

What Is Information Literacy and How to Improve It?

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Abstract

Information literacy is a controversially discussed topic with heterogeneous definitions. In the context of a project on “Information Literacy and Democracy” in Germany, 21 experts from diverse scientific backgrounds submitted position papers in which the authors provided their perspectives on the following questions: What is information literacy? How to foster information literacy? What are the central developments in the field of information literacy? What other aspects are relevant? Based on document analysis, this contribution unites the core messages of the 19 position papers for an international audience. Such a combined view of 21 experts from diverse scientific backgrounds is rather scarce. By merging the views of many experts and transcending disciplinary borders, this paper hopes to make a small contribution to stimulate multidisciplinary discussions on information literacy and corresponding approaches to improve it.

Keywords: information literacy; multidisciplinary; experts; document analysis

1 Introduction

Information literacy is a concept which has attracted much attention in Information Science. In the context of a project on “Information Literacy and Democracy” researchers from the University of Hildesheim aim to raise public awareness on the significance of information literacy, both for public and scientific discourse. By bringing together different stakeholders and actors

with diverse backgrounds, a broad discourse is initiated that aims to reveal a comprehensive picture of the subject information literacy, and possible approaches to foster information literacy. In the summer of 2019, a call for position papers was announced in the context of the first conference of the project¹. The goal was to collect the views of experts from different subject areas and professions on the following four questions: What is information literacy? How to foster information literacy? What are the central developments in the field of information literacy? What other aspects are relevant? Twenty-one authors answered the call and provided 19 position papers. The authors work within a wide range of subjects and professions. In addition to scientists from different subjects, librarians as well as journalists have contributed. Additionally, perspectives from political science, educational science, and teacher training expand the perspectives yielded by information science and library science. As a result, the position papers deliver a comprehensive view and diverse perspectives on information literacy. The position papers are available online in German language (Çetta et al., 2019). This contribution analyzes the 19 position papers for an international audience using document analysis that orients on inductive category formation as proposed by Mayring (2014). The authors believe this is worthwhile as such a perspective on information literacy is rather scarce. By unifying the views of many experts and transcending disciplinary borders, this paper hopes to make a small contribution to stimulate discussions on multidisciplinary views on information literacy. As indicated in the title of the paper, the research interest is on the question what constitutes information literacy and on approaches on how to improve it.

The paper is structured as follows. In the next chapter, we delineate information literacy as an evolving concept, portray multidisciplinary aspects of information literacy, discuss its relevancy and new approaches to improve it. In this way, the following explanations are contextually framed. In the next step, we describe the research aim and the analytical approach and procedure. Then, the papers are analyzed. Finally, the results are summarized and discussed. Please note that the authors of the position papers are the experts. The authors of this paper only build up upon their work.

1 The website of the conference is located at <https://informationskompetenz.blog.uni-hildesheim.de/>.

2 Information literacy as an evolving concept

According to literature, origins of information literacy can be traced back to a report written by Paul Zurkowski (1974) addressed to the *US National Commission on Libraries and Information Science* (Leaning, 2017). Zurkowski already stated at the beginning of the seventies that although most people today can read and write, only a small proportion of the population could actually be called information literate as “they have learned techniques and for utilizing the wide range of information tools” (p. 6). Another important milestone can be seen in the *Final Report of the Presidential Committee on Information Literacy* of the *American Library Association* (1989). Here, information literacy is understood as a behavioral and search process-oriented competency of the individual user. At the same time, the connection between information literacy and critical thinking, lifelong learning and social participation is already proclaimed here. Starting in the 1990s, further dissemination of information literacy concepts can be observed on an international level. For example, in 1999, the *Society of College, National and University Librarians* (SCONUL) proclaimed a model which consists of seven “pillars” of competence. The seventh pillar, *synthesis and create*, includes the generation of knowledge as a part of information literacy (SCONUL Advisory Committee on Information Literacy, 1999). In the year 2000, the *American Library Association* published the *Information Literacy Competency Standards for Higher Education*. Here, five behavioral standards with associated performance indicators and outcomes are prescribed. The model is behavioristic in principle, still, the inclusion of social and normative aspects of information behavior becomes clear. In the UNESCO *Global media and information literacy (MIL) assessment framework*, published in 2013, media and information literacy are connected and defined as “a set of competencies that empowers citizens to access, retrieve, understand, evaluate and use, create, as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way, in order to participate and engage in personal, professional and societal activities” (p. 29). This framework has a wide focus on media and information literacy. It draws a normative connection between information literacy and individual and societal well-being. Finally, the *Framework for Information Literacy for Higher Education* provided by the *Association of College & Research Libraries* (ACRL, 2016), is based on six “frames”. Within each frame “knowledge practices” and “dispositions” are

