

Cyberspace's Ethical and Social Challenges in Knowledge Society

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INTRODUCTION

During the last years the issue of *digital divide* has received particular attention from international bodies like the UN, UNESCO, OECD (Bindé, 2005; OECD, 2001; UN, 2006). These organizations acknowledge that our planet is divided into “information haves” and “information have-nots” and that the effort to bridge this global gap is one of the main challenges of society today.

Interest in digital divide is also widely present in literature. In these last five years, research and empirical surveys on this subject have notably increased (Baker, 2001; Hargittai, Di Maggio, Neuman, & Robinson, 2001; Ranieri, 2006; Rallet, 2004; Sartori, 2006; van Dijk, 2005).

What does digital divide mean? What are the causes of the digital gap? How can education and technological research contribute to facing this challenge?

In this chapter, we shall first develop this concept, identifying through literature reviews its dimension and causes. We shall then focus our attention on the possible roles that education and technological research can play in order to overcome the gap, suggesting four main directions to be followed, with the help of concrete examples.

DEFINING DIGITAL DIVIDE: A LITERATURE REVIEW

The *Oxford English Dictionary Online* (2004) registered the first occurrence of the term “digital divide” in an article published in 1995 in the *Columbus Dispatch* (Ohio), giving the following definition: “the gulf between those who have ready access to current digital technology (esp. computers and the Internet) and those who do not; (also) the perceived social or educational inequality resulting from this.”

Still during the mid-1990s, the term recurred in the reports of the U.S. National Telecommunications and Information Administration (NTIA) regarding the inequality of access to telecommunications. NTIA published six reports from 1995 to 2004 in a series entitled *Falling through the Net*. In the third NTIA report (1999) the profile of the *have-nots* was introduced and defined, and the following five different levels of inequality in Internet usage were identified: (1) between the minority of connected and the majority of unconnected; (2) between those who use the Internet for a wide range of activities with advantageous effects and profit and those who do not use the Internet; (3) between those who can use paid services and those who use the Internet's free research engines; (4) between those who use the net for e-commerce and those who do not effect any transactions on the Internet; and (5) between those who benefit from the broadband and those who cope with only slow connections.

In the following years the term became a very commonly used expression in European debates and eventually extended also to the developing countries. Some authors underline the ambiguous character of the term *digital divide* which is a very wide concept (going from access and non-access to telecommunication infrastructures and educational programs) used in reference to most diverse situations involving nations, regions, organizations, social groups, individuals, and so forth (Rallet & Rochelandet, 2004; Yu, 2002).

In the attempt to clarify its meaning, three different accentuations can be identified in debates and in literature.

Initially, the accent was placed on technological equipment, and digital divide was conceived as a form of exclusion of those who did not have access to the information and communication technologies (ICTs).

A wider perspective enriches the semantic range of the term with other meanings. This vision is based not only on having or not having of the ICTs, but on the effective ability to use them. In this perspective, it is not important to increase the number of technological

equipment and Internet connections, but to evaluate and improve their uses. If we considered the contextual, cultural, and knowledge resources available to individuals and groups, digital divide would therefore be the consequence of pre-existing inequalities and defines the gap between the ICTs users and those who do not use them. It would moreover be legitimate to speak not only of digital divide but also of digital inequality referring to the social and knowledge gaps that influence the diffusion and adoption of technologies (Sartori, 2006).

A third approach focuses on contents (knowledge, information, expertise) and the services to which the ICTs give access, independently from the technologies. Digital divide is therefore defined as the gap between those who have access to contents and services offered by the Internet and those who do not.

More generally, according to Baker (2001):

The digital divide can be conceptualized from a *user* standpoint as a suboptimal condition of access to technologies (the initial conceptualization of the digital divide), orientation on hardware, networking, and access to advanced IT/Telecom services:

- Content available, that is, what services and information can be accessed and
- Utility/awareness which relates to the actual value as well as the perceived value or awareness of the user/citizen/business of the use of ICTs and associated services.

The definition proposed by the OECD and to which the most part of studies refer, includes the various elements highlighted up to now: “the gap between individuals, households, businesses and geographic areas at different socioeconomic levels with regard to both their opportunities to access ICTs and to their use of the Internet for a wide variety of activities. The digital divide reflects various differences among and within countries. The ability of individuals and businesses to take advantage of the Internet varies significantly across the OECD area as well as between OECD and non-member countries” (OECD, 2001, p. 5).

In synthesis, according to this last definition the concept of digital divide is applied on a universal level, goes back to various geographic dimensions (international and intranational) and includes two distinct problems, that of access and use of the ICTs,

and is ultimately conditioned by access to the resource infrastructures.

UNDERSTANDING DIGITAL DIVIDE

Digital divide is a multidimensional phenomenon. In order to examine the factors influencing its evolution, it would be useful to distinguish between two different levels of analyses: a macro analysis level, aimed at globally identifying the diverse economical, social and political conditions which characterize industrialized and developing countries; and a microanalysis level, aimed at evaluating the individual characteristics of Internet users (Sartori, 2006, p. 51).

The comparison between the industrialized and the developing countries shows that elements like income, education and training, investments in the sectors of research and development, and the costs of infrastructures, are crucial factors that can prevent or facilitate the diffusion of the Internet in various countries. An effective comprehension of the phenomenon is in fact possible only by integrating the various elements.

Let us start from the first factor. The degree of development of a country is certainly a decisive factor. For example, in observing trends in the map showing the extent of the use of the Internet by countries, we can see that its coverage goes hand in hand with geographic development. In other words, there is a close relationship between inequality in industrial development and inequality of access to information (Bindé, 2005). However, the wealth of a country, as fundamental as it can be, is not sufficient in itself to increase the use of the Internet (Norris, 2001).

Besides, digital literacy is fundamental. The international organizations agree that it constitutes, along with the educational background and the knowledge of languages, a prerequisite that can positively or negatively influence access to the Web.

In addition, the factors related to offers of new technologies are to be considered. Availability of infrastructures and the costs of computers and connections have a direct impact on the opportunities of individual users to access the Web. The costs are still very high especially in developing countries, where they are higher than in developed countries (Bindé, 2005).

Obviously, directives from local governments regarding public policies in the ICTs sector also affect costs. They can more or less be oriented towards the

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