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From Solid to Liquid: New Literacies to the Cultural Changes of Web 2.0

De lo sólido a lo líquido: las nuevas alfabetizaciones ante los cambios culturales de la Web 2.0

ABSTRACT

This paper proposes a model for developing new literacies of citizenship in the digital society. Using Bauman's metaphor, we contrast the 'solid' culture of the 19th and 20th centuries to the «liquid» information culture of the 21st century in which Web 2.0 plays a fundamental role and affects many aspects of our culture. We first review the main features of Web 2.0 through six major dimensions: as a universal library, global market, as a giant hypertext jigsaw puzzle, a public space for social communities, a territory for multimedia and audiovisual expression, and as a space for multiple virtual interactive environments. In the second part, we propose an integrated theoretical model of literacy for the citizen. This model is based on two pillars: the areas or dimensions of literacy, and the competences (instrumental, cognitive-intellectual, socio-communicative, emotional and axiological) to be developed in citizens. Finally we contend that the new literacies amount to a civic right and a necessary condition for social development and a more democratic society in the 21st century.

ABSTRACT (Spanish)

En este artículo se propone un modelo de nuevas alfabetizaciones para la formación de la ciudadanía de la sociedad digital. Usando la metáfora de Bauman se hace referencia a la oposición entre la cultura «sólida» predominante en los siglos XIX y XX con la cultura de la información «líquida» en la que la Web 2.0 tiene efectos muy relevantes sobre múltiples planos de nuestra cultura actual. En un primer momento, se examinan las principales características de la Web 2.0 definiéndola en relación a seis grandes dimensiones o planos que se entrecruzan y son simultáneos: la Web 2.0 como la biblioteca universal, como mercado global, como un puzzle gigante de hipertextos, como una plaza pública de comunicación e interacción social, como un territorio de expresión multimedia y audiovisual, y como múltiples entornos virtuales interactivos. En una segunda parte, se propone un modelo teórico de la alfabetización del ciudadano ante esta cultura digital que consta de dos ejes o planos básicos: el primero referido a los ámbitos o dimensiones de la alfabetización, y el segundo a las competencias de aprendizaje (instrumentales, cognitivo-intelectuales, sociocomunicacionales, emocionales y axiológicas) a desarrollar en los sujetos. Por último, se defiende que las nuevas alfabetizaciones son un derecho de los individuos y una condición necesaria para un desarrollo social y democrático de la sociedad en el siglo XXI.

KEYWORDS

Web 2.0, digital culture, literacy, new literacies, multi-literacy, competences, Internet, ICT.

Web 2.0, cultura digital, alfabetización, nuevas alfabetizaciones, alfabetizaciones múltiples, competencias, Internet.

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1. Introduction: From solid culture to liquid information

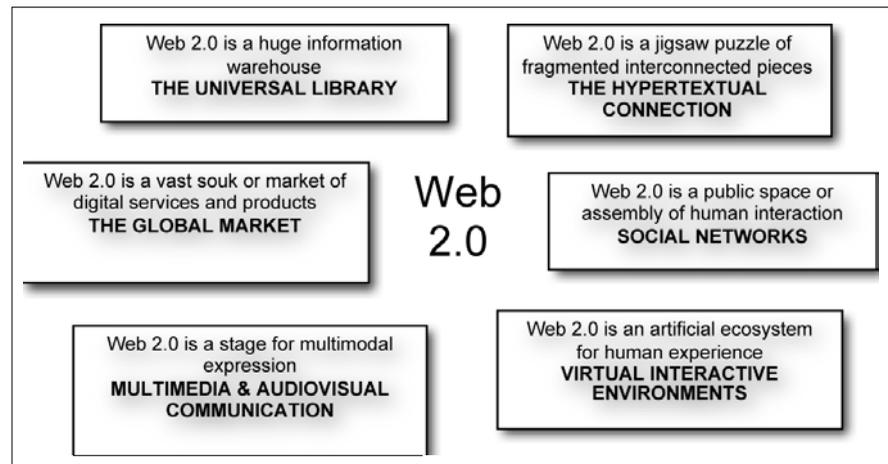
The solid and the liquid is a metaphor (Bauman, 2000) that characterizes today's processes of socio-cultural change propelled by the information and communication technologies (ICT) that are now everywhere. This metaphor suggests that the age in which we live –its digital culture– is an unstable flow of manufactured knowledge and information in a state of permanent change and constant transformation, and stands as a counterpoint to the mainly Western products of the 19th and 20th century in which the stability and inalterability of the physical, material and the solid predominated.