described for learners developing information literate abilities. The ACRL framework is less deterministic and process-oriented than earlier concepts of information literacy. Rather, it aims to enhance users' comprehension of ontological and epistemological aspects of information (environments). In sum and seen from a historical perspective, it can be stated that the discourse on information literacy has become increasingly holistic. The original scope of information literacy, whose focus was on the individual user and behavior-based and also search process-related has expanded. Newer approaches additionally include a citizen and society related perspective. They take in account the context of the development and interests in knowledge generation as well as epistemological aspects.

Information literacy seems to be a rather broad concept. It is intertwined with other digital literacies. For example, the UNESCO bundles media and information literacy. The ACRL framework explicitly refers to the metaliteracy approach of Mackey and Jacobson (2014). In Germany, in the educational system, the term information literacy is known in the higher education area. In schools, teacher training, and in the curriculum, rather the term media literacy is used (e.g., Weisel, 2017; NLQ Hildesheim, 2015). In the ICIL 2018 study, Fraillon et al. (2019) speak of computer and information literacy. These "double"-competences explicitly show that the single competences are strongly interwoven and benefit from each other. E.g., the ability to act in an informational self-determined manner is important for the competent use of digital technologies and vice versa (ibid.). From the user's point of view, the respective context of action and his or her pragmatics are decisive for the adequate "competency bundle" that is required. Nevertheless, it is useful to define a core of information literacy which helps to identify the learning related areas that need to be addressed to foster information literacy. The historical perspective laid out above suggests that the ability to uncover and satisfy information needs in a self-determined manner is one central aspect and can be considered as the original core. Especially the ACRL framework emphasizes that information literacy nowadays also includes the ability to understand and reflect information on an ontological and epistemological level.

Concerning its significance, we can postulate information literacy touches on more stages and areas of life and is more important than ever. Von Loh and Henkel (2014) argue that information and media competence is already important in early childhood education. Furthermore, although often under the hood of media literacy, there seems to be an increasing integration of

information literacy into school education (cp. above). In higher education, information literacy expands to include aspects such as electronic publishing (e.g., open access) and research data management (Koltay, 2017). Beyond the academic sector, although still in the niche, the awareness of the relevance of information literacy also increases (Travis, 2017). Especially in everyday and societal life, information literacy becomes more important. Indeed, using search engines is easy. Still, information behavior in everyday life contexts is far from being trivial. In fact, information markets are complex and difficult to see through. In e-commerce, naive users are in danger of being manipulated or getting caught by fraudsters (Wang et al., 2014). In health-related areas, information literacy is directly related to personal well-being (Cano-Orón, 2019). With regard to political information, information literacy is seen as a critical basis for democracy (Khan, 2020). And we know, not all is well. Some researchers are seriously alarmed and are concerned about democracy (Breakstone et al., 2018; Morgan, 2018). With regard to information literate behavior of users, research shows there is much to be wished for. The ICIL study (Fraillon et al., 2019) indicates that many pupils only show a basic level of information literacy. Pursuant to Wineburg et al. (2016), many students struggle to assess the credibility of information. Users often rely on rather simple evaluation heuristics (such as familiarity or popularity) (Metzger & Flanagin, 2013). Typical patterns of search engine usage show preferences for top positions and specific result types (White, 2016, pp. 64–82). Queries are usually short and often users are satisfied with a single result or the information given directly on search result pages (Fishkin, 2017). In addition to these effort minimizing strategies, cognitive distortions are also a common phenomenon, such as confirmation errors, i.e., the preference for results that support the user's own point of view (Knobloch-Westerwick et al., 2015). The mentioned aspects make it apparent that the development of information literacy succeeds, and only then succeeds, when users really understand their information environment and are actually motivated to behave in an information literate manner. With regard to the latter, information literacy curricula that lead users to perform in-depth analysis of knowledge artefacts, e.g., websites to determine their credibility are increasingly criticized (Fielding, 2019). Such check-list based approaches like the CRAAP (Currency, Reliability, Authority, Accuracy, and Purpose) method originate from academic contexts. For everyday life information behavior, they were evaluated as unfit for two reasons. First, if such an analysis of knowledge artefacts is carried out carefully, it would be very costly, which seems unrealistic. As a result,

