

# Information literacy in Web 2.0 environments: emerging dimensions of research

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## Abstract

Although the conceptual core of information literacy (IL), with its emphasis on acquiring abilities that enable one to ethically seek, use and create information, has remained quite stable since the term was first introduced, recent transformations in experiences of information and information use are subverting the current discourse of IL. Information literacy, in its central features, has always been influenced and determined by information environments. Therefore, it comes as no surprise that in parallel with the advent of Web 2.0, which had transformed information environments into complex and unstructured places, central conceptions of IL are being re-examined and reshaped respectively. IL today, more than ever, should deal less with finding information and focus on evaluating and using or communicating information. In the paper, the author will re-examine the IL concept with regard to developments triggered by the Web 2.0 environment, share her thoughts on the concept "Information Literacy 2.0" and define research challenges and directions initiated by shifts in the IL domain.

**KEYWORDS:** information literacy, web 2.0, social media, research themes.

## Introduction and problem statement

Information literacy (IL) is an extensively discussed, researched and a commonly accepted concept, especially in the LIS field. Hardly any information professional or librarian would dispute its importance. Nevertheless, before attaining a definitional consensus and wide acceptance, IL went through a long-lasting process of growth in theoretical and applied understanding characterized by numerous terminological and conceptual contradictions during the 1990s (Shapiro and Hughes 1996; Snavely and Cooper 1997; Bawden 2001). After years of proposals of definitions and re-examinations of the concept, the 2000s lead to the consensus that IL is characterized more by convergence than by divergence (Owusu-Ansah 2003). However, quite recently attempts to re-examine and revisit the concept emerged and ended with propositions to abandon it or replace it

with new and more attractive kinds of 21<sup>st</sup> century literacies like transliteracy, metaliteracy, participatory literacy etc. (Mackey and Jacobson 2011): It comes as no surprise that such attempts intensified with the advent of the Web 2.0 and social media. The actual impact of Web 2.0 developments on IL, its definitions, research profile and practical consequences will be analyzed in the remainder of the paper.

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## IL and its evolution

In order to make judgements about the (in)sufficiency of IL as a concept that is still valid in the light of revolutionary social and participative Web 2.0 technologies a closer look at the development of the concept and its definitional core is needed.

As stated before, IL went through a long process of defining the concept and its boundaries. Moreover, as expected with multidimensional and context-bound concepts as IL, different definitions have been proposed and different elements the concept consists of have been highlighted. Despite the variety in approaching and defining IL, a principal analysis reveals a conceptual core characterizing all IL definitions regardless of the domain it emerged from or it applies to. This core encapsulates abilities to access, evaluate and use information. Essentially, IL provides individuals with a necessary framework for gathering, interpreting, evaluating, and using information. This basic nucleus is clearly defined and documented in several widely accepted definitions, publications and statements. For instance, the highly cited ALA definition determines information literate persons as those who "...know how to learn because they know how knowledge is organized, how to find information and how to use information in such a way that others can learn from them" (ALA 1989). ACRL (2000) defines IL as "the set of skills needed to find, retrieve, analyze, and use information" and accompanies this definition with a set of standards that outline the IL skills set. *CILIP (2004)* has defined IL as "knowing when and why you need information, where to find it, and how to evaluate, use and communicate or share it in an ethical manner." The generic core model for higher education adapted by *SCONUL (2011)* defines the skills and competencies, abilities, attitudes and behaviours that make an information literate person by using the verbs identify scope, plan, gather, evaluate, manage and present. Although different verbs come into play when defining IL, the referenced definitions reveal a conceptual core, stable theoretical framework and consensus in views on IL.

