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Article

Knowledge organization and information literacy in the digital world: a needed conversation

Organización del conocimiento y alfabetización informacional en el mundo digital: un diálogo necesario

Organização do conhecimento e literacia informacional no mundo digital: uma conversa necessária

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Abstract

The interdisciplinary dialogue between knowledge organization and information literacy is examined and presented as a much-needed conversation. The viewpoint of the knowledge organization community is adopted as the central perspective, though both disciplines are considered. First, a prospective diagnosis of both disciplines is offered regarding their status for interdisciplinary cooperation, e.g., their basis for a fruitful dialogue. In the second step, the previous discussion on information literacy in the field of knowledge organization is examined in detail. Finally, it is concluded that information literacy must incorporate knowledge organization literacy with a careful consideration of the level of knowledge and needs of users. Conversely, information literacy can be helpful in knowledge organizations, and, in particular, knowledge organizations should consider information literacy as a key engine of their future disciplinary development and social relevance. Furthermore, knowledge organization systems and tools are effectively used to improve the user experience in information literacy actions and products, mainly taxonomies and ontologies in websites, assessment tools, and gamification projects.

Keywords: KNOWLEDGE ORGANIZATION; INFORMATION LITERACY; KNOWLEDGE ORGANIZATION LITERACY; INTERDISCIPLINARY RELATIONS.

Resumen

Se examina el diálogo interdisciplinario entre la organización del conocimiento y la alfabetización informacional, y se defiende la necesidad teórica y práctica de esta conversación. Se adopta el punto de vista de la comunidad de la organización del conocimiento como perspectiva principal, aunque se tienen en cuenta ambas disciplinas. En primer lugar, se ofrece un diagnóstico prospectivo de ambas disciplinas en relación a sus bases comunes para un diálogo fructífero. En una segunda etapa, se examina en detalle la discusión que se ha realizado sobre la alfabetización informacional en el campo de la organización del conocimiento. Finalmente, se concluye que la alfabetización informacional debe incorporar necesariamente la alfabetización en organización del conocimiento, aunque con una consideración cuidadosa de las competencias y necesidades de los usuarios; y, viceversa, que la alfabetización informacional debe considerar la alfabetización informacional como un motor clave de su futuro desarrollo disciplinario y social. Además, los sistemas y herramientas de organización del conocimiento se están utilizando de manera efectiva para mejorar la experiencia del usuario en acciones y productos de alfabetización informacional específicos, principalmente mediante el uso de taxonomías y ontologías en sitios web, herramientas de evaluación y proyectos de gamificación.

Palabras clave: ORGANIZACIÓN DEL CONOCIMIENTO; ALFABETIZACIÓN INFORMACIONAL; ALFABETIZACIÓN EN ORGANIZACIÓN DEL CONOCIMIENTO; RELACIONES INTERDISCIPLINARES.

Resumo

O diálogo interdisciplinar entre organização do conhecimento e alfabetização informacional é examinado e apresentado como uma conversa muito necessária. O ponto de vista da comunidade da organização do conhecimento é adotado como perspectiva central, embora ambas as disciplinas sejam consideradas. Primeiramente, é oferecido um diagnóstico prospectivo de ambas as disciplinas quanto ao seu status para a cooperação interdisciplinar, por exemplo, suas bases para um diálogo frutífero. Na segunda etapa, a discussão anterior sobre alfabetização informacional no campo da organização do conhecimento é examinada em detalhes. Por fim, conclui-se que a alfabetização informacional deve incorporar a alfabetização em organização do conhecimento com uma consideração cuidadosa do nível de conhecimento e das necessidades dos usuários. Por outro lado, a alfabetização informacional pode ser útil em organizações do conhecimento e, em particular, as organizações do conhecimento devem considerar a alfabetização informacional como um motor-chave de seu futuro desenvolvimento disciplinar e relevância social. Além disso, sistemas e ferramentas de organização do conhecimento são efetivamente utilizados para aprimorar a experiência do usuário em ações e produtos de alfabetização informacional, principalmente taxonomias e ontologias em websites, ferramentas de avaliação e projetos de gamificação.

Palavras-chave: ORGANIZAÇÃO DO CONHECIMENTO; ALFABETIZAÇÃO INFORMACIONAL; ORGANIZAÇÃO DO CONHECIMENTO ALFABETIZAÇÃO; RELAÇÕES INTERDISCIPLINARES.

