



Information Literacy as a Prerequisite for Effective Work with Information Sources

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Abstract:

Acquisition policy in the field of electronic information resources is often conducted in the light of research into the identified or predicted area of interest of the users of the institution. The acquisition itself, but the promotion of resources does not have to ensure their use. In order for users to use resources actively, it is essential that they have a degree of information literacy that allows them to effectively define their needs, search and analyze resources, and then use them. Therefore, the contribution will focus on different approaches and models of information education, aiming at better work (not only) with electronic information resources.

Drawing not only on theoretical models, but also on projects that are implemented directly in the online environment within the educational activities of KISK – Information Literacy Course and Creative Work with Information. Based on the data, it will also illustrate what topics students are interested in and what they want to miss.

Knowledge society

Information literacy is a theme that, on the one hand, resonates with the broad concept of the information society - it must be literate in order to exist. Peter Jarvis draws attention to the existence of a so-called knowledge society. It is such a society in which the most important skill

is the ability to find and use information. Jarvis makes the difference between an information, knowledge and learning society. At what stage are we now left to the consideration of kindly readers, but it must be said that, for example, a learning society assumes a knowledge-based society for its origin and existence. Therefore, we cannot talk about a society in which everyone learns, cannot without being a company based on information professionals.¹

In this context, it is also important to recall Robert B. Reich, who describes modern society in his book *The Work of Nations*², based on the class of professions he describes as symbolic analysts. They are workers who use, analyze and manipulate information in their work. The Digital Competence Framework 2.0, published by the European Commission on Information Literacy, is working in its first thematic pillar:

*Information and data literacy: To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organise digital data, information and content.*³

This is something we are commonly used to perceive information literacy, and although we will continue to follow the different models, it will be clear that they are not too far from this definition. The Digital Competence Framework is working with a competency model that it perceives as essential for a citizen to live and work effectively in today's digitized society.

All these contexts, which relate to digital literacy to the social phenomenon of the knowledge society, create a certain framework for the importance of developing information literacy for all citizens without exception. Individual learning outcomes vary according to the target group. Obviously, information literacy by professionals or scientists is a prerequisite for improving their research and publishing profile and should therefore be in the forefront of the interest of libraries in this sector, as well as broader policies leading to the improvement of the quality of the institution.

¹ THELENOVÁ, Kateřina. *Sociologie, andragogika a teorie učení Petera Jarvise*. Olomouc: Univerzita Palackého v Olomouci, 2014. ISBN 978-80-244-4309-6.

² REICH, Robert B. *The Work of Nations: Preparing Ourselves for 21st Century Capitalis*. Vintage, 2010.

³ VUORIKARI, Riina, et al. *DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: The Conceptual Reference Model*. Joint Research Centre (Seville site), 2016.

At the same time, however, it has to be said that information education is really focused mainly on undergraduate students and that education is basically almost always either interest (ie courses in libraries) or a certain form of competency minima that leads to the ability to write bachelor or diploma thesis, not to general academic or scientific skills. The problem is also the scientific profile of teachers who devote themselves to information education (primarily librarians) or only limited habilitation opportunities in this area. It is also impossible to underestimate another major problem, namely the congestion of the curriculum at all levels of education in which new literacy or areas are very problematic.

On the one hand, it is therefore a social imperative, where a drop in information poverty can have very unpleasant consequences for individuals and, for example, the low level of information literacy of its professional staff may also suffer from the quality of the whole institution (whatever qualities we put under the notion of quality) you can meet with something that can be used with a certain degree of exaggeration, as "polite indifference."

In our contribution, we would like to see in the first part individual models of information literacy and look for structures that could be used to work with electronic information sources, ie, essentially, a certain necessary framework of knowledge-based society, if we stick to the designation, used by Jarvis.

Information literacy models

At this point, let's focus on some selected concepts or models of information literacy without claiming the completeness or systematicity of our analysis.⁴

Perhaps the most famous model is **Big6**⁵, which is cyclical and is one of the basic models of information literacy. It is based on the concept of information behavior, in which it seeks to identify the individual phases that can then be developed.

⁴ Viz např. JOHNSTON, Bill; WEBBER, Sheila. Information literacy in higher education: a review and case study. *Studies in higher education*, 2003, 28.3: 335-352. MACKEY, Thomas P.; JACOBSON, Trudi E. Reframing information literacy as a metaliteracy. *College & research libraries*, 2011, 72.1: 62-78. or BAWDEN, David, et al. Origins and concepts of digital literacy. *Digital literacies: Concepts, policies and practices*, 2008, 30: 17-32.

