *See* Visual media on the Internet  
Greece, low Internet connectivity in, 52, 53  
Gross National Product (GNP), 219n.4  
  crossnational comparisons, 18–20, 23  
  and Internet diffusion, 59  
Guandong, China, 61  
Gurstein, M., 162, 163  
Gutenberg revolution, 39–40, 204–205  
Gyandoot rural technology project, 85, 91, 171–172, 179–181
- Hampton, Keith N., 158  
Handheld computing devices, 66–69  
Hard vs. soft media determinism, 204–205  
Hargittai, Ezster, 50–51, 53  
Harlem  
  HarlemLive Internet-based youth publication, 92  
  Playing2Win, 127–129  
Harnad, Stephen, 25, 26, 27  
Hawai'i  
  ethnographic research in, 47  
  native language content development in, 103–107  
Health-related information and networking, 28–29, 188–191  
  in India's village knowledge centers, 85–86  
He, K., and J. Wu, 144  
High-income groups. *See* Elite groups  
Hindi language, 102–103  
Hirsch, E. D., 119  
Hispanics  
  Internet access rates of, 55, 56, 57–58  
  school computer use by, 130–131  
  television diffusion rates for, 37  
Hole-in-the-Wall computer kiosks, 1, 85, 91, 163, 179  
Holland, 34  
Hornberger, Nancy, 107  
Host domains. *See* Domains on the Internet  
Human resources, 47, 109  
Hypertext, 26
- ICT. *See* Information and communication technology (ICT)  
Identity formation, 93–95, 122

- Images. *See* Visual media on the Internet
- Income level  
as a factor in Internet access, 54–55, 56–58
- Independent Media Center, 195
- India, 172–173  
development issues of, 23, 209–210  
educational technology in, 86–87, 181  
Gyandoot rural technology project, 85, 91, 171–172, 179–181  
Hole-in-the-Wall computer kiosks project, 1, 85, 91, 163, 179  
Institute of Technology (TeNet), 71–73  
Internet access in, 60–61  
land issues and the land record system in, 175–177, 179, 210  
local and regional language software in, 102–103  
the Simputer project, 66–69  
street children's project, 164  
telecommunications infrastructure, 71–72, 74  
village knowledge centers project, 85–86, 91, 171
- Industrial revolutions, 12–13  
informationalism as the third revolution, 12–13, 38–39
- Infertility-related networking, 188–191
- Information Age Town contest, Ireland, 2–4
- Information-based technology companies, 16–18
- Information and communication technology (ICT). *See also* Internet; Personal computer  
catalytic effects of, 212  
design issues in, 203–204, 211  
effects on productivity of, 183–184  
enhancing transparency in government and business, 183–184  
importance of access to, 29–30  
institutional embeddedness of, 208–209  
sociotechnical models of, 206–207  
supplementing other forms of interaction, 160, 162, 191  
technosocial interaction of, 4, 7, 12, 183, 214–215
- Information and Decision Support Center, Egypt, 58
- Information economy, 11, 14–18, 18, 29–30  
information-related employment, 22
- Information literacy, 113–115
- Information revolution, 11–12, 14–15, 93  
global dimensions of, 15–18
- Information, Service, Integration, and Schooling (ISIS), 169
- Innovation  
and behavioral change, 211–212  
innovation diffusion, 219n.3  
the innovator's dilemma, 63–65, 74
- Institute of Technology, India (TeNet), 71–73
- Institutional embeddedness of technology, 208–209
- Institutions, 153, 208
- Instruction online. *See* Internet-based education
- Intellectual colonialism, 96
- Interactive broadcasting technologies, 25–26  
citizen feedback programs, 172–173, 177, 179–181
- Internet. *See also* Online networks; Online services; Virtual communities  
dot-com businesses, 11 (*see also* Information economy)  
evaluating information on, 113–115  
growth, 81–83  
information overload on, 26  
supplementing other forms of interaction, 160, 162