After the term was coined by P. Zurkowski (1974), it has always been conceived, applied or researched with regard to concepts within the current information environment. In other words, IL is always a reflection of characteristics and features prevailing in the information environment within which IL is conceived, researched or put into action. For instance, when IL started to evolve as a concept the information environment was predominantly print-based. This condition

determined IL practices, programmes and research topics. On the other hand, when information started to appear online, practice and research underwent transformations and changed in focus. Several authors have commented on the evolution of IL in the context of changes in information environments (Špiranec and Banek Zorica 2010; Markless 2009; Farkas 2012; Stoecklin 2012). M. Farkas (2011) has recognized three phases in the evolution of the concept: 1) library-focused user education, 2) internet-focused IL education, and 3) IL in the Web 2.0 era. The first era was the result of the predominantly print-based environment. The ultimate aim of IL in this phase was to educate the users for finding information in print resources. Therefore, educational practices concentrated on tools available in the library to augment the processes of locating, accessing or finding information (i.e. how to use the library catalogue, how to use bibliographies etc.). The advent of the web and the internet has shifted the focus of IL in terms of practice and research and can therefore be considered as the second phase in the evolution of the concept. M. Farkas describes this phase as skills-oriented (Farkas 2011), recognizing the focus on procedural skills that can be applied in closed and highly structured systems such as academic databases (distinction between basic and advanced search, what options to use in a particular case, how to use the thesaurus etc.). With the emergence of the Web 2.0, there is again a shift in the way information appears online and it is characterized by less predictability, more complex information structures, socially produced information and the need for a stronger focus on evaluation that is more nuanced and sophisticated (Farkas 2011).

In other words, contemporary information environments are characterized by the third, Web 2.0 and social media initiated phase. Therefore, it makes sense to shift the focus of IL again, this time towards evaluation that is much more complex and layered than it was before, as well as towards socially- and community oriented dimensions of IL. IL research and practice needs to recognize that information and knowledge are socially produced and distributed, and that they can therefore be effectively accessed primarily through social relationships, as A. Lloyd (2006) has observed, although not specifically relating to technological developments but to IL in workplace settings. The preceding discussion and presented arguments show that IL research and practice, in order to be relevant and meaningful, should reflect the features of information environments. In order to determine theoretical and practical features of IL in Web 2.0 and social media environments, it is necessary to gain insight into conceptions that characterize these environments, which will be presented in the next section.

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## Contours of new information and media environments

In the last decade a new version of the Web has emerged that has transformed many assumptions in the LIS field by blurring common perceptions about the very nature of information, knowledge, communication or interaction. C. Dede (2008, 80-81) has presented an analysis concerning not the technological but

the epistemological shifts in Web 2.0 environments and contrasts the „classical“ and Web 2.0 views of knowledge, expertise, and learning. “Conceptually, Web 1.0’s design, processes, and outcomes embodied a ‘classical’ perspective of ‘authenticated’ knowledge compiled by the ‘experts with substantial credentials in academic fields and disciplines’”, whereas “the Web 2.0 definition of ‘knowledge’ is collective agreement about a description that may combine facts with other dimensions of human experience, such as opinions, values, and spiritual beliefs” (Dede 2008, 80). Such a tremendous shift is made possible by highly user-centred approaches and participatory practice. User experience of information is determined by functionalities of social networks and sites like Facebook, Twitter or Delicious and services like weblogs or wikis. Those have transformed information experiences and user roles by making them information producers, creators and co-creators. A major change refers to the fact that users within this new environment influence the composition and design of systems and services by creating, adding, sharing and organizing their own content. New information systems based on Web 2.0 application and services are shaped by user input and systems’ responses are influenced by the search activities of former users (Špiranec and Banek Zorica 2010, 142). OCLC has released a report identifying major trends in the content space that correspond to the described Web 2.0 transformations. This report also stresses the non-technological aspects of new information environments: “the major trends - and challenges - are social and are profoundly changing how content is created, collected, used, shared and preserved”. In addition, “users are shifting their attention away from packaged content to social information about location, presence and community” (OCLC 2004). This statement emphasizes the shift from content towards relationships, human networks and social dimensions, which constitute a new research avenue in IL research as well.

