



Whiteboard: Synchronism, accessibility, protagonism and collective authorship for human diversity on Web 2.0



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ARTICLE INFO

Article history:

Available online 13 July 2013

Keywords:

Socio-digital inclusion
Web 2.0
Accessibility
HTML5

ABSTRACT

The Whiteboard is a synchronous and collaborative tool projected in line with the accessibility principals and universal design, whose objective is to increase the knowledge socialization and promote the real-time decision making. Aspects resulting from the Culture of Collaboration and Participation are discussed to delineate the Web 2.0, a perspective that will be concrete only with the guarantee of everybody's participation, specially the participation of people with diverse needs. This article considers the implications of the Whiteboard functions and discusses about the validation processes performed with real users in relation to the possible resources that are available to increase individual and collective authorship, to promote the virtual learning cycle and impel practices that value the human diversity.

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1. Introduction

The Internet tools have been characterized as a set of online services that provide ways of publishing, sharing and organizing information, extending the human interaction spaces and projecting a contemporary interface called Web 2.0. The Web 2.0 social repercussions, as it is observed by Primo (2007), must not be disregarded since they stimulate collective work processes of emotional exchanges and social construction of knowledge supported by computer resources.

We have been experiencing a **cultural transformation** (Jenkins, 2009) as we are encouraged to search information that is spread in many kinds of different media and to be permanently connected. According to Primo (2010, p. 23), the advance of the information and communication technologies has worked as “a ferment for technological experiences”, because it is in the cyberculture context that the network actions and the collaborative production have their possibilities developed.

The first generation, Web 1.0, the great digital library, allowed the access to a large amount of content but with very little interaction. The users were just spectators who did not have permission to modify the available information. Collaboration and participation spaces emerged on the Web with the implementation of streaming servers of audio and video, modeling a new internet generation called Web 2.0. The user profile of the web changed

with the addition of new tools to generate knowledge, to create communities, and to interact.

The world wide web, in the Web 2.0 perspective, initiates the **User Era of the Interactive Generation** produced through the logic of the collective intelligence concept and explained by the multiple possibilities of sharing and cooperating. The present researches model the Web browsing personalization with programs which perceive peculiarities and user preferences, it is the Semantic Web, which is able to organize and analyze information (Fig. 1).

With the high speed networks and the possibilities of the mobile devices we have now started to experience the concept of computer pervasiveness more intensively, a technological configuration that stands out from the logic of its own “disappearance” as it releases intuitive interfaces that can be easily used, and it allows its own application to different contexts, inserted in the ordinary people's lives. These characteristics of pervasive computing (ubiquitous computing) promote the development of competences of people who are excluded from the processes of social interaction, mainly because they implement interfaces that respect and value the human particularities.

From all characteristics that can be pointed to the contemporary functionality of the world wide web, the fact that with the Web 2.0 it is possible to perform online operations without being necessary to install programs has addressed to one of the issues that people with diverse needs have to deal with when interacting with computer technologies. In addition, there is the computer pervasiveness scope with the interface designs presented in a “transparent” way, which allows their resources to be used without causing cognitive overload.

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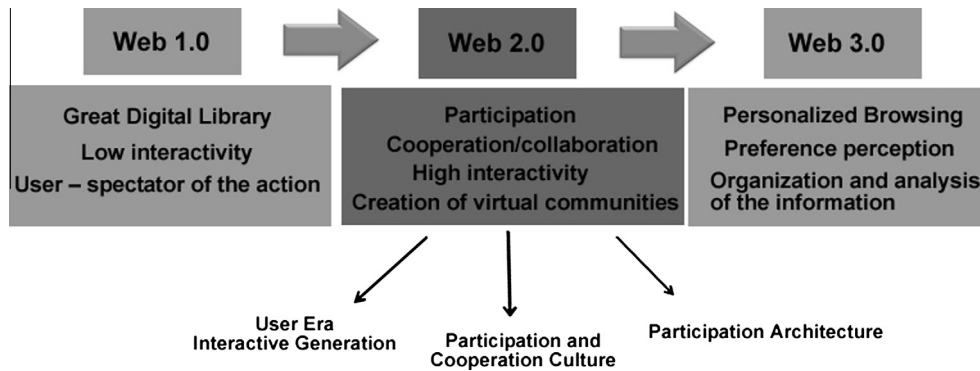


Fig. 1. The web evolution.