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Introduction

When exploring the interdisciplinary relations between knowledge organization and information literacy, the first fact that emerges from a prospective literature review is that they have not yet been discussed in depth. A simple title search for the keywords “knowledge organization” and “information literacy” in Web of Science, Scopus, or Google Scholar does not yield any results as of 2025 February 5. As both are very consolidated terms to label their fields of interest—although not uncontested, as it will be argued in the second section—their lack of co-occurrence in a standard title is very significant. It is, of course, possible to get down to the specifics and look at the general KOS (thesauri, classifications, headings, taxonomies, and ontologies—singular and plural—) or KO processes (cataloging, indexing, and classifying), but only a couple of hits were found for taxonomies and three for ontologies—the newest and most popular in the digital environment—. All five were convenient applications, not theoretical or methodological discussions relevant to an interdisciplinary debate, but as examples. Also, when checking a key reference tool such as the ISKO Encyclopedia of Knowledge Organization (Hjørland & Gnoli, 2017-), we found that information literacy is seldom present and mainly refers to topics other than knowledge organization. However, Hjørland (2018) relates both concepts quite significatively, as will be reviewed later.

A first question to ponder: why? As discussed later, there is no reason, in principle, why knowledge organization and information literacy cannot have a fruitful relationship. A working hypothesis is that the research and practice communities behind these disciplinary labels are far away in interests, disciplinary networks, and

commitments. A more specific proposition might be that knowledge organization researchers and professionals are more devoted to aspects of information systems design, whereas information literacy is more concerned with people.

Before going into detail, providing some simple definitions of both disciplines may help clarify further discussion. Information literacy could be defined as the education about the information cycle—or one of its specific steps—provided to persons not professionally focused on the information professions (which is the subject of professional information education). Knowledge organization is the discipline of improving the preservation of and access to knowledge by representing, relating, and arranging the concepts of interest (topics) in such a way that they can be accessible, navigable, and, through them, also the knowledge records (documents in a comprehensive sense) linked to them.

In any case, in this paper, we do not attempt to discuss definitions of knowledge organization (Hjørland, 2016) or information literacy (ACRL, 2015; Sample, 2020) in order to derive the need for interdisciplinary cooperation systematically, nor to examine the sounding standard philosophical foundations (Tomic, 2010), both of which would be exciting and sound approaches to explore the logical basis for interdisciplinary cooperation. Our aim is more modest, that is, to examine the current state of the discussion on their collaboration, mainly from the perspective of the knowledge organization community, without ignoring occasional references from the other side of the balance.

The thesis of this paper is that information literacy must incorporate knowledge organization literacy with careful consideration of the particular knowledge levels and needs of users and, *vice versa*, that information literacy can undoubtedly be helpful to knowledge organization and, more precisely, that knowledge organization should consider information literacy as a key driver of its future disciplinary development. This proposition has been explored in three steps: first, a prospective diagnosis of both disciplines has been intended regarding their status for interdisciplinary cooperation, e.g., their grounds for a fruitful dialogue; second, the discussion of information literacy in the field of knowledge organization has been reviewed examined; third, some practical applications of contemporary knowledge organization systems to information literacy product design are presented; and finally, some conclusions and future trends have been proposed.

A prospective diagnosis for interdisciplinary Collaboration: common ground and Emerging Challenges

Knowledge organization and information literacy share a similar structure to scientific disciplines: they have a concrete core of specific problems and specialized knowledge on the one hand and a powerful, broad, and somewhat centripetal network of interdisciplinary relations on the other. Such a structure results in common strengths and weaknesses at the same time.

Regarding strengths, both disciplines can attract the interest of researchers from many different scientific and professional communities. This is because of the profound cross-disciplinary nature of their objects of research and practice. As a result, new concepts, theories, methodologies, and practices are introduced to the recruits and their relationships, providing their disciplines with an extraordinary toolbox for improving the understanding and practice of both knowledge organization and information literacy. Both disciplines' application domains are also immense, encompassing almost all aspects of contemporary life, which is based on information and knowledge with the increasing help of intermediating technologies. The opportunities such a vast application domain offers are also significant: there is always much work to be done in many niches where projects and research can be developed.

However, transdisciplinarity also has its drawbacks. On the side of the weaknesses, there is the risk of losing focus, a certain inability to accumulate knowledge, a relative subjection to fashions and personalities, and the constant discussion of concepts and terms that should be clearly defined but have diverse denotations—not to say connotations—in the different disciplines of origin of those interested in their central problems. Also, the vastness of the possible practice and research topics can lead to disjointed efforts and dispersion and the impossibility of building on a well-established common shared formal knowledge. This is the reason for the success of standards backed by strong organizations that give structure to both disciplines: for example, ACRL standards for information literacy, thesauri and ontology standards, or the major bibliographic classification schemes. All of these

have fostered the emergence of strong communities of practice around them, supporting a robust accumulation of knowledge, but most of the efforts remain in their periphery.