### **Experts’ viewpoints of problematical aspects brought about the Web 2.0**

Due to profound changes described in the previous section, information environments can be described as transient, collaborative, free-flowing and decentralized and obviously need to be treated differently than before, both in IL research and practice. In other words, IL within print-based environments has different functions, manifestations and addresses different issues than in e.g. digital or collectively constructed environments. Several authors have commented on rather problematical aspects that are specific to new Web 2.0 environments. D. Bawden and L. Robinson perceive Web 2.0 environments as the cause of current information pathologies: „The variety and diversity of novel forms of information and communication resources within Web 2.0, and their sheer number, clearly contribute to the overload and other issues...” (Bawden and Robinson 2009, 187). According to S. Markless, “content co-creation is conducted in an environment that disregards authority, hierarchy and order, giving voice to the individual and to ever changing groups or communities” (Markless 2009, 32).

A major theme occurring in discussions of experts on issues that have emerged with Web 2.0 technologies is disintermediation. Eysenbach describes disintermediation as a process that empowers and enables consumers to cut out the middleman or intermediary (librarians, health professionals, travel agents) and access information or services directly (Eysenbach 2007, 162). This allows consumers to bypass the expert intermediary and gain direct access to unfiltered information. In this situation, consumers and users have to assume new responsibilities for assessing the credibility of the information. Therefore, disintermediation is a social process enabled through digital, predominantly Web 2.0 technologies that put forward issues of credibility, quality and evaluation of information. T. Brabazon contributes to interpretations of the phenomenon of disintermediation and consequences for IL using the notions *Google effect* and *culture of equivalence* (Brabazon 2006, 157). She recognizes that through the proliferation of blogs and Wikipedia a large quantity of low quality material has emerged and that Google, as the main access point to information, is based on the assumption that the popularity of 'hits' determines the relevance of the results. Therefore, the problem is the "Google effect" that has flattened expertise and saturated inexperienced students with low-grade information. T. Brabazon pledges for re-intermediation that can be activated through media and information literacy provision as a scaffold to frame, shape and structure the engagement with ideas and information (Brabazon 2011, 215).

### **Information literacy 2.0**

As seen from above referenced comments by several authors, new information environments have generated new issues. IL should not function in a vacuum and be isolated from transitions emerging in information environments, but should deal, in practice and research, with exactly those issues. Primarily, what is obviously needed in new environments generated by the Web 2.0, are comprehensive understandings of information landscapes that put users in the position to critically evaluate, share, organize or communicate information and content. Although this was generally the rationale of IL from its beginnings, some elements in the IL continuum have gained importance and became far more complex, like evaluating and using / communicating / producing information. Prevailing IL practices however concentrate too much on finding information instead of prioritizing information evaluation or production. Criticism over such traditional approaches to IL is expressed by a range of authors who have used the expression "Information Literacy 2.0" in order to give a framework and label to the complex relationship between IL and developments of participative Web 2.0 environments (see Hapke 2007; Tuominen 2007; Špiranec and Banek Zorica 2010; Farkas 2011).

According to T. Hapke, the emphasis in existing IL concepts lies in searching for information, which has to be questioned because in contemporary information environments IL refers not only to efficient retrieval and navigation strategies

but to critical reflection about encountered information. Therefore, IL 2.0 is more about learning about information than learning with information (Hapke 2007). Špiranec and Banek Zorica have used the term “IL 2.0” to criticise existing approaches to IL because these are still reflecting a strong dependence on a print-based culture, which is incongruent with the transient and hybrid nature of Web 2.0 environments (Špiranec and Banek Zorica 2010, 151). Print-based environments are much more stable, structured and linear, whereas in digitized and Web 2.0 environments information is decoupled from its material carrier, but equally from authority and sometimes trust. In respect to this, issues like credibility and authority, intellectual property, coping with information overload, problems in privacy, understanding publishing mechanisms and gaining deeper understandings of contemporary information environments should become part of IL activities. Tuominen, who has also used the phrase “Information literacy 2.0”, describes processes initiated by Web 2.0 environments as an erosion of information contexts:

“we will receive more and more documents and (commercial) messages that are detached from all contexts... In essence, IL is all about recreating or reconstructing the lost sense, the lost context” (Tuominen 2007, 7).