Internet, and particularly Web 2.0, has changed the traditional rules of the game that determined the production, distribution and consumption of culture. Cultural objects created in the 20th century (printed material, cinemas, vinyl records and cassettes, photographs, etc) are disappearing. The ICT have sparked or at least speeded up a far-reaching revolution in our civilization that turns on the transformation of the mechanisms of production, storage, dissemination of and access to information; on the communicative forms and flows between people; and on the expressive languages and the representation of culture and knowledge. The new age has generated new actors (Internet, the mobile phone, videogames and other digital devices) that influence us across a broad range of experiences: in leisure, personal communications, in learning and at work, etc. The digital is a liquid experience very different from solid culture's experience of consumption and acquisition, and so requires new approaches and new learning and literacy models.

(2005) described some of its important features: a platform for software services, participative architecture, cost-benefit scalability, transformations and remixes of data and their sources, software not exclusively linked to a single device, and making optimum use of collective intelligence.

From our viewpoint the Net, that is the current state of development of telecommunications and the World Wide Web known generically as Web 2.0, can be defined according to six major parameters or dimensions of production, consumption and dissemination of culture which coexist, cross over and develop alongside each other. Web 2.0 is a universal library, a global market, a giant jigsaw puzzle of hyper-textually interconnected pieces, a public meeting place where people communicate and form social communities, a territory in which multimedia and audiovisual communication take precedence, and a diversity of virtual, interactive environments. The information available on the Internet is vast, multimedia, fragmented and socially constructed within technological environments. The digital is liquid, and the 21st century citizen needs new literacies that enable him to act as an independent, critical and cultured subject within cyberspace.

- The web as universal library: the overabundance of information generates «infoxication». One of the most remarkable phenomena marking the start of this



2. Web 2.0: liquid information invades our experience

Many investigators have attempted to define Web 2.0 and describe its effects on the various strands of our culture, largely identifying it as a reality that is too diffuse, changeable and unstable to fit into a tidy definition. In a seminal article on Web 2.0, O'Reilly

century is the excess of information generated by the exponential increase of that information which is amplified and massively disseminated by the many and varied media and technologies available. This has been dubbed «infoxication» (Benito-Ruiz, 2009), in that the accumulation and excess of data inevitably lead to saturation, or information intoxication, that lea-

ves the subject with a confused, unintelligible and opaque vision of reality (be it local, national or global). This is one of the cultural paradoxes of our age: we have the resources and media to access a lot of information, but the human brain's limited capacity to process it all means that our understanding of events is clouded by the excess of data we receive. Many different authors state that the information society is not necessarily better informed. One thing is to have access to data, and quite another is the ability to interpret them, make sense of them and put them to good use, that is, to transform data into knowledge, knowing how to put that information to use to suit a purpose or solve a problem. This is a crucial objective for any literate subject in the digital culture.

- The web as a market or digital souk information as the raw material of the new economy. Information is now the raw material of important sectors of the so-called new economy or digital capitalism. Online purchasing, use of public sector services, communication via Internet with companies, associations, government bodies, the daily checking and handling of our finances and other commercial activities... are habits that are now a regular part of our daily lives. Data and online service industries in their various forms are now a strategic sector in any nation's efforts to create wealth. Web 2.0 is increasingly becoming a virtual space for financial transactions. Companies or service institutions that operate in this space need qualified personnel, workers who are literate in the competencies required to produce, manage and consume products based on data management. Equally important is enabling the client, the user and consumer of online products to become literate, aware of his rights and with a sound knowledge of how to use the Web. Media literacy means training workers of the digital industry and citizens to become responsible consumers.