users typically diminish their effort. Secondly, if users take such a pragmatic approach and reduce their effort, they usually rely on very simple criteria such as the top domain type, the design of the website, self-declarations of expertise or the existence of graphics to assess quality. This is easily misleading (Warner, 2019). A lateral reading strategy is recommended – a procedure that professional fact-checkers also show (Wineburg & McGrew, 2017). Some newer initiatives that aim to build up information literacy in everyday life are based on such considerations (e.g., Caulfield, 2019).

So much to a literature-based background on information literacy as an evolving concept, its multidisciplinary aspects, its relevancy and new considerations on how to improve it. In the following, we will see into how far the experts correspond to or expand on the perspective drafted in this chapter.

3 Research aim, analytical approach, and procedure

The aim of our research is to get a comprehensive overview and multidisciplinary perspectives on information literacy and its perception. The pragmatic goal is to get insights on two questions: a) What is (understood of) information literacy? and b) How to improve information literacy? The hope is to come up with a current view of the field that is up-to-date and, somewhat representative. Of course, representativeness is difficult to achieve in qualitative research. Still, a merger of the views of many experts from different fields is more than the publicly available views and insights users, students, librarians, and researchers are encountering when researching the field.

Data collection and the resulting data set were as follows. The call for the position papers was disseminated in June 2019. Potential contributors were invited per email. In addition, the call was posted in mailing lists. A template was provided for the contributors that regulated copyright issues (in which the authors granted a non-exclusive right of publication) and specified the expected length of the position paper. Each of the four questions should be answered in 150–300 words. Thus, each position paper was targeted to be 2–4 pages long. Till October 2019, 19 position papers by 21 experts were submitted. Overall, the collection papers are 56 pages long and consist of roughly 17,000 words (Çetta et al., 2019).

How should the data be analyzed? The pre-defined questions resemble very generic perspectives on the topic information literacy (what it is, how to foster it, trends and other aspects). They do not structure information literacy in content-related or action-oriented pre-defined categories. In contrast, the analysis aims to reveal such perspectives of the experts. Thus, an inductive approach of analysis seems to be appropriate. The analytical procedure is oriented towards inductive category formation as proposed by Mayring (2014, pp. 79–87). The analysis was sequenced as follows:

1. The level of categories was pre-defined by the four questions that structured the position papers. The level of abstraction was determined by the topics found, not specific aspects of them. For example, with regard to the first question “What is information literacy”, e.g., *research expertise* is seen as a topic whereas the *ability to recognize an information need* is not seen as a topic of its own but as a part of the topic *research expertise*.
2. The first author of the paper worked through all of the 19 position papers and formulated categories. At the same time, the second author worked through five of the position papers and formulated categories.
3. Both authors developed an agreed collection of categories.
4. The first author again worked through the material and revised the categories, partly re-arranging the category system by building main and sub-categories.
5. The category system was checked and finalized in a discussion of the first author with the second author of the paper.

Microsoft Excel was used for the analysis. The analysis was carried out in March 2020.

4 Analysis

The analysis is structured as follows. First, we describe the profile of the experts. In the second step, we provide an overall consolidation of position papers. We first display the main categories across all four questions. Then, we get more specific and discuss the insights we gained about the single questions.

4.1 Profile of the experts

Overall, 21 experts contributed 19 position papers. Seventeen papers were written by one author and two papers by two authors. The majority of the experts were librarians (8) and information scientists (7). Furthermore, four educational scientists with a focus on teacher education, one communication scientist (a former journalist) with a focus on journalism and one teacher (also active as a media education expert) were involved. Two of the educational scientists co-authored a paper. Together, the communication scientist and the teacher also wrote one paper. Table 1 provides an overview.

Table 1:

Overview of the authors' profession and the number of position papers

Profession	Number of authors	Number of position papers
Librarian	8	8
Information scientist	7	7
Educational scientist with a focus on teacher education	4	3
Communication scientist with a focus on journalism (former journalist)	1	0,5
Teacher	1	0,5

Summarizing, we can see that information scientists and librarians make up the majority of the sample. In addition, educational scientists constitute a substantial part. Finally, individual views from the teaching and journalistic professions are also included.