⁵ EISENBERG, Michael B.; BERKOWITZ, Robert E. *Information Problem Solving: The Big Six Skills Approach to Library & Information Skills Instruction*. Ablex Publishing Corporation, 355

The first step is to define the information needs, the second step is to determine the search strategy and the subsequent information search process; the third step involves determining the location of the sources and their finding; the fourth step is their use, ie critical reading and writing of notes. In the fifth step, resources are organized and the presentation of information is the last, the sixth step is evaluation, ie the evaluation of whether the process and the selection of resources were correct and led to the solution of the problem.

Within this model, it is possible to say that the center of gravity of work with resources (or their search) lies in the second and third steps. That is, the ability to use appropriate procedures and tools to search for, or access to, information. At this point, it can be emphasized that steps four through six should be dealt with by the expert on the basis of his field erudition without much difficulty. As the most demanding in terms of education as well as practical use, it is the first point. Defining a problem at a glance may seem like a certain assumption by which a researcher enters the information search process, but often a low orientation in the topic, poorly used keywords, etc., can make it harder for the whole job. The task of the librarian should be the relevant search capability at this point, on the basis of which the user will be able to work with keywords to refer to the issues currently solved.

Here we are dealing with the problem of the difference between search and discovery. It is possible to search only what we can conceivably define. If we do not know exactly what we are looking for, it is an adequate process of discovery, but for which there is not a sufficiently developed library or information architecture.

The academic environment comes from another competency model, namely the **Seven pillars of information literacy**⁶. It is based on the idea that what should be educated to develop are competencies for certain manipulations of information. For each of them, it is possible to create their own educational practices and pay attention to it. Care must be taken to ensure that the individual has at least an elementary level of development of all the pillars, but at the same time it is possible (even probable and to some extent also desirable) to be more expert in some areas than in others.

Chestnut St., Norwood, NJ 07648, 1990. or EISENBERG, Michael B. Information literacy: Essential skills for the information age. *DESIDOC journal of library & information technology*, 2008, 28.2: 39.

⁶ BAINTON, Toby. Information Literacy and Academic Libraries: The SCONUL Approach (UK/Ireland). 2001. or JOHNSTON, Bill; WEBBER, Sheila. Information literacy in higher education: a review and case study. *Studies in higher education*, 2003, 28.3: 335-352.

The names of the pillars are as follows: organization of information, evaluation, presentation, gathering and locating and accessing, identifying needs, planning strategies for finding and accessing resources and knowledge. The last four focus on the competencies that are crucial to search and work with e-resources. Interestingly, the model is working on a plan that is, rationalizing the look of the search. If we remain in the analysis of the work of academics, students or scientists, it does not have to be a partial search strategy (for example, growing pearls), but rather a reflection on resource search methodology, which will enable the subject to be framed efficiently and, if necessary, to produce surveys. It is not just about finding the information, but also knowing in what structure or databases it is located and to what extent the selection of resources is relevant.

Outside of these pillars, the model emphasizes that the work with information always happens in a certain context and situation. The education process should respond to it and work with her. This is not primarily about universal unified education but about the development of an individual in his particular life situation and environment. Let us remember that one of the currents of social pedagogy works precisely with the approach of "helping people to manage their real life situation" or "day-to-day problems".

We can also mention the model of **information and critical literacy** of Markless and Streafield.⁷ It describes three main pillars: linking to information, interacting with information, and using information. Compared to the previous two models, all three pillars are completely interconnected. Linking to information is primarily an ability to navigate the problem and resources, to locate resources by searching and exploring. Interaction with information is primarily thought of critical thinking and evaluation of information and its construction and transformation (creation of structure, interpretation). The use of information includes application, communication, referral (citation) and transformation (learning, restructuring). In this model, the subject we are studying is mainly present in the "link to information" section.

⁷ MARKLESS, S. A New Conception of Information Literacy for the Digital Learning Environment in Higher Education. *Nordic Journal of Information Literacy in Higher Education*. 2009, vol. 1, iss. 1, s. 25-40. Dostupné z: <https://noril.uib.no/index.php/noril/article/viewFile/17/3>

KISK has developed a **Transitional Model of Information Literacy**⁸, which is based on the fact that one needs to be equipped with a basic competency set (this is referred to as an information self-esteem) and that the process of working with information (the model basically describes information behavior) measures non-linear and dynamic, but at the same time contains a certain sequence of steps.