- The fragmentation of culture: the triumph of microcontent. Web 2.0 culture is fragmented, like a jigsaw puzzle of microcontent in which the individual must write his own account of experiences in the digital environments. Network-driven culture consists of

short, brief slices individually separate but linked together for rapid consumption. Each unit or cultural object (a song, a post, a comment sent to a discussion room, a video, a text, a photo...) can be consumed by the subject and taken in isolation from the author's context, transforming its original meaning, remixing it with other pieces from other authors, enabling the subject to produce an entirely unique and individual experience for himself. Creating a webpage, a blog or a wiki seems more like collage than the production of a closed cohesive piece of work.

Web 2.0 communication is leading to an extension and consolidation of the «telegram culture» boosted by characteristics of mobile phone social interac-

Literacy must be a process of development of an identity as a subject operating within the digital territory, characterized by the appropriation of intellectual, social and ethical competences that enable him to interact with information and transform it in a critical and emancipating form. The goal of literacy is to develop each subject's ability to act and participate in an independent, cultured and critical way in cyberspace. This is an essential universal right of all citizens of the information society.

tion, blogs and social networks. The epistolary culture of the past has been replaced by the economical use of the word and the urgency to get it to the intended receiver. This means that we are atrophying as subjects who manage forms of expression in the writing of long coherently argued texts that contain a start, middle and end (Carr, 2010). By contrast, most social network texts are short and spontaneous with little thought given to their elaboration. This is the triumph of communicative immediacy over intellectual reflection; the triumph of SMS writing over narrative text. Literacy must cultivate competencies in a subject so that he can control different types of language (text, audiovisual, iconic and sound) in various expressive forms (microcontent, narrations or hypertext).

- The web as a public meeting place for communication: the social networks. Web 2.0 is often refe-

red to as the social network in the sense that it allows us to be in permanent contact with other users and so construct communities or horizontal communication groups (Flores, 2009; Aced, 2010; Haro, 2010). These networks or virtual communities, Tuenti, Hi5, NIng, Flickr, Twitter, Facebook, etc., enable any individual to interact and share information easily and directly with others and without going through an intermediary. The Internet is not only a global network of machines and tools; it is a public meeting place for exchanges between people who share the same interests, problems and outlooks. The social networks can generate strong emotional ties that come with belonging to the specific collective or social group with which we interact.

The new age has generated new actors (Internet, the mobile phone, videogames and other digital devices) that influence us across a broad range of experiences: in leisure, personal communications, in learning and at work, etc. The digital is a liquid experience very different from solid culture's experience of consumption and acquisition, and so requires new approaches and new learning and literacy models.

The social networks not only show their potential in leisure activities and informal communication, they are also useful for professional training and education, as seen in the creation of online practical work communities. This social network duality manifests itself in many spaces that are often divergent and seemingly contradictory. They are used for political and social mobilization, as has occurred recently in North Africa and Spain. On the other hand, social networks are also a space for exhibitionists and juvenile behaviour, and it is common for certain types to use Facebook, Tuenti or Twitter to divulge their opinions, photos, songs and webpages, etc, to everyone else (supposedly their «friends»). So, literacy has to incorporate this duality in forming subjects for socialization in virtual communities and by developing communication competencies in which empathy, democratic values and cooperation are uppermost, as well as an awareness of what is public and / or private.

- The web as an expanding territory of multimedia

and audiovisual expression. The web is increasingly full of images, sounds, animations, films and audiovisual material. Internet is not only a cyberspace of text and documents to be read. With Web 2.0, it is now a place to publish and communicate through photos, videoclips, presentations or any other kind of multimedia file. Iconographic audiovisual language is invading the Net's communicative processes, and this requires subjects to be literate both as consumers of this type of product and as individual broadcasters with the expressive competencies to articulate with multimedia format and audiovisual languages. An important tradition based on audiovisual education and media literacy already in place has much to contribute to these processes to create literate subjects (Gutiérrez, 2003; 2010; Aparici, 2010).