4.2 Overview of categories

Table 2 provides an overview of all main categories across all four questions. This overview clarifies, first and foremost, information literacy is still seen as the ability to conduct research. This is the core of information literacy. In addition to that, most of the experts write that information literacy should not be seen in isolation but is overlapping and related to other competencies.

Table 2:

Overview of the main categories (fraction of papers mentioning the category)

Questions	Categories
What is information literacy?	<ul style="list-style-type: none"> research skills (inclusive evaluation competence) (79%) overlap with other competencies (64%) critical thinking (53%) societal participation (42%) competence in scientific work (32%) information processing and dissemination (26%) ethical use of information (26%) domain-specific (16%)
How to foster information literacy?	<ul style="list-style-type: none"> content (74%) places of learning (74%) didactic (58%) basic requirements (learning provision) (37%) intermediaries (26%) learning requirements (users) (16%)
What are the central developments in the field of information literacy?	<ul style="list-style-type: none"> new subject areas (extensions of the concept) (68%) evaluation of information becomes the central sub-competence (37%) information literacy becoming more important (32%) information literacy becoming more complex and comprehensive (32%) individual and adaptive mediation (21%) improved integration of learning provision (21%)
What other aspects are relevant?	<ul style="list-style-type: none"> necessity of a holistic epistemic perspective (26%) information literacy learning through gamification (11%) need to strengthen networking between institutions and intermediaries (11%) significance of information science (11%) certification (5%) cultural aspects (5%) fostering motivation to learn information literacy (5%) negative societal change (5%)

Roughly half of the authors argue that critical thinking is a part of information literacy. Large groups of the experts connect information literacy with the ability to participate in society and the competency for scientific

work. In addition to that, a fourth of the papers argue that information processing, dissemination and the ethical use of information also belong to information literacy. For some authors, it is important to mention that information literacy is domain-specific.

Referring to the question on how to foster information literacy, data shows that for most experts the learning content and the places of learning are a decisive factor. A majority also mentions didactical aspects as important for competency development. Furthermore, basic requirements on the supply side and requirements on part of the users are discussed. A quarter of the experts state a wide array of different kinds of intermediaries that are or should be involved in information literacy-related learning.

Concerning trends in the field of information literacy, two-thirds of the experts mention new subject areas to which information literacy should be related to. One-third of the experts argue that the ability to evaluate information has developed into the central part of information literacy. Respectively, also one-third assesses information literacy as becoming more important and also more complex and comprehensive. A fifth of papers request that learning supply should be more strongly focused on the needs of the individual learner and be adaptive. Two papers demand that learning provision should be more strongly integrated into the educational system. Also, two papers claim a greater personal responsibility for being information literate.

Finally, the analysis of the “other aspects” shows many issues already mentioned within the first three questions. Nevertheless, some hitherto unnamed facets are revealed, e.g., two authors contemplate on the role of information science in information literacy education. Besides, certification and culture are revealed as important aspects of information literacy.

4.3 Question 1: What is information literacy?

As mentioned, at the core, information literacy is seen as one’s individual ability “to paint a picture of the world around us that comes close to reality”. It encompasses research skills and critical thinking, scientific competencies and is a central foundation for lifelong learning, informal self-determination, and societal participation. Knowledge should also be used constructively and ethically. Some authors hint that information literacy is not a generic skill, fitting to any context, but highly domain-specific. Here, we can observe some tension between the generalizability of information literacy as basic

literacy and its affordances in specific informational contexts. One fourth of the papers also include information processing and further dissemination as a sub-competency of information literacy. Besides, information literacy is related to other competencies. Digital literacy is mentioned in one-third of the papers, data literacy and media literacy are also pointed out.

Table 3 contains the main and subcategories for questions one in detail.

Table 3: Question 1 – Overview of the main and sub categories (fraction of papers mentioning the category)

Question 1: main and sub categories
- research skills (inclusive evaluation competence) (79%)
- overlap with other competencies (64%)
▪ digital literacy (37%)
▪ data literacy (26%)
▪ media literacy (21%)
- critical thinking (53%)
- societal participation (42%)
- competence in scientific work (32%)
- information processing and dissemination (26%)
- ethical use of information (26%)
- domain-specific (16%)

4.4 How to foster information literacy

The experts provided manifold ideas to improve information literacy. Most of the answers were concerned with the content and places of learning. Also, didactical aspects, basic requirements of learning provision, intermediaries and learning requirements on part of the users were mentioned. Regarding the content, there is a field of tension concerning the delimitability of the rather generic research-oriented core area of information literacy and its relationship to individual subject-specific or pragmatic contexts. One expert wrote: “courses on search techniques or database applications are certainly justified, but they are ultimately only accessible to a limited group of society and can only cover a small part of the required skills.” That was kind of common sense, a generic basic understanding and research courses are helpful. Nevertheless, information literacy learning has to be subject-specific and should tie-up with learners’ world of experience.