Areas include defining needs, searching for information, knowledge organization, analysis, document creation, knowledge creation and communication. The key to finding a piece of information, which includes two sub-areas - search competencies (from knowledge of tools to strategies) and the ability to adequately work with resources - is the key to us.

One of the most important contemporary models of information literacy is offered by **ALA**⁹, which aims at a university environment. It offers six areas in which information literacy needs to be developed and each identifies practical skills and personality traits for further behavior. The ALA model is specific by providing a framework for the overall education of both students and academics.

The areas are: Authority Is Constructed and Contextual; Information Creation as a Process; Information Has Value; Research as Inquiry; Scholarship as Conversation; Searching as Strategic Exploration. In relation to the topic we are analyzing, relevant areas are primarily related to research as a topic that is related to the search for information. This is a very crucial topic that is somewhat neglected in the models studied, but in that every research should begin with a "survey study" or at least with a certain thematic framing, I think that this area should be given the greatest attention. Also interesting is the last area that focuses on planning and creating strategies for saturation of information needs. This is a topic that appears in several places and shows that work with information or information retrieval is closely related to research and its design.

With a little exaggeration, we could say that "literature is the mother of research," and its proper grasp of how consistently trying to show ALA is something we should work with in the long

⁸ ČERNÝ, Michal a Dagmar CHYTKOVÁ. Přechodový model informační gramotnosti I. *ITlib. Informačné technológie a knižnice*, Bratislava: Centrum vedecko-technických informácií SR, 2013, roč. 17, č. 4, s. 33-39. ISSN 1336-0779.

⁹ AMERICAN LIBRARY ASSOCIATION, et al. Framework for information literacy for higher education. *Chicago, IL: Association of College & Research Libraries*, 2015. Dostupné z: <http://www.ala.org/acrl/standards/ilframework>

term. Working with resources - and here is a document more than unambiguous - requires information literacy. It is not possible to pursue meaningless acquisition policy without being associated with the education process. This connection is bi-directional. Information literacy, on the one hand, allows you to work with resources in a meaningful and effective way, but at the same time it allows you to define what resources users need for their work. For example, just by making surveys it is easy to map the necessary texts and, depending on them, to buy databases or to choose a purchasing strategy for individual sources. According to ALA, information education rationalizes acquisition processes, which also has a direct economic impact.

Work with electronic information resources

In analyzing selected information literacy models we have already indicated some aspects that appear in the relationship between electronic information resources and information literacy, but we still consider it important to explain them in this area as important.

The first aspect is connected with enjoyment. Purchasing electronic information resources is an important item for all institutions, and if the acquisition is made from public or grant money, it is important to think about economic efficiency. If users are unaware of, or unable to use, and use them, their acquisition is actually meaningless. In this case, it would be useful to assign ad-hoc purchases of individual texts.

This parameter must be perceived in a certain context and situation, so you can never imagine that all researchers use all the resources or their essential parts. At the same time, the availability of resources opens the possibility of research, scientific communication,

The second parameter has already been mentioned - careful analysis of what sources and databases the researchers are working on and implementing specific acquisition measures. Three things are to be considered: databases that are often used (for example, for well-structured studies already mentioned, but also for self-study by scientists) should be appropriately captured. The second category is the databases or magazines that are related to the former (already based on citation analyzes, thematic maps, publishers) and which are not yet actively used. It is these who can become part of some information support for scientific research. The third group is databases that have little use. In their case, it is appropriate to assess what license

the institution will buy or manage, which model will be most appropriate, and whether it would be more effective to direct funds to other areas.¹⁰

Of course, it follows from the above that the acquisition specialty must have an excellent knowledge of both the information behavior of individuals and their publishing activities. Without the knowledge of resources used in publications, a systematic purchasing policy for electronic information resources cannot be considered at all.

Last but not least, it is also necessary to consider what the search interface looks like or what is the overall policy of solving individual resources. Is the institution available to Discovery?¹¹ Are they designed to enable the widest possible number of users to really do scientific research? It is just such an information service associated with the ability to simply search for and organize the items found. In the models we analyzed, we did not pay enough attention to the issue of data or document organization, but one can again say that one of the areas in which institutional infrastructure can be well established is very positive. There are more options - from installing and editing citation managers to special features found in the service discovery service.