Because of the fact that information contexts are in many cases lost, evaluation is not only more necessary but also more complex and harder to conduct. When writing about IL 2.0. Farkas primarily refers to the problem of evaluation:

“With the growth of Web 2.0 technologies, we need to start shifting towards providing instruction that will enable our patrons to be successful information seekers in the Web 2.0 environment, where the process of evaluation is quite a bit more nuanced” (Farkas 2011).

The cited different perceptions about Web 2.0 landscapes and specifically about IL in Web 2.0 environments highlight possible new research themes relevant for scholars in the IL field. Research endeavours should deal with problems of information creation, new information genres and subsequent information overload, authority and credibility issues as a consequence of the erosion of information contexts, the need for evaluation, social dimensions of IL, subjective and personal information organization etc. Some of these issues will be explored in the next section as part of the concept *Information literacy 2.0*.

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## IL in web 2.0 environments: identifying new research themes

IL has appeared as a result of a growing heterogeneity and complexity of information, information resources and information structures and co-evolves with information environments. Its main aim is to prepare and support users to cope with intricacies of information environments they live in. As shown in the previous section, the conceptual core of IL is centred around finding, evaluating and using/communicating information, all of which stand up to challenges of current information and media-saturated environments. However,

IL within print-based environments has different functions, manifestations and addresses different issues than in e.g. digital or collectively constructed information environments. The question remains however to what extent existing IL research themes and directions reflect the need of contemporary users who confront issues different from those determining print environments or online environments based purely on Web 1.0 technologies.

Comprehensive mappings of the IL research territory have been conducted before the proliferation of Web 2.0 technologies and services. Bruce has identified main research themes and topics appearing in IL studies and put together a representative list of IL research (Bruce 2000). This listing reveals that primary interest points in IL research before 2000 have been information users and their skills and/or attributes, investigations of IL in different settings (educational/workplace), experiences of information seeking and use, experiences of using particular sources (e.g. thesauri, library catalogues), IL programmes, curricula etc.

Bruce's work was essential and may be perceived as a seminal contribution that provides a comprehensive insight into IL research, but only for the period before the advent of the Web 2.0 that was characterized by relative stable, linear and predictable information environments. However, information needs and challenges of users shifted together with transformed information landscapes introduced by Web 2.0 technologies. Several empirical studies stress the problem of appropriateness of existing IL practices and research in the light of Web 2.0 transformations while other draw a more comprehensive picture of IL in new Web 2.0 environments (Sundin 2008). Results of empirical studies suggest that a classical approach to IL concentrating on traditional library topics (search engines and tools, seeking information) still prevail without meeting the challenges users encounter in a web 2.0 world (see RIN 2008). Markless presents similar observations about how IL is practiced and conceived in UK libraries and education institutions. She criticises limited views of IL, which too often appears to be about libraries and resources, searching for and accessing information, finding the right webpage or information, technical procedures and particular use of specific tools etc (Markless 2009, 29-30).

A more recent research conducted by Sundin (2008) shows different approaches to information literacy mediated through web-based tutorials. According to the author, the study of web-based tutorials allows the drawing of a picture of diverse information literacy facets. Based on his research results, Sundin identified four approaches to IL: the source approach, behavioural approach, process approach and the communication approach. The *source* approach to IL focuses on information sources and bibliographical tools. This approach corresponds to what has often been described as system orientation that takes the information system and not the user as its point of departure (Sundin 2008). Epistemologically, the source approach is incongruent with the Web 2.0 since it is characterized by brief descriptions of information sources while the librarian is the knowledge expert, the person who owns the power to choose