There are many venues where information literacy can be learned. “Typical” places like schools, universities, libraries were mentioned most often. Several authors wrote that information literacy education should start at the time of entry into the school system. Furthermore, the experts made clear, that beyond the typical places, there are more areas out there where information literacy can be fostered, e.g., the working environment, private areas and even kindergartens, and museums. The answers grouped into the didactic category can be read like a table of contents on current trends in (e-)learning: gamification, self-directed learning, collaborative learning, flipped classroom and others. Two librarians mentioned information literacy frameworks and models. Two authors wrote information literacy education should orient on journalistic approaches.

In addition to the many “places” to learn, there are many ways seen to make information literacy education and learning effective and interesting. Still, information literacy education has its conditions for success. On the one hand, teaching staff must be trained, and information literacy has to be integrated into the curriculum. On the other hand, learners are confronted with a variety of cognitive and motivational demands. They also need to be motivated and able to learn information literacy, as the following comment illustrates: “The requirements for imparting any kind of ‘information literacy’ are, [...] the desire to increase knowledge (which is more important than the actual information), the will to seek information, and, above all, the scientific theoretical qualification and attitude.” To motivate learners, provocation, and pointing out the uncertainty and transparency of their information environment is seen as an anchor for access. In addition to teaching staff and librarians, the personal social environment, that is family, friends, and the users themselves are mentioned. In sum, the experts provide us with a collection of many touchpoints and opportunities to foster information literacy.

Table 4 contains the main and subcategories for questions two in detail.

*Table 4: Question 2 – Overview of the main and sub categories
(fraction of papers mentioning the category)*

Main categories	Sub categories
content (74%)	subject-related (53%) relation to learner's own world of experience (42%) basic understanding and research courses (16%)
places of learning (74%)	school (58%) university (32%) library (26%) adult education and citizens (16%) private area (16%) work environment (16%) further education (5%) kindergarten (5%) museum (5%)
didactic (58%)	e-learning (16%) collaborative learning (11%) applying frameworks and models (11%) gamification (11%) research based learning (11%) self-directed learning (11%) adapting to subject-specific epistemic cultures (5%) citizen science, real laboratories (5%) flipped classroom (5%) intermediaries setting an example (5%) orienting on the journalistic approaches (5%)
basic requirements (learning provision) (37%)	technical and curricular prerequisites (21%) staff prerequisites (21%) further training of teachers (16%)
intermediaries (26%)	teaching staff (16%) friends (14%) family (11%) libraries (5%) users themselves (5%)
learning requirements (users) (16%)	motivation (11%) critical thinking (11%)

4.5 Question 3: What are the central developments in the field of information literacy?

Concerning trends in the field of information literacy, the analysis shows the following main aspects. Two-thirds of the papers mentioned that information literacy is an expanding topical area. Respectively, one-third considers information literacy as getting more important and complex and wrote that the evaluation of information becomes the central sub-competence. Furthermore, a fifth of the papers argue an improved integration of learning provision, with regard to improved cooperation of intermediaries and the integration into the educational system. Finally, a fifth of the papers see a need for individual and adaptive mediation. Also, two papers argue a greater personal responsibility for information literacy.

With regard to the expanding topical area, the ‘old’ core of a primarily search-related information literacy is widely expanded. The most prominent single sub-topic mentioned is fake news. Furthermore, information literacy nowadays includes aspects of personal information management (data protection, IT security) and processes of scientific and commercial knowledge genesis. Moreover, there is a wide range of other topics, such as the structures and players in the information market (influencers, publishers, open access, ...), technical basics and implications of digitization (text and web mining, search and recommendation algorithms, ...). Depending on one’s point of view, information literacy is mostly unbounded in terms of content. Here again, we are confronted with the question where does information literacy start and where does it end? It seems information literacy requires a comprehension of ontological and epistemological aspects of many information environments. The scientific information market is prominently mentioned here. At the same time, everyday information behavior is very present. Besides, according to some experts, aspects of daily information management also are an inherent part of information literacy.