An irritating but important question, and now unavoidable, is whether information literacy and knowledge organization are still important in an increasingly AI-driven world.

For their part, knowledge organization systems and processes have been under heavy automatization for many years now—increasing automatization has always been a key driver of the information profession—. However, generative IA systems have taken the advanced statistical approach to information classification and retrieval to a new level. Based on the vast availability of information in the digital space and the advances in neural-inspired technologies, large language models can be implemented that can pair collocations, questions, and answers in such an acceptable way that the magic of semantics seems to be solved finally. Of course, these systems produce errors and "hallucinations" and require more traditional IA work (e.g., expert systems) and human correction. However, the professionals correcting these systems are increasingly engineers, ontologists, and language processing specialists, not librarians or professionals from other memory institutions.

On the other hand, while searching has been the core of information literacy for many years (Hjørland, 2021, 2022, 2023), first Google and now IA-driven chatbots offer effortless searching to end users. The broad movement seems to be replacing professionals with AI systems and promoting unskilled users, whose only key competence will be to know how to express their needs in the most specific way possible, through questions or even, more efficiently, through examples (images, similar pieces of text, sounds or music, etc.).

This competition from technology has contributed to the new shift in Library and Information Science and its specialties towards the physical—proximity relations, actual spaces, and tangible objects and documents— in libraries, archives, and other specialized memory institutions (García-Marco, 2011; Nicholas, 2012, p. 31). From a broader perspective, the problem of technological adoptions and disintermediation is a classic of LIS throughout history and reminds us of the

motion of a pendulum: printing seemed to threaten old approaches, and, more recently, the highly specialized work of former online documentation was disintermediated in the World Wide Web era with more and mass-oriented friendly interfaces and now a re-intermediation by a small number of information technology companies (Google, etc.). However, in the end, a new—albeit provisional equilibrium—is always found after each cycle (García Marco, 2016).

However, these trends should not be taken as the complete picture. Although many impressive high-tech firms have successfully conquered general information for the masses, specialized information is also booming, and specialists are increasingly needed in these scientific and professional areas. The general law might be that—in those areas where the traceability of sources, authorities, and processes is key—searching, processing, and using information requires another level of knowledge and processing, and that, although these tasks can be partially automated, they require careful and educated control, whether by professionals (Audunson, 2018; Hvenegaard Rasmussen & Hjørland, 2022) or by highly information-literate users. Examples include heritage databases, genetic information databases, and literature reviews for the current state of the art.

This discussion brings to mind a very relevant analogy in the field of neuroscience: the distinction between the automatic, distributed, massive, and rapid processing of information related to previous situations in the prefrontal cortex versus the deliberate, controlled, centralized, limited, and slow work of the frontal cortex that is needed when a real and new problem arises, and which is at the heart of what it means to be human and intelligent. Let us call them Type A and Type B problems, respectively. Neural IA technologies impressively solve the first set of problems (Type A), but the second set of problems does not disappear but remains (Type B). For this, professionals and highly educated users are and will be increasingly in demand as all the facets of life become more information-driven and specialized. The context of reference to previous knowledge changes rapidly due to technological feedforward.

In this sense, knowledge organization will remain primarily a Type B problem and task because the world constantly changes, requiring active ontological work (e.g., Green, 1996), not only the analysis and recombination of previous knowledge expressed in information. Even when going into the details of products and specific

interventions, information literacy is also about adapting and responding to users immersed in a world of constant change. As the pace of change increases, acquiring and developing information competencies and other related skills—digital, media, visual, etc.—becomes proportionately more important for professionals (LIS education) and savvy users who need them (information literacy).

So, we must not give in to despair and inaction, but, on the contrary, there are strong reasons to persevere with confidence according to the long-established lessons of our fields. This, of course, and as always, using the best tools available, of which both branches of IA—knowledge representation and the advanced statistical neural approach—are key, and in which we need to become as expert as possible.

The discussion of information literacy in the field of knowledge organization

Despite the absence of specific proposals for addressing information literacy in the field of knowledge organization, there has been an interest in the topic since at least the nineties, which arises from the very definition of knowledge organization itself.