the “right” information. The *behavioural* approach also focuses on bibliographical tools and information sources; its intention is to provide the user with a kind of model for how information seeking should be carried out and a guideline with the aid of which the user can tackle future information seeking. Users are usually provided with step-by-step guides that take them through sequences of computerised information searching, with the intention to enable them to repeat these trained sequences later in other situations (Sundin 2008). Such approaches are questionable within Web 2.0 environments, which are much less linear or predictable than print-based environments. The third approach to IL Sundin has termed the process approach. Shifts from information as such to the user and the different aspects of information seeking are presented in chronological order. The process approach is determined by a sequence of steps: it typically starts out by introducing problem formulation and information needs, which is usually followed by a presentation of the different elements of search techniques and source evaluations, and occasionally even includes the writing-up process. This approach corresponds to user-oriented research and is based on the constructivist view of information seeking (Sundin 2008), but still relatively linear in nature and therefore inconsistent with information processes within Web 2.0. Finally, the *communication* approach emphasizes the social and communicative aspects of information processes, which are context-sensitive. The communication approach stresses the relation between cognitive authority and source evaluation as well as the significance of social navigation. The focus of this approach largely consists of an awareness of the importance of understanding the socio-cultural conditions for the production, mediation and consumption of information (Sundin 2008). Obviously, with the orientation towards communication approaches IL conforms to the very nature of Web 2.0 environments and characteristics of social media. However, as Sundin’s study has showed, compared to the other three approaches, the communication approach is least visible in IL practice. The results of this study also outline the developmental stages of IL and suggest the nature of research questions stated in each stage. The beginnings of IL are closely related to user education with an orientation towards (library) sources. For instance, appropriate research questions in this early, source-oriented phase refer to whether user are knowledgeable about particular library sources and whether they use them effectively. The question remains whether such research is appropriate and relevant in information environments that are much more complex and intricate compared to linear and print-based environments. In order to deal with issues that have emerged within Web 2.0 environments IL research should adapt to the communication phase that brings forward new research questions pertaining to credibility or social dimensions of information. Main themes relevant for the communication phase are outlined below.

### **Issues of credibility and trust**

Trust, authority and credibility are not brand new research themes and have preoccupied scholars long before the emergence of internet or online



information. However, due to the phenomenon of disintermediation made possible by current technological developments and new authority models, the day-to-day online experience of every user is challenged by decision-making regarding the trustworthiness or credibility of information. Questions of trust, credibility and authority are particularly alarming in specific domains of human endeavour, e.g. in the domain of health literacy/medical information, legal and business information or scholarly research. For example, scientific data and research are traditionally captured and locked within traditional valued sites of scholarly communication, like journals or academic databases, which make activities like locating or evaluating scientific information convenient, transparent and reliable. As opposed to centrally managed and structured information environments, the research process today includes sites of information not stewarded by traditional information gatekeepers and non-traditional scholarly information sources that lack the imprimatur of publishers, but still may be of scientific value. C. Borgmann has also commented on this issue: "[Quality] indicators included publication channels, selection by libraries and citation rates. With fewer external quality clues available, individuals must make more sophisticated judgments about whether to trust a document or a source." (Borgman 2007, 85). Every contemporary user should be aware of issues surrounding the trustworthiness of data and express doubt over the provenance or accuracy of posted information. However, this does not mean that credibility and credibility markers have completely disappeared. Still, some have moved from the source itself to community networks and social spaces. Recent empirical studies suggest that users put more emphasis on social validation than traditional expert sources when assessing online information (Metzger, Flanagin and Medders 2010). Yet, as Jessen and Jørgensen have put it, our current theories fail to explain this dynamic, leaving us with an insufficient framework to analyze and explain the workings of Web sites such as Twitter and Wikipedia (Jessen and Jørgensen 2012). Metzger, Flanagin and Medders have identified a tremendous change in credibility processes and a "radical externalization of the processes involved in trust assessment", where externalization means a greater reliance by individuals on more social means of online information processing and evaluation. Therefore, the authors claim, a transformation in the authority model is going on, from a single authority to a model of multiple distributed authorities based on networks of peers (Metzger, Flanagin and Medders 2010, 414-415).