Table 5 contains the main and subcategories for questions three in detail.

*Table 5: Question 3 – Overview of the main and sub categories
(fraction of papers mentioning the category)*

Question 3: main and sub categories
<ul style="list-style-type: none"> - new subject areas (extensions of the concept) (68%) <ul style="list-style-type: none"> ▪ fake News (37%) ▪ scientific work and scientific communities (26%) ▪ data protection (21%) ▪ (search) algorithms (21%) ▪ open educational resources and open access (16%) ▪ use of social media (16%) ▪ copyright (11%) ▪ information markets (11%) ▪ text mining and data mining (11%) <li style="padding-left: 20px;">use of collaborative work systems (11%) ▪ altmetrics (5%) ▪ linked open data (5%) ▪ use of cloud services (5%) - evaluation of information becomes central sub-competence (37%) - information literacy becoming more important (32%) - information literacy becoming more complex and comprehensive (32%) - individual and adaptive mediation (21%) - improved integration of learning provision (21%) <ul style="list-style-type: none"> ▪ improved integration into the educational system (16%) ▪ improved cooperation of intermediaries (11%)

4.6 Question 4: What other aspects are relevant?

Finally, experts were asked to address other aspects that they felt were important. As written, many points mentioned here were already presented before. Nonetheless, some new facets of and on information literacy were revealed. One expert wrote that information literacy also relates to cultural, social, geographical, political and temporal contexts. As far as we know, little research has been done on cultural and intercultural aspects of information literacy. Information literacy is widely treated as culture-agnostic which is surely a deficiency. In addition, two authors argue the relevance of information science research for information literacy education. One author formulates regret regarding a lack of visibility of information science. The

other author doubts the significance of the information science community: “German-language information behavior research is completely atrophied with regard to the interdisciplinary study of user behavior and the handling of information from an intentional perspective”. Concluding, some authors re-emphasize the necessity for a holistic perspective on the field and the significance of information literacy, not only for the individual but for society: “To realize effective social communication in the long term, it is necessary to strive for certain standards in information transfer and communication design in addition to critical reception behavior, and to commit the students (like all other participants in communication) to these standards.” That means information literacy is not only a skill but also a commitment.

5 Discussion and conclusion

What can we learn from this analysis and how should this research be categorized? With regard to the latter aspect, as written, the paper aims to get a comprehensive view and diverse perspectives on information literacy. First, it has to be remarked, research here is of exploratory value. For an expert sample, the sample is not that small, but it can in no way claim to be representative, not even for the German community of which its members consist of. In this way, the results here should not be seen as a kind of joint will of the involved communities. Still, the opinion papers resemble more than a solitary voice. At least in Germany, at current, it is the best representation of the topic that goes beyond individual disciplines. With the many viewpoints included, the collection could be used as an orientation and guideline of things to consider and ways to go, when the aim is to promote and foster information literacy.

With regard to the first question what is (understood of) information literacy we can conclude the following. As a first result, we can summarize for all their diversity in details the position papers show a relatively uniform view. First, information literacy is seen as an individual’s ability “to paint a picture of the world around us that comes close to reality”. It is seen as an essential aspect of modern life. The content and places of learning are decisive for fostering information literacy. Information literacy has expanded, covers many new areas and is intertwined with other literacies. The ability to evaluate information is one of the most decisive factors for being an infor-

mation literate person, which is also important seen from a societal perspective. Thus, if we relate the experts' insights with the literature-based overview in Chapter 2, we can state that both point in the same direction. Information literacy is a very broad and expanding field that shows significance for scientific contexts but also everyday information behavior in private or professional contexts. A holistic perspective and epistemic approach, most often named as critical thinking, is necessary.