- The web as an artificial ecosystem for human experience. Internet and other digital technologies are being used to construct an artificial environment that enables users to enjoy sensory experiences in three dimensions or as a mix between the empirical and the digital, as in augmented reality (Cawood & Fiala, 2008). This technology mediates between our individual perception as subjects and the reality as represented by the technology

itself, to the point where the virtual and empirical come together to generate «virtual worlds» via online platforms such as Secondlife, Torque or OpenSim (Cherbakov, 2009). These artificially constructed worlds not only create an avatar or personage that represents us but also enables us to experience intense emotions through communication and social interaction. The narrative and interactive human-machine experience that comes with videogames provides a new type of cultural experience that requires training and specific literacy skills (Sedeño, 2010).

3. New literacies for the citizen of the Web 2.0 culture

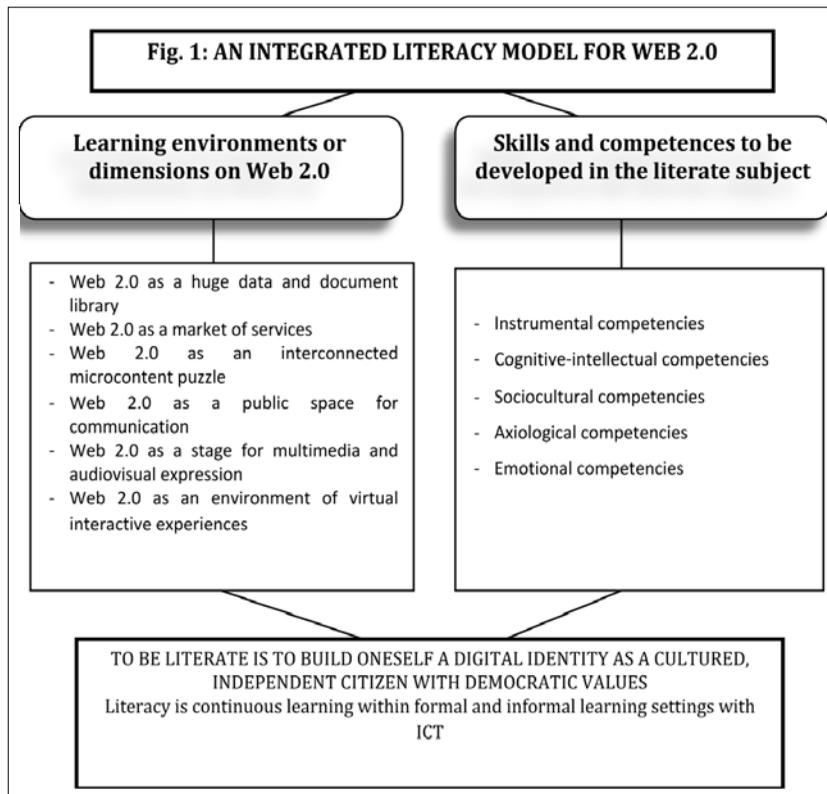
Hypertext, 3D graphics, virtual worlds, videoclips, simulations, real time and simultaneous computer-based communication between subjects, virtual human communities or social networks, videoconferencing, messaging via mobile phones or Internet, navigating the World Wide Web and multi-