Research focus in IL: credibility, authority and trust are potential new dimensions of research in the IL field that have emerged within Web 2.0 environments. Although these research issues are already part of the wider area of user studies, stronger connections to IL research is needed that could result in IL models and recommendations. Research questions that might be stated refer to how individuals use social- and collectively constructed information to arrive at credibility decisions. Specifically, the development of trust mechanisms in new socially-oriented environments should be explored, such as whom users do

trust and how trust is developed; e.g. is it institutionally-focused (do users trust institutions and organizations), community-focused (communities of learning or practice), or is it user-focused (following other users that are considered to be experts or authorities).

### **Evaluation of information**

Evaluation is closely related to authority and trust issues. Evaluation was, from the very beginning, a central theme and crucial element of the IL concept. It belongs to the *definitional core* since all IL definitions, standards and frameworks acknowledge evaluation as a basic building block of IL. In order to be part of IL theory and practice, evaluation is built upon diverse criteria devised for print and online information. IL practice (e.g. IL standards) and research (e.g. research questions) are evolving according to these criteria. For example, in many IL studies users are asked whether they use or are able to distinguish academic and popular sources, do they regularly check references, what sites of information they trust (.com or .edu) etc.

The problem of evaluating information has caught the attention of many scholars, in particular with the exponential growth of online information when it became evident that standards of quality control are less rigorous than in traditional information sources. Nevertheless, many of the criteria developed for print-based environments were used in online environments as well, because models of authority or credibility of information sustained the transition to web environments. The Web 2.0 undermined those existing models, making many of the criteria outdated or urging for their modification, specifically criteria regarding new information genres like wikis, blogs, social bookmarking etc (Špiranec and Banek Zorica 2012, 9-10).

OCLC also addressed this problem by identifying a rapid “unbundling” of content from traditional containers such as books, journals and CDs (OCLC 2004). In this context, users are overwhelmed by quality choices that they need to make without contextual or peripheral cues such information container usually offered. Obviously, new definition of metrics is needed to establish credibility, significance, value and validity of information applicable in Web 2.0 environments. The conceptual turn in evaluation can be summarized as the need to evaluate information, not the container. In addition to this turn, the process of evaluation has gained social dimensions; source and contextual quality marks are supplemented and sometimes even supplanted by social and popularity markers like tagging, click and/or download rates, user comments, recommendations etc. The mechanisms of those markers still have to be scrutinized.

Research focus in IL: typical studies regarding evaluating information in the IL domain pertain to the question how individuals assess information they find on institutionally created sites of information and how they apply evaluation

criteria developed for print and online environments. These criteria however lack references to social collaborative processes that appear in evaluating information online. Therefore, besides determining users information evaluation habits regarding new information genres and quality clues they consider as relevant, research insights about new evaluation metrics are needed, specifically about bottom-up assessments of information quality. Contemporary and future researchers in IL focused on evaluation should relate to following research questions: what evaluation criteria are applicable in information environments and specific genres created in Web 2.0 environments, how participative, reader- and user-generated approaches affect the evaluation of information, what social and group means of evaluation are prevalent within new information environments etc.

### **Managing and communicating information**

The necessity of stressing communicative aspects of IL was recently put forward by I. Huvila, who claims that besides reading the notion of literacy embraces the idea of writing, although the concept of IL has often bypassed this connotation (Huvila 2011, 239). In close connection to communicating information is the activity of organizing information. Both processes, communicating and organizing information, are part of IL conceptualizations although they are not receiving enough attention in IL curricula or research. Along the fact, that organizing and communicating information receive modest attention in IL research and practice, both went through tremendous change in Web 2.0 environments. Beside incredible possibilities in creating user-generated content and potentials in contributing to digital conversations, the Web 2.0 has turned the prospects of organizing information upside down as well. It enables, through its architecture, groups and individuals to self-organize rather than have structure or organization imposed (Schiltz, Truyen and Coppens 2007, 98). Organizing and managing information have always been part of IL because it enables efficient filtering and use of information. IL research and practice seem to be unaffected by new possibilities offered by Web 2.0 and social media; when IL education covers aspects of information organization, it is predominantly system-oriented (the explanation of the principles of organization of information in predefined information systems, e.g. libraries, databases, directories etc.). Such a focus needs to be widened in order to cover user-centered practices of organizing information (assigning ad hoc user-created objective or subjective tags, creation of link collections, collaborative managing of web links and bibliographic data etc.) (Špiranec and Banek Zorica 2010, 147-148).