- Internet access  
connectivity rates, 49–52  
costs of, 52  
crossnational comparisons of,  
49–53, 58–62, 81–84  
digital divide in, 51, 52, 53–54  
involving community structures in  
access projects, 4, 5, 163, 199–  
202  
physical access as only one aspect  
of, 118–119  
public access centers, 75–79  
shared Internet accounts, 59  
teledensity and Internet diffusion  
rates, 50–51, 59, 60  
in the U.S., 53–54
- Internet-based education, 144–145  
advanced placement instruction,  
146–148  
economics of, 150–152  
evaluation of, 148–150  
for rural areas, 86–87  
teacher training, 148  
university courses, 150–152
- Internet content. *See* Content of  
digital resources
- Intranets  
serving regions, 179–181
- Ireland, “information town” contest  
in, 2–4
- ISIS, 169
- Italy, low Internet connectivity in, 52,  
53
- Jarboe, K. P., 8
- Jenkins, Henry, 7
- Jjunjhunwala, Ashkok, 71, 72–73
- Karnataka, India, 176–177
- Kawai’ae’a, Keiki, 105
- Kiosks (computer), 1, 85, 91, 163,  
179
- Kling, Robert, 7–8, 206, 207
- Kothmale Community Radio  
Internet project, Sri Lanka,  
170–171
- Kraemer, K., L. J. Dedrick, and S.  
Yamashiro, 16
- Kranzberg, M., 183
- Laboratory of Universal Access,  
Brazil, 66
- Language. *See also* Languages  
bilingual education, 93–94, 135  
collective identity and, 93–95,  
104–105  
and identity, 93–95  
oral vs. written, 25  
threat to linguistic diversity, 94
- Language content of digital resources,  
81, 213–214  
affect diverse access, 92–93  
built-in biases of, 98, 203  
domination of English, 96–99,  
100–102  
machine translation techniques, 99  
native languages online, 61, 97,  
103–107, 144, 179
- Languages  
Chinese language online, 61, 144  
Egyptian Arabic, 99–100  
English as the global language,  
94–96  
Hawai’ian language online,  
103–107, 179  
Hindi, 102–103  
Tamil, 103  
Vai script, 42–43
- Lapin, Howard, 137
- Learning. *See also* Education;  
Educational technology  
constructivist approaches to,  
119–120, 145  
identity formation a part of, 122  
learning communities, 120–121, 124  
situated, 123–124
- Leokī bulletin board, Hawai’i,  
105–107
- Levine, P., 196–197
- Levinson, P., 205
- Liberia, 42
- Lievrouw, L. A., 38



- Lin, N., 158
- Linux operating system  
free software solutions on, 170  
plans to bundle with low-cost systems, 66, 68
- Literacy. *See also* Electronic literacies;  
Language; Print media  
defined and characterized, 39–40, 110–111  
as a factor in information technology access, 38–39, 59  
the literacy divide, 41–43  
literacy pedagogy, 40–41, 220n.3  
as a set of social practices, 41, 43–44, 45–46  
social context of, 42, 44–46, 108, 218n.2  
textual literacy, 115–116 (*see also* Print media)
- Literacy model of access, 38–39, 43–44, 46–48  
skills acquisition, 43–45  
social contextuality, 42, 44, 45–46
- Longitudinal ethnographic studies, 214–215
- Los Angeles  
Foshay Learning Center, 137–138  
public utilities in, 34, 35
- Low-cost computers  
efforts to develop, 65–69
- Low-income populations. *See also*  
Class stratification; Developing countries; Minorities; Rural areas  
computer education for, 125–127, 134–135  
information needs of, unmet, 83, 88–89  
marginalization of, 173, 209  
providing greater Internet access to, 1–2, 56, 57, 79, 169–170  
school computer use among, 130–131  
socioeconomic factors in access, 29, 37, 49–52, 54–58, 59  
television diffusion rates for, 37  
the urban poor, 2
- Malinformation, 114
- Mandarin Chinese language, 144
- Market mechanisms, 34–35, 213  
encouraging high-end development, 64–65, 74  
as incentives for public access centers, 78
- Márquez, Gabriel García, 112
- Mar Vista Elementary School, California, 135–137
- McLuhan, Marshall, 204
- Media determinism, 204–205
- Meeting halls, 186
- Melbourne WTO protest, 194
- Mentoring, 121
- Meta-language comprehension, 43
- Milanovic, Branko, 20–21
- Minitel system, 53
- Minorities  
disadvantaged groups, 214  
Latino community access program, 169–170  
marginalized groups, 186
- Minorities. *See also* Disabled persons;  
Low-income populations
- Misinformation, 114
- Mobile telephones, 60. *See also* Teledensity
- Model Computer Lab project, 5
- M. S. Swaminathan Foundation, 168  
village knowledge centers project, 85–86, 91, 171
- Multilateral Agreement on Investment (MAI), 193–194
- Multimedia, 27–30, 169, 170–172  
potential equalizing effect of, 116
- Multimedia literacy, 115–116
- Music on the Internet, 27, 87
- NanTou primary school, ShenZhen, China, 143–144
- Narrowcasting, 159
- National information strategy, 53
- National Telecommunications and Information Administration, U.S., 1