media presentations are all part of a kaleidoscope of expressive codes and communicative actions that are manifestly different from communication via reading and writing on paper. For almost a decade now the literature on literacy, while acknowledging the tradition represented by Freire's liberating and dialogical approach and Dewey's focus on the democratic preparation of the citizen, as well as the contribution of critical media education, has been attempting to formulate a theory of literacy for the digital culture. Some highly influential proposals have emerged such as the concept of «multiliteracy» (Cope & Kalantzis, 2009), «new literacies» (Lankshear & Knobel, 2009) and from «Alfin» information literacy (Bawden, 2001), all of which come from the library and documentation fields. Likewise, new concepts appear that add adjectives to digital age literacy: «technological literacy», «media literacy», «digital literacy», «multimedia literacy» or «information literacy». Gutierrez (2010) states that literacy for digital technology is a more complex process than the ability to operate hardware and software. It means being literate in the new codes and communicative forms of digital culture. Several authors (Gutiérrez, 2003; Snyder, 2004; Monereo & al., 2005; Tyner, 2008; Merchant, 2009; Leahy & Dolan, 2010) have tackled this question and affirmed that the

acquisition of skills for the intelligent use of new technologies requires at least an instrumental control of the same, together with the acquisition of competencies related to the search for, and the analysis, selection and communication of data and information so that the subject can transform this information into knowledge and become a «prosumer», an active producer and consumer of information, and develop competencies for communicative interaction in digital environments. The subject has the ability to appropriate and confer meaning on the dense array of information on the Net which is represented in multiple expressive languages. The appropriation of meaning and multimodal expression would be new terms for the old concepts of reading and writing that are a traditional part of producing literate citizens. Our viewpoint requires us to go further and add new elements to those already mentioned in the formulation of a theoretical proposal for the literacy to match the new cultural changes that have appeared with the development of Web 2.0.

Figure 1 shows the main lines or basic architecture of an integrated literacy model for the training of citizens in the digital society. We have combined what would be the learning environments or dimensions within the various planes or settings that represent Web 2.0, as identified in the previous section. We

have also combined what would be the competencies and skills involved in the entire literacy process, such as the acquisition of instrumental, cognitive-intellectual, socio-communicative, axiological and emotional competencies. The literacy process means the fusion of learning competencies and the action dimensions or content within Web 2.0, to develop in the subject – or facilitate the construction of – a digital identity that enables the citizen to act as a person with culture and independence, with critical abilities and democratic values. Figure 1 is the representation of this integrated literacy model.



3.1. Learning environments and dimensions for Web 2.0

The first element or pillar of this literacy model refers to what a literate subject must know to be able to use the Web 2.0. Our chart identifies the six Web 2.0 dimensions mentioned previously (Universal Library, Global Market, Hypertextually linked Microcontent, Multimedia Communication, Social Networks and Virtual Environments) and describe the learning environments that each literacy plan, project or programme must provide for the digital age. These six environments or dimensions represent the «content» of literacy. A fully integrated 21st century education must instruct the citizen how to act and participate on the multiple planes that converge in Web 2.0 (table 1).

3.2. The competences in the literacy for digital cultural

The second element or pillar of this theoretical model of literacy is the identification of the subject's learning competence environments. We have tackled this problem before (Area, 2001; Area et al., 2008), identifying four competence environments: instrumental, cognitive, socio-communicative and axiological. This integral, educational and global model for literacy in the use of ICT requires the simultaneous development of five areas of competence in the subject in order to learn:

- Instrumental competence: technical control over each technology and its logical use procedures. This refers to the

acquisition of practical knowledge and skills for using hardware (set-up, installation and use of various peripheral devices and computing machines) and software or computer programs (the operative system, applications and Internet navigation and communication, etc).

- Cognitive-intellectual competence: the acquisition of specific cognitive knowledge and skills that enable the subject to search for, select, analyse, interpret and recreate the vast amount of information to which he has access through new technologies and communicate with others via digital resources. The subject learns to utilize data intelligently to be able to access information, give it meaning, analyse it critically and reconstruct it to his liking.