Research focus in IL: research questions pertaining to communicating and organizing information refer to defining elements and learning outcomes in both information creation and organisation. Specifically, researchers need to gain insights and understanding of the process of creating information and user motivation that leads to creation and co-creation of content. In addition,

more knowledge is needed on tagging and how organizing information for oneself and others and collective endeavours in organizing information lead to information selection, discovering and use that are part of IL conceptualizations.

### **Building reputation and preserving privacy online**

Contemporary information landscapes are characterized by increased complexity and new and alternative forms of information genres like wikis, blogs, social bookmarking sites etc. These genres serve as tools for self-expression and personal identity construction. Rather than simply being the target of mediated messages, users can see themselves as protagonists of mediated narratives and can integrate themselves into a complex media ecosystem (Stefanone, Lackaff and Rosen 2008, 107). Furthermore, as stated before, parallel to self-expression and personal identity construction, the Web 2.0 allows that information is discovered, accessed, evaluated, shared and communicated online in a highly collaborative fashion. These new types of online practices present both opportunities and risks. Web 2.0 features enable potentially valuable formative experiences and social practices in the learning ecology, but they also open the door to potentially unproductive interactions, harmful public scrutiny, and threats to privacy that undermine learning (Greenhow, Robelia and Hughes 2009, 251). On the opportunity side, users could benefit from online practices by building their own internet-reputation. Commercial domains (e.g. Amazon ratings) have already shown how such a reputation generates attention and influence. The creation of online identity of a professor was illustrated by Greenhow, Rubelia and Huges as follows: he/she might become known for his/her bookmark collection and interpretations of texts and resources on a particular subject(s). The reputation develops through ever-expanding networks within the system that allow Delicious users to see and track other users' public bookmark collections (Greenhow, Robelia and Hughes 2009, 253). These forms of social scholarship and/or education are of particular interest for tailored IL session for special target groups, e.g. professors, researchers or postgraduate students (Špiranec and Banek Zorica 2012, 12). IL should draw the attention of users to evolving and existing reputation mechanisms in their own quest for information, but should also make them think about their own reputation and the "digital footprints" they create while performing different online activities. How to maintain a good reputation online or preserve privacy should be a theme in IL theoretical and practical considerations.

Research focus in IL: the question of how to maintain a good reputation and prestige online is important for learners, researchers and users in general and should therefore be a central theme in IL. An important research direction pertains to possible risks and benefits of identity development in online contexts and how these should be integrated into IL curricula.

## Social dimensions of IL

A new research avenue in IL, urged by proliferation of social media environments, might be its social perception. Although all previously discussed research issues appeared largely because of the social character of new tools and technologies and are therefore social in their nature, the hereto-lacking social dimensions of theoretical assumptions and frameworks should be a research area of its own in the IL domain. Existing IL models, frameworks and theories have generally neglected social/collective dimensions of IL by dominantly considering and dealing with documents. The centre of information activities and processes within existing IL approaches are documents, document-like objects or collections that have to be searched, accessed, evaluated, used etc. The user is perceived as an individual working with documents or information sources which at least on a theoretical level creates straightforward relationships in the form 1-to-1 (one user – one document) or 1-to-many (one user – many documents or information sources). However, contemporary information environments function quite differently. Users are discovering, evaluating, using and producing information within networks and communities. Other humans, peers and communities – in collaborative and participative web 2.0 environments more than ever – function as information sources, filters, digesters and co-creators of information. Therefore, instead of being conceptualized as an individual competence as visible in the standards and frameworks, IL practice and research should be conceived as a social, participative and communicative phenomenon.