- Native language bulletin boards, 105–107
- Neo-Nazis, 196
- Netville, Toronto, 158–159
- Networks, 24, 187–191. *See also* Online networks
  - function of broad networks of weak social ties, 155, 157–158, 190, 196
  - health-related information and networking, 28–29, 188–191
  - of learning, 121
  - value of informal, 149–150
- New Delhi, computer kiosks in, 1, 85, 91, 163, 179
- New institutionalism, 207–209
- News media. *See also* Community news services
  - electronic, 26, 187
  - newspapers, 186–187
- New York
  - Community Technology Centers Network (CTCNet), 127
  - HarlemLive Internet-based youth publication, 92
  - Playing2Win, 127–129
- Nongovernmental Organizations (NGOs), 191–192, 193
- Norm social capital, 155–156
- Oddanchatrammarket.com, 168
- OECD countries, 50–52, 98–99
- Office-based desktop interface, 203
- Ong, Walter, 215
- Online communication, 27–28. *See also* Online networks
  - bulletin boards, 105–107, 117, 187
  - chat rooms, 28
  - e-mail, 117
  - virtual communities, 146, 160–162, 187
- Online education. *See* Internet-based education
- Online networks, 187–191. *See also* Networks
  - political or activist, 88, 191, 191–197
  - in science and research, 144–146, 218n.8
  - of the socially alienated, 29, 196, 197
  - virtual communities, 146, 160–162, 187
  - workplace-related, 13, 14–15
- Online-offline interactions, 160, 162, 191
- Online services, 28, 88–90
  - community news services, 87 (*see also* Sampa.org)
  - complaint services, 179–181
  - e-commerce Web sites, 168, 179
- Online voting, 222–223n.15
- Organization for Economic Cooperation and Development (OECD), 98–99
  - connectivity of member countries, 50–52
- Oxnard, California, 135–137
- Package model of computing, 206–207
- Participatory Rural Appraisal (PRA), 90–91
- Personal computer, 66–69
  - costs of computers and software, 32, 47, 62–63
  - efforts to develop lower-cost systems, 65–69
  - emergence of in the U.S., 203
  - learn-to-earn programs to obtain, 63
  - multimedia computers, 116
  - social biases in technology of, 203–204
- Personal enrichment, 88
- Physical access. *See* Internet access; Personal computer
- Piaget, Jean, 119
- Playing2Win, Harlem, 127–129
- Political association online, 88, 191, 197
  - of Nongovernmental Organizations (NGOs), 191–192, 193

- political space for persecuted groups, 197
- of popular movements, 192–196
- surveillance of, 197
- Popular movements using the Internet, 191–196
- Post-Fordist management techniques, 14–15
- Postindustrial era, 38–39, 93
- Poverty. *See* Low-income populations
- Prayas (Brazilian organization), 164
- Print media
  - the Gutenberg revolution, 39–40, 204–205
  - newspapers, 186–187
- Proenza, E., J. Bastides-Buch, and G. Montero, 77–78
- Programming biases, 203–204
- Project Fresa*, 135–137
- Proxy servers, 182
- Public utilities, 34, 35
- Putnam, Robert, 154, 155, 159
  
- Radio diffusion, 31, 33–34
- Radio Internet project, Sri Lanka, 170–171
- Rapid Rural Appraisal (RRA), 90–91
- Regional Information Technology and Software Support Center, Egypt, 58
- Relationships, 154, 159. *See also* Social interaction
  - broad networks of weak social ties, 155–156, 157–158, 190, 196
  - weak vs. strong ties, 155–156
- Research
  - ethnographic studies, 9–10, 47
  - online communication of data, 144–146, 218n.8
- Resnick, P., 172
- Restrictions on Internet use, 182–183
- Rheingold, Howard, 160–162
- Riverside, California
  - Community Digital Initiative, 164–165
  - the Riverside Cybrary, 169–170
- Robison, K. K., and E. M. Crenshaw, 49–50, 109, 182
- Roosevelt, Franklin Delano, 35
- Rural areas
  - information needs in, 90–91, 102–103
- Rural technology projects
  - e-commerce Web sites, 168
  - Gyandoot rural technology project, 85, 91, 171–172, 179–181
  - Internet-based education, 86–87
  - village knowledge centers project, 85–86, 91, 171
- Sampa.org project, 87, 165–166
- São Paulo, Brazil
  - Sampa.org project, 87, 165–166
- Scandinavia, 34
- School computer and Internet access. *See* Educational technology
- Scribner, Sylvia, and M. Cole, 42
- Seattle WTO protest, 194
- Selective exposure to information, 159
- Shandong, China, 61
- Shanghai, China, 61
- ShenZhen, China, 143–144
- Singapore
  - restrictions on Internet use in, 182–183, 184
- Situated learning, 123–124
- Skill-levels in information technologies, 38, 39, 220. *See also* Computer education; Electronic literacies
  - acquisition of similar to attaining literacy, 44–46
- Social capital, 155–156, 221n.4
  - and Internet technology, 156–160, 172
  - macrolevel, 181–185
  - mesolevel, 185–187
  - microlevel, 155, 157, 160–163
  - promoting through community technology projects, 163
  - theory of, 153–156

- Social embeddedness of technology, 202, 203
  - social biases in technology, 203–205
  - social informatics, 205–207
- Social exclusion or isolation, 29, 159–160, 221n.3
- Social inclusion. *See also* Digital divide
  - as the aim of information technology access, 1, 28, 210–213
  - defined, 8–9
  - language and, 94–95
  - policy challenges to ensure, 4, 5, 211, 213
  - research agenda regarding, 213–215
- Social interaction. *See also* Online communication; Relationships
  - face-to-face vs. technology mediated, 146, 148–149, 159
  - over Internet supplementing other forms of interaction, 160, 162, 191
  - virtual communities, 146, 160–162, 187
- Social networks. *See also* Online networks
  - theory of, 161–162
  - weak-tie networks, 155, 157–158, 190, 196
- Social reproduction, 123
- Social resources, 47. *See also* Social capital
- Social transformation, 8
- Sociotechnical models of information technology, 206–207. *See also*
  - Social embeddedness of technology;
  - Technological determinism;
  - Technological neutrality
- Soft vs. hard media determinism, 204–205
- Soviet Union (former), 12–13
- Spain, low Internet connectivity in, 52, 53
- Sri Lanka, 170
- Stewart, A., 8
- Stratification. *See* Class stratification; Economic stratification
- Subjectivity, 93
- Surveillance tools, 197
- Swaminathan, M. S. *See* M. S. Swaminathan Foundation
- Symbolic analysts, 22
- Technocratic paradigm of literacy, 41
- Technological determinism, 202, 204, 208
- Technological diffusion. *See also* Internet access; Personal computer
  - “disruptive technologies” and the innovator’s dilemma, 64–65, 74
  - rise of science and technology, 13–14
- Technological neutrality, 202–203, 205, 208
- Technology Academy, Los Angeles, 137–138
- Technology access programs, 2–3, 5, 9, 53, 65–66, 75, 76, 78–79
- Technology-based education. *See* Educational technology; Internet-based education
- Technology costs. *See* Affordability
- Technology Development Center (TDC), Egypt, 139–140
- Technosocial interaction, 4, 7, 12, 183, 214–215. *See also* Social embeddedness of technology
  - institutional embeddedness of technology, 208–209
- Telecentros (telecenters), 75, 76, 77–79, 199–201
- Telecom Eirann, 3
- Telecommunications and
  - Computer Networks Group (TeNet), 71–73
- Telecommunications infrastructure, 69, 71–72, 74, 77
  - broadband access, 58, 69
  - DSL providers, 69–70
  - leapfrogging, 71–72
  - wireless local loop systems, 72–74

- Teledensity
  - diffusion of telephones, 33, 34–35, 35–37, 50–51
  - Internet diffusion and, 50–51, 59, 60
- Telephones, diffusion of, 33, 34–35, 35–37, 50–51
- Television, diffusion of, 31, 33–34, 37
- TeNet, India, (TeNet), 71–73
- Tocqueville, Alexis de, 186
- Tool model of computing, 206–207
- Touraine, Alain, 93
- Training programs
  - computer training, 9, 125–129, 137–138, 179
  - teacher training, 148
  - vocational training, 88, 135
- Transistor, 12
- Transparency of government, 88, 173–177, 183–184
- Turner, J., J. Grube, and J. Meyers, 189–190
- Typographic era, 39–40, 204–205
  
- Unicode, 203
- United Nations Development Program, 18–19
- United States
  - Agency of International Development, 5
  - emergence of the personal computer in, 203
  - examples of educational technology programs in, 135–138
  - number of web pages in, 82
  - online content in, 88–90
  - unequal Internet access within, 53–54, 56
- United States government
  - Agency of International Development (USAID), 5
  - Department of Commerce, 54
  - National Telecommunications and Information Administration, 1
- University courses online, 150–152
- Usenet, 24
  
- VCRs, diffusion of, 33–34
- Venture capital, 65
- Videocassette recorders
  - diffusion of, 33–34
- Village knowledge centers project, 85–86, 91, 171
- Virtual communities, 160–162, 187
  - vs. face-to-face interaction, 146, 159
- Visual media on the Internet, 27, 115–116, 128
  - textual equivalence needed for blind access to, 90
- Vocational training, 88, 135
- Voluntary associations, 185. *See also* Civil society
- Voronov, Anatoly, 96
- Vygotsky, Lev S., 121
  
- Wade, Robert, 20–21
- Weak-tie relationships, 155, 157–158, 190, 196
- Web Accessibility Initiative, 89–90
- Web-based bulletin boards. *See* Bulletin boards
- Web pages. *See also* Domains on the Internet; Internet
  - authoring software for, 98
  - education to design, 128
  - number of, 81–83
- WELL (Whole Earth LECTronic Link), 161
- Wireless local loop systems, 72–74
- Woolcock, M., 153–154, 172
- World Bank, 18
  - Education and Technology Team, 142
- World Trade Organization (WTO)
  - opposition movement, 192, 193–195
- World Wide Web. *See* Internet; Online networks
- WTO. *See* World Trade Organization (WTO)

- Zapatista rebels, Internet based  
campaign of, 192–193, 196
- Zone of proximal development  
(ZPD), 121
- Zook, Matthew, 82
- Zuboff, Shoshana, 183–184,  
214–215

This is a section of [doi:10.7551/mitpress/6699.001.0001](https://doi.org/10.7551/mitpress/6699.001.0001)

# Technology and Social Inclusion

## Rethinking the Digital Divide

By: Mark Warschauer

### Citation:

*Technology and Social Inclusion: Rethinking the Digital Divide*

By: Mark Warschauer

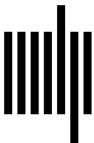
DOI: 10.7551/mitpress/6699.001.0001

ISBN (electronic): 9780262257176

Publisher: The MIT Press

Published: 2004

The open access edition of this book was made possible by generous funding and support from the author



The MIT Press

First MIT Press paperback edition, 2004  
© 2003 Massachusetts Institute of Technology

All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher.

This book was set in Sabon by SNP Best-set Typesetter Ltd., Hong Kong  
Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Warschauer, Mark.

Technology and social inclusion : rethinking the digital divide /

Mark Warschauer.

p. cm.

Includes bibliographical references and index.

ISBN 0-262-23224-3 (hc. : alk. paper), 0-262-73173-8 (pb.)

1. Digital divide. 2. Marginality, Social. I. Title.

HN49.I56 W37 2003

303.48'33—dc21

2002075130

10 9 8 7 6 5 4 3 2