- Socio-communicative competence: the development of a set of skills related to the creation of various text types (hypertextual, audiovisual, iconic, three-dimensional, etc), and their dissemination in different languages, establishing fluid communication with other subjects through the technologies available. This also assumes the acquisition and development of behavioural norms with an inherently positive social attitude towards others that could take the form of collaborati-

The literacy dimensions or environments for the new cultural forms of the Web 2.0	
Learn how to use Web 2.0 as a universal library	This dimension of literacy responds to the complexity of accessing the new bibliographical sources distributed on digital databases. This aims to develop skills and competencies so that the citizen knows how to find information for a given purpose, localize it, select it, analyse it and reconstruct it. This is information literacy.
Learn how to use Web 2.0 as a market of services	This dimension of literacy refers to the critical formation of the consumer and citizen. The purchase of products or the transaction of administrative tasks online requires not only skills in acquisition and payment but also in training as a worker and consumer who is aware of his rights and responsibilities on the network.
Learn how to use Web 2.0 as a jigsaw puzzle of interconnected microcontent	This dimension of literacy aims to empower the individual to navigate the network from one document or unit of information to another, so that he is able to reinterpret and construct his own narrative of meanings based on basic units of content that are seemingly separate but on which the subject confers discourse. The subject controls the hypertextual forms of information organization both as consumer and producer of cultural messages.
Learn how to use Web 2.0 as a public space for communication in social networks	This dimension of literacy refers to the ability to play a full part in communities or interconnected social groups via telecommunication networks, and develop social behaviours based on collaboration and the exchange of information.
Learn how to use Web 2.0 as a multimedia and audiovisual expression	This dimension of literacy aims to develop the student as a subject capable of analysing and producing texts in multimedia format and audiovisual language. It proposes to instruct subjects to be critical consumers of audiovisual products and to become producers, broadcasters and disseminators of the same by using digital environments. This is multimedia and / or audiovisual literacy.
Learn how to use Web 2.0 as a territory of virtual interactive experiences	This dimension of literacy enables the subject to acquire the skills to interact within three-dimensional virtual environments of immersive, augmented or simulated reality. It requires interaction competencies, not only with the machine but also with other people in real time or offline to make intelligent decisions.

ve work, respect and empathy within the social network of choice.

- Axiological competence: referring to the awareness that ICT are not aseptic or neutral from the social viewpoint but exert a significant influence on the cultural and political environment in our society; the acquisition of ethical and democratic values engendered by the correct use of information and technology should help to avoid the diffusion of socially negative communication.

- Emotional competence: this deals with the affections, feelings and emotional sentiment aroused by the experience of acting in digital environments. These can occur during actions that take place in virtual settings, such as videogames, or during interpersonal communication in social networks. Literacy in this dimension is related to learning how to control negative emotions, with the development of empathy and the construction of a digital identity characterized by an affective-personal balance in the use of ICT.

4. Conclusion

The aim of making citizens literate is to help the subject to build a digital identity as an independent, cultured citizen with a democratic outlook on the Net. Literacy in general, and digital literacy in particular, must be treated as a sociocultural problem linked to civic education, and as one of the most important challenges for educational policy makers attempting to create equal opportunities for all in the access to culture. Education, be it in formal settings such as schools or in informal settings like libraries, youth clubs, cultural centres or associations, must not only provide equal access to technology but also instruct (make literate) citizens so that they can become cultured, responsible and critical subjects; knowledge is a necessary condition for the conscious exercise of individual freedom and democracy. Equal access and empowering critical knowledge are two facets of literacy related to the use of digital technologies. Literacy must not be taken just as a problem of formal education; it must also be applied to informal education.

The literacy of digital or liquid culture in Web 2.0 is more complex than just learning how to use social software instruments (blogs, wikis, networks and other cloud computing resources). Literacy must be a process of development of an identity as a subject operating within the digital territory, characterized by the appropriation of intellectual, social and ethical competences that enable him to interact with information and transform it in a critical and emancipating form. The goal of literacy is to develop each subject's ability to act

and participate in an independent, cultured and critical way in cyberspace. This is an essential universal right of all citizens of the information society. Without literacy, the development of social harmony in 21st century society will be impossible. Without a population with culture, that is, a citizenry without a solid cultural base, there will be no liquid society, no democratic society and no intelligent society.

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