In her position paper "Knowledge Organization: Its Scope and Possibilities," Ingetraut Dahlberg (1993, p, 212, 214) defined knowledge organization and, without using the term explicitly, defended the central role of knowledge organization in the life of every literate citizen, with a special focus on educators and leaders, and thus the need for knowledge organization literacy:

> Knowledge Organization, so far the specific domain of librarians and information science people could become the necessary methodology for the following three main user groups, namely: (A) Everybody willing to adopt a more conscious way of life and his studies. Wherever possible the teaching of the knowledge of Knowledge Organization to students at the beginning of their university studies ought to be started soon, with a repeating course in the middle of their studies. With this knowledge, I am sure students will be much better equipped to organize their own studies and their further careers than hitherto (a paper by N.Meder, based on an unpublished Memorandum concerning such a university leaching outlines this idea (15). (B) In a very special way, Knowledge Organization should be taught to students of education, as it is rather essential for their professional activity: viz. in order to use their educational material in such a way as to optimally transfer it to their future students. Work in this direction has recently been started at a German university institute for didactics; for more on this see the article by E. Kiel (16); (C) Furthermore, the knowledge of Knowledge Organization must

> be mastered by all those who lend a helping hand to our political, industrial, and social leaders.

As can be seen from the citation, Dahlberg takes up the challenge posed by Kiel (1993) in a then-recent paper. Because of his background as an educator, Kiel was an early advocate of a user-centered approach in the knowledge organization community. In his own words: “Order and classification, however, are not ends in themselves. They are the basis of utilizing knowledge for problem solving.” (Kiel, 1993, p. 71). On the other hand, Dahlberg’s broad view of the goals of knowledge organization provides a fertile field for this new seed. In her view, knowledge organization cannot be just a discipline for highly specialized experts working behind the scenes, albeit for the benefit of users. It is a knowledge needed in all human activities and professional activities (see also García Marco & Esteban, 1993).

The importance of information literacy for knowledge organization has come and gone in ISKO debates without ever disappearing. However, it has evolved with the urgencies of each decade: social web, users as authors, and now artificial intelligence. The knowledge organization community is only now coming to terms with the last one: the impact of AI. So, most of the discussion so far has been related to the first two trends, which can be summarised in a main one: the growth of users from searchers and consumers of information to become authors and publishers supported by social media platforms and web services, while new tools and specialties in knowledge organization literacy were emerging to support this evolution, such as web taxonomies, effective folksonomies, and social tagging, etc.

In 2008, Ohly reopened the topic for public discussion, but with a new— by then inevitable—focus on digital information and social media. In proposing "Knowledge Organisation 2.0 - a communicative paradigm", he characterized it as “many persons, heterogeneous, new objects, multi-disciplinary, user-oriented [and] *knowledge organization literacy*” (Ohly, 2008). Also, at the same time, Gnoli (2008), while addressing the “ten long-term research questions in knowledge organization,” also drew the attention of the ISKO community to the growing importance of the no-cost knowledge organization activities performed by non-experts and how they can be integrated and combined with the professional efforts. In 2012, Ohly (2012) insisted on the topic when including “Who is the target for

Knowledge Organization literacy [efforts]?" among his "open questions that might be solved in future by ISKO and neighbor societies." At that time, some Brazil researchers were trying to land the discussion in practice and developed some field research on information literacy projects from a knowledge organization perspective (Varela & Barbosa, 2012).

With a strong interest in both user studies and information literacy, Huvila (2011) also wrote a paper defending the "creation and organization of information as central aspects of being information literate" and calling for the pursuit of information literacy "beyond seeking and use." He wisely pointed out that searching and accessing information had become easier than ever, and that now the problem was no longer finding information, but obtaining high quality information, which, in a context where everyone has become a writer, would require educating web participants in the creation and organization of information. The need to educate users in information creation has become even more relevant after the second version of the ACRL standard (2015), which addresses citizens as information users and creators.

A couple of years later, another leading ISKO scholar addressed the need for knowledge organization literacy in a very similar way to Dahlberg's proposal but with a focus on the—by then obvious to professionals and researchers—limited information retrieval skills of the vast majority of internet searchers. In the ISKO and Knowledge Organization's 25th Anniversary conference (Green, 2014), Soergel stated that "ISKO should get involved in formulating information literacy standards so these standards incorporate not just surface skills in searching for information but deeper understanding of principles of knowledge organization that will make people much better searchers." (Green, 2014, p. 331).