The second question asked for insights on how to improve information literacy. Here, experts acknowledge the need to build up a basic understanding of information literacy, e.g., with the help of "search techniques" courses. But it is clear, information literacy education is so much more. It has to be context specific, that means first and foremost specialized and relate to the learners' world of experience. It should be integrated in the educational system, and we should also think beyond that. Information literacy can be experienced in work environments, adult and further education and even in the cultural leisure context (museums). The same is true for the intermediaries. According to the experts, we should again think beyond typical educators, and teaching staff, e.g., family, and friends are significant too. Concerning didactical arrangements of learning environments, the experts provide many ideas to make information literacy learning available, motivating and effective. If we compare the experts' recommendations with the initiatives presented in Chapter 2, we see some deviations. The recommendations of the experts are much more generic with regard to didactical aspects and the content of learning environments, than the mentioned initiatives in Chapter 2. Those rather focus on users' acquisition of worthwhile heuristics (lateral reading). Still, both perspectives, those reported on in the literature section and the views mentioned in the position papers, point in the same direction. They emphasize the importance of ontological and epistemic dimensions of information literacy. For that reason, it can be argued that the ACRL framework would be a good point of orientation for many of the ideas mentioned on how to improve information literacy.

As a concluding remark, we argue that the position papers show that information literacy is a basic literacy for the digital world. In many contexts there is an omnipresent need to be information literate. In addition to that, the position papers point out ways of leaving the niche in which information literacy is de facto still located, at least in the education system in Germany. According to the authors' assessment, interdisciplinary and trans-professional cooperation is especially worthwhile as the collection of the position

papers shows. Beyond stimulating the discussion, maybe the cooperation made visible here, serves as an anchor and starting point to which following joint initiatives for the promotion of information literacy will be linked to. Due to the importance of the topic, we hope for further initiatives and discussions. The project “Information Literacy and Democracy” ends in 2021, the cooperation hopefully continues and expands.

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References

- ACRL (2016). *Framework for Information Literacy for Higher Education* | Association of College & Research Libraries (ACRL). <http://www.ala.org/acrl/standards/iframeframework>
- American Library Association (1989). Presidential Committee on Information Literacy: Final Report. <http://www.ala.org/acrl/publications/whitepapers/presidential>
- American Library Association (2000). *Information Literacy Competency Standards for Higher Education*. <https://alair.ala.org/bitstream/handle/11213/7668/ACRL%20Information%20Literacy%20Competency%20Standards%20for%20Higher%20Education.pdf?sequence=1&isAllowed=y>
- Breakstone, J., McGrew, S., Smith, M., Ortega, T., & Wineburg, S. (2018). Teaching students to navigate the online landscape. *Social Education*, 82(4), 219–221.
- Cano-Orón, L. (2019). Dr. Google, what can you tell me about homeopathy? Comparative study of the top10 websites in the United States, United Kingdom, France, Mexico and Spain. *El profesional de la información*, 28(2). <http://www.doi.org/10.3145/epi.2019.mar.13>
- Caulfield, M. (2019). Check, Please! Starter Course Released [Online Course]. *Hapgood*. <https://hapgood.us/2019/08/13/check-please-starter-course-released/>
- Çetta, D., Griesbaum, J., Mandl, T., Montanari, E. (Eds.) (2019). Positionspapier: Informationskompetenz und Informationskompetenzvermittlung: Aktueller Stand und Perspektiven. Projekt: Zukunftsdiskurse: Informationskompetenz und Demokratie (IDE): Bürger, Suchverfahren und Analyse-Algorithmen in der politischen Meinungsbildung, Universität Hildesheim, 12–13, <http://informationskom->

petenz.blog.uni-hildesheim.de/files/2019/10/Projekt_Informationskompetenz_und_DemokratieKompilation_aller_Positionspapiere.pdf

- Fielding, J. A. (2019). Rethinking CRAAP: Getting students thinking like fact-checkers in evaluating web sources. *College & Research Libraries News*, 80(11), 620–622. <https://doi.org/10.5860/crln.80.11.620>
- Fishkin, R. (2017). The State of Searcher Behavior Revealed Through 23 Remarkable Statistics. *Moz*. <https://moz.com/blog/state-of-searcher-behavior-revealed>
- Fraillon, J., Ainley, J., Schulz, W., Duckworth, D., & Friedman, T. (2019). *IEA International Computer and Information Literacy Study 2018 Assessment Framework*. <https://doi.org/10.1007/978-3-030-19389-8>
- Khan, S. (2020). Negotiating (dis) Trust to Advance Democracy through Media and Information Literacy. *Postdigital Science and Education*, 2(1), 170–183. <https://doi.org/10.1007/s42438-019-00072-9>
- Knobloch-Westerwick, S., Johnson, B. K., & Westerwick, A. (2015). Confirmation bias in online searches: Impacts of selective exposure before an election on political attitude strength and shifