

Chapter 40

Digital Inclusion and Computational Thinking: New Challenges and Opportunities for Media Professionals

Walter Teixeira Lima Jr.

Methodist University of São Paulo, Brazil

Rafael Vergili

University of São Paulo, Brazil

ABSTRACT

The Information and Communication Technologies (ICTs) brought new players to an environment that subverts industrial logic of communication, visibility and representation. The issue of digital inclusion is still latent, especially in developing countries, such as Brazil. However, with initiatives that facilitate access to technological innovations and ever cheaper devices, possession, remixing and distribution of information are no longer exclusive to large companies or mass media vehicles. Anyone with network access and knowledge about certain topics can generate content for various parts of the world. In this context of constant change, the media professional is faced with new challenges and, in order to gain competitive advantage in the labor market or in the academic environment needs to more adequately understand the technological environment in which he/she is inserted, topics that are discussed under the prism of computational thinking and digital literacy concepts, possible foundations for new paths of his/her activities.

INTRODUCTION

Initially transmitted only face to face, information has begun to spread more easily since the development of the movable-type printing press by Johannes Gutenberg. Following the technological evolution, came up the telegraph, the radio, the television and the personal computer. The latter, with the help of the Internet, became largely responsible for allowing the individual production of information and the

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exchange of ideas with textual, audio and visual resources, with no time or space barriers (BENKLER, 2006).

Ever since, technological devices have become increasingly accessible, from the economic viewpoint, and friendly, in terms of platform handling. If, formerly, in order to deal with monochrome phosphorus displays, specific knowledge and commands were required to insert simple information in a system, presently with graphics mode, the mere touch of a finger in a miniature device provides new ways to access, edit and share information (LIMA JUNIOR, 2013b).

Despite some structural issues in the Brazilian telecommunications systems, it is not discussed that the increase of data traffic and page dynamics from Information and Communication Technologies (ICTs), have attracted and encouraged the “domestic” use¹ – and no longer only the programming specialists, as in the beginning of the Internet – of telematic networks. That contributed significantly to the growth of information flow and its several ways of dissemination. On the other hand, the obvious fascination regarding the social impact and the various facilities offered may have contributed to media professionals’ lack of improvement regarding technological structure, what Wing (2006, 2008) and Pearson (2009) call “computational thinking” – a concept which will be detailed later in this text. That concept basically refers to the understanding of the limits and potential of technological structure common to most devices connected to the network, ensuring continuity of knowledge and avoiding the simple technical ownership of new devices or social networks that, in a short period of time, have become obsolete.

The present text is developed through literature review with theoretical references discussed in more detail from the “Background” item. It aims at highlighting how easy access to ICTs (digital inclusion) and the changes in consumption and production of information by connected individuals can affect the performance of the media professional, who, in order not to become obsolete, may use computational thinking and digital literacy as foundations to originate new paths for his/her activities.

BACKGROUND

Information storage and production have changed significantly since the development of the Web, by Tim Berners-Lee. The technology to access this environment’s pages, the Common Gateway Interface (CGI) and the Open Systems Interconnection (OSI) model, linked to the Transmission Control Protocol/Internet Protocol (TCP/IP), allow each one to own his/her desired Internet.

From the perspective of the sociologist Castells (2003), the story of the creation and development of the Internet, from building the Arpanet in the 1960’s up to the explosion of the World Wide Web in the 1990’s is an extraordinary human adventure through which many bureaucratic barriers were overcome.

Those who are not included in this technological context, by not owning a computer or not having information, knowledge and literacy required to interact in the digital environment, are hence marginalized from what Castells calls “network society”. Our present days, permeated by technological innovations, are built around a society with nodal gaps of knowledge in which the distance between people is no longer given only by the geographic issue, but by the degree of interaction between the individual and the computer. Thus, you may say that the economic geography of the Internet occurs through a connected portion, in contrast to disconnected places (Castells, 2006).

For instance, in Brazil, a country, which up to this time is underdeveloped, has been facing many problems for many years regarding the technological gap when compared with developed countries. This relates to the Leapfrogging concept, exposed by Bhagavan (2001), which will be detailed in the

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