Also, the question of why people do not use certain resources may be associated with problems other than general dislike or lack of information literacy such as bad marketing within an institution where individual scientists do not necessarily know that such resources exist that their institutions are (and how) can work with them. We believe that the whole issue of so-called Library Defense is to a certain extent a manifestation of discrepancies between library services and their ability to adequately design their services and communicate with users.

¹⁰ For example, the author of the article will be among the few employees of the Faculty of Arts who reads the texts on quantum physics, structure and stellar evolution and the theory of general relativity. In this case, it is advisable to look for a licensing model linked to a specific person or computer, or ad hoc payment per text.

¹¹ GILSTRAP, Donald L. Discovery Services in Libraries. or HOEPPNER, Athena. The Ins and Outs of Evaluating Web-Scale Discovery Services. *Computers in libraries*, 2012, 32.3: 6.

What is the interest of students?

As part of the Information literacy course¹², we have data from Google Analytics¹³ that can help us analyze pages where students spend most of their time (which may be burdened by a mistaken way of different lengths of posts), but also how many pages visited. After the departures of the Immediate Departure visits and course information pages, we received the following dates in autumn 2017:

Topic	Unique Visits
Database of expert texts	1294
Internet as a source of information	1270
Evaluate resources and information	1110
Advanced Search Options on Google	1106
Creating text	1036
Formal criteria for evaluation of information sources	1023
Defining the topic	1016
Specialties of internet search engines	921

The table shows data between September 24, 2017 and May 1, 2018. A combination of students and other visitors can be expected. On the other hand, the attendance at the end of the semester has dropped considerably, and many visitors from that time are students returning to it to get some specific information.

The Information Work Course is an open web course designed for students of Masaryk University and its typical student is a person who is in the first year of a bachelor's degree. The data show that the greatest interest is finding information and their formal evaluation. In the context of the above models, we have to say that the course does not focus on information retrieval strategies. The fact that so many texts from the rating category are selected when

¹² TULINSKÁ, Hana. *Kurz práce s informacemi* [online]. 2017 [cit. 2018-04-13]. Dostupné z: <http://kisk.phil.muni.cz/kpi>.

¹³ CLIFTON, Brian. *Advanced web metrics with Google Analytics*. John Wiley & Sons, 2012. or TURNER, Steven J. Website statistics 2.0: Using Google Analytics to measure library website effectiveness. *Technical Services Quarterly*, 2010, 27.3: 261-278.

selecting the most visited pages can be attributed to a homework that is challenging in this respect as well as to the smaller subjects and experience of college students. However, the usual dynamics of the semester can have an impact on them in the first half.

On the contrary, a person too involved can be a place that focuses on making notes, creative work with information or self-control, and providing information. The question is whether these are topics that are too remote for students or do not make sense in the context of working with information themselves. In deeper data analysis, it is possible to see that the topics from the first half of the Big6 model are genuinely preferred if we borrow some theoretical knowledge. An exception is the definition of the topic, one of the least frequented in the autumn of 2017, while in 2016 it was among the most visited (along with databases, electronic information sources and search).

Conclusion

In our study, we have attempted to outline some dimensions of the relationship between information literacy and electronic information resources. The fact that the acquisition, electronic information sources, information and data mining departments are often separate from each other, seems to be useful as a managerial one, but in terms of the final work and thinking of the concept as problematic and inappropriate.

We have tried to show how Curatorial approach to collections can change the architecture of libraries¹⁴, but also the overall structure of their services as well as the social impact, in the past year Curating content as a way to promote interesting resources. In this text, we have worked with the second pillar, ie with the information search itself, as a necessary prerequisite for the emergence of a knowledge society.

Also, this conceived concept would result in a certain transformation of the library environment, especially in scientific or university libraries. This does not mean that we want to ignore their other functions or services, but we believe that this area would deserve much wider and more prominent support and attention.

¹⁴ ČERNÝ, Michal. Curating content as a way to promote interesting resources. In *INFORUM 2017: 23. ročník konference o profesionálních informačních zdrojích*. Praha: Albertina icome Praha, 2017. 19 s. ISSN 1801-2213.

Although our approach to this topic was eclectic and perhaps abbreviated, even considering the limited scope of the paper, we believe it shows some changed discourse towards a reflection on the role of libraries in current scientific research.

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