Research focus in IL: research in IL should focus on the role of communities, social construction and *the collective mind*; specifically, research topics should aim at group-based and socially discovered, constructed, evaluated or used information. Research may consider questions as how social dimensions can be integrated and reflected in IL models, programs or standards and how learning outcomes regarding community and social dimensions of IL may be defined and pursued.

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## Conclusion

Theoretical background assumptions emerging from IL research have crucial effects on how information literacy training is performed. These assumptions depend on and change in parallel with information environments. Due to the advent of Web 2.0 and social networks information environments went through a paramount change characterized by the outbreak of different phenomena, issues and problems. Within this context, principal conceptions of IL are being re-examined and reshaped respectively. Neither the concept itself nor its standard definitions are brought into question by current transformations in information environments. However, main themes and issues that are prioritized in IL research or practice need to be reconsidered. A closer look at IL definitions reveals a conceptual core that is concentrated on finding, evaluating and using/

communicating information, all of which stand up to challenges of current information and media-saturated environments. Therefore, the main question is not whether IL as a concept should be abandoned or the definitional core should be reconceptualised, but whether IL practice and research should embrace more holistic approaches that incorporate new realities of the Web environment. This implies perception of IL as a whole and not just examining certain elements or traditional library-focused themes referring to locating information or finding particular library resources. Due to tremendous changes triggered by Web 2.0, becoming information literate requires understanding of what constitutes information and how and by whom the information is created, disseminated or used. Therefore, developing conceptual insights into information landscapes and abilities of interpreting them becomes the core rationale of IL practice while research should explore how these processes are evolving in current information environments.

IL today, more than ever, should deal less with finding information and focus on evaluating, using and communicating information. Primarily, a holistic approach to IL in social media environments implies a shift towards social dimensions and practices that influence and shape the processes of discovering, evaluating using and producing/communicating information. Without the recognition of social and collaborative dimensions in IL, with all potentials and challenges these dimensions elicit, IL runs the risk of losing relevancy and meaning in social media environments. Within this article, the author advocates for such a holistic approach to IL and identifies several research themes that are representative of such approach:

- trust/authority/credibility
- evaluation
- managing/communicating information
- online reputation and privacy
- social dimensions in IL

Of course, the list of research themes is not exhaustive although it is representative for the wider domain of user education studies. For researchers in the field of IL it is necessary to align their research with the listed themes that take into account transformations in information environments caused by the Web 2.0 and social networks. By prioritizing themes that reflect a linear, print-based culture, IL research runs the risk of becoming decontextualized and detached from developments in information environments and therefore meaningless and irrelevant.

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## Sažetak

### **Informacijska pismenost u okruženju Weba 2.0: novi pravci i težišta istraživanja**

Iako se informacijska pismenost u svojoj pojmovnoj okosnici, koju čine etičko pronalaženje, korištenje i stvaranje informacija, nije značajno mijenjala od uvođenja same koncepcije, korjenite promjene u korištenju informacija i modalitetima ulaženja u interakciju s informacijama dovele su do preispitivanja donedavno čvrstih i stabilnih pojmovnih okvira ovoga koncepta.

Informacijska je pismenost oduvijek bila određena i definirana informacijskim okruženjem. Stoga ne iznenađuje da su se polazišta informacijske pismenosti počela mijenjati pojavom Weba 2.0, koji je pridonio složenosti i nestrukturiranosti informacijskih okruženja. Sukus promjena čini odmak od pretraživanja i pronalaženja informacija te naglašavanje vrednovanja i korištenja/priopćavanja informacija. U radu se informacijska pismenost razmatra u odnosu na promjene potaknute tehnologijama Weba 2.0, prikazuje se koncept „informacijska pismenost 2.0“ i komentiraju novi istraživački pravci, težišta i teme iznjedrene promjenama u informacijskom okruženju.

**KLJUČNE RIJEČI:** informacijska pismenost, web 2.0, društveni mediji, istraživačke teme.