In the interaction with web environments, the cognitive load is related to the mental process that is needed to access and interpret the digital resources (screens, icons and objects), as well as to accomplish the task. The cognitive load is a factor that is always present in the computing system designs as the interaction with the technological resources demands interpretation which causes the user to spend mental energy. A complex interface design, with different layout patterns, can trigger an increase of the cognitive load due to different interface elements that need to be noticed and interpreted.

The development of computing systems that are synchronized with the usability and accessibility principles, that is, complying with the requirements of standardization of the text, media and layout, will allow the decrease of the cognitive load of the user by providing safer and calmer browsing and interpretation. When the waste of the energy directed to the interaction is minimized, the appropriation of the information process and the accomplishment of the task are maximized, which allows the focus to be not on the appropriation of technology anymore, but on the mediation process among peers and on the projects/activity development. This aspect reveals psychological accomplishments rather than technological ones. As we can see in Fig. 2, whenever we learn something reasonably well we use it without thinking and then focus on the solution of the problem or on the achievement of the goal. Therefore, the focus is no longer on the technological resource itself, but on the task performance.

The Web 2.0 has revealed a new paradigm in the interface design for the new digital information and communication technologies. This process, more than improving the usability of the

interfaces for the Web, aims to develop a **Participation Architecture**, (O'Reilly, 2005) that is, computing systems that incorporate resources of interconnection and sharing of technologies and knowledge. For the possibilities that this paradigm change foresees to the Web to be accomplished we must completely accept the principle that, as (O'Reilly, 2005) states, "the more people use its resources and benefits the better the Web features will become" The sharing and interconnection density that the network must reach on the Web 2.0 configuration will only be possible when the positivity of its resources becomes a possibility for the human diversity as well.

Aiming to establish the **Participation and Cooperation Culture**, the human actions must be ruled by the dialog with the differences. We can achieve this modern cultural matrix when we fight against the previous exclusion of any social group and against the restrictions of human rights and duties. The new Web generation that starts to be designed has allowed invisible parts of humankind to conquer spaces of formation, work and sociability. When developers and programmers acknowledge and value the human diversity, they apply programs that perceive preferences, organizing and analyzing information, adjusting tools and technological systems to the specificity of their inter-agents.

The Inclusive Society demands the main criteria of the technological choices to be the respect and appreciation of the human diversity. The human being is above any kind of technological devices, as "the technology is always provisory" (Santarosa et al., 2010, pg. 337), it always crystallizes and represents a stage of the socio-cultural development of the humankind.

The Brazilian educational scenery ratifies the concept of socio-digital inclusion and points to the importance of the development of authorship tools that are synchronous, collaborative and accessible. The increased number of people with diverse needs enrolled in Higher Education Institutions – an increase of 933.6% from 2000 to 2010 – illustrates this aspect. This increase in the presence of human diversity in the higher education demanded adjustments in the architecture, the syllabus, and the educational resources that are available, including digital information and communication technologies. The Brazilian Education Ministry (MEC) requires the Higher Education Institutions to perform government actions that respect and assure equal rights to people with diverse needs. One of these actions is the Inclusion Program (Programa Incluir).

According to the Education Ministry (MEC) (Government, 2011) guidelines the Inclusion Program aims to promote actions to eliminate physical, pedagogical and communication barriers in order to ensure access and permanence for people with diverse needs in the Federal Institutions of Higher Education. Since 2012 the technological and financial resources have been transferred directly to the Higher Education Institutes through their Accessibility Nuclei. In order to illustrate the human diversity presence and the results

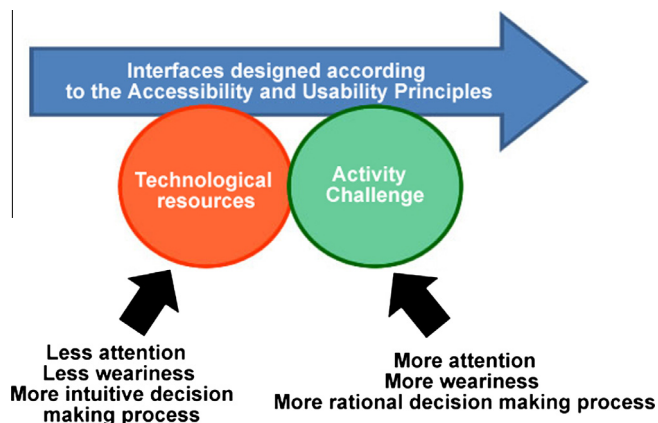


Fig. 2. The human perception in the interaction process with accessible technological resources.

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