In this direction, Terra (2018) insisted some years later on the idea that, though most of the information literacy standards recognize the importance of managing information, they do not sufficiently specify the information organization skills, and, more specifically, she drew the attention to the limited skills of users in organizing their personal files, an area of interest recognized as personal information management. Remarkably, she titled her poster: "Information organization as a forgotten information literacy skill."

To sum up, relevant knowledge organization scholars have recognised that their field of study and practice is necessary for both the general population and the professionals and that should therefore be a subject of literacy. In the words of Hjørland (2018): "It seems strategically important to develop respected courses in information literacy, which is strongly related to and dependent on document retrieval and knowledge organization."

Although the general idea of a "knowledge organization information literacy" has been clarified along a discussion of two decades, a lot of work still needs to be done to specify the competences and learning outcomes, to adapt them to specific fields, to consider the best methodologies for the intended target users, and to integrate them into existing information literacy actions and programmes or, if necessary, to design new ones. It does not seem feasible to carry out this task only from the side of knowledge organization experts, since the training programmes and activities are usually managed by information literacy experts. For this to happen, practitioners and researchers in both fields need first to come together, discuss priorities and opportunities, and design pilot projects.

Knowledge organization to support information literacy

Though our analysis has been focused mainly on the knowledge organization perspective, it is important to provide also at least some examples on how knowledge organization can be ancillary to information literacy.

From a general point of view, knowledge organization scholars and practitioners can offer their terminological (Barite, 2025) and taxonomical skills to their colleges in information literacy, helping to connect a very internationalised field with many different perspectives, contexts and relations that often lead to misunderstandings, gaps, and partial and disorganised knowledge maps.

From a more practical stance, knowledge organization systems and tools can contribute to represent specialised knowledge in information literacy so many tasks properly can be automated and assisted. In this direction, two projects have been published that use ontologies or taxonomies to facilitate information literacy planning. For example, Lloyd (2010) developed a website ontology that frames

information literacy as an information practice; and Kozaki, Kanoh, Hishida & Hasegawa (2015) developed an information literacy ontology to guide the design of an information literacy plan. Other projects have been focused on the use of knowledge organization systems in information literacy instructional tools: for example, Leeder, Markey, and Yakel (2012) designed a faceted taxonomy for rating student bibliographies in an online information literacy game. More recently, Shiri (2024) has developed a taxonomy for the emerging and hot subfield of artificial intelligence literacy, providing a state-of-the-art of previous approaches.

Conclusion and next steps

Following Bates' (1999) clearly-cut questionnaire of the main IS problems —the physical, human, and design questions—, Saracevic (2009) identified Library and Information Science as having "two orientations: one that deals with information retrieval techniques and systems and the other that deals with information needs and uses, or more broadly with human information behavior." It seems clear that knowledge organization is mainly focused on the first one—although not blindly to human-related problems, as the strong research trend in ethical questions proves (Guimarães et al., 2008; Moreira, Marques Redigolo & Mendes da Silva, 2024)—, and information literacy on the second. Together, they can better represent the different dimensions of information science, combining their strengths to cover their respective weaknesses. In this paper we have tried to show how both fields can greatly benefit from each other, and we provide some examples of relevant experiences and research. Let us hope that this fruitful but still incipient interdisciplinary dialog will continue and bear new and promising fruits.

But dialogue alone will not be enough, because the actual work on information literacy is done through standards, organizational plans—mainly in academic institutions and networks—and actual projects and products. Both knowledge organization and information literacy are ultimately visible through outstanding products and services that can significantly improve a community of users. The rapid social and technological change does not help either. Focuses and priorities change rapidly, new coalitions of researchers emerge, new languages develop, and knowledge accumulation becomes a difficult and uncertain task. However, this is

also a common problem for the rest of the human and social sciences, which should not discourage scientists and practitioners from taking action, though a very humble stance about the durability of our contribution is advised. Both communities understand the importance of normalisation—standards—, institutionalization and networking, which provides them with another firm common ground for cooperation.

As a result of this enquiry on the collaboration between the two disciplines, we would like to emphasize two strategic goals for cooperation, one for each direction of the interdisciplinary dialog: information literacy should develop knowledge organization literacy in its information management dimension; and information literacy should be embraced by the knowledge organization community as a key driver of its future disciplinary development. Both are a necessity in a world where information seekers have also become information creators, or more precisely—not everyone is actually a creator—where the role of author has been democratised and has become a core feature of modern citizenship.

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Author's contribution note

The author is the only author of the paper, and has performed himself all the CRediT roles: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Data availability note

All the data necessary for this paper has been referred in the text, and therefore there was no need of creating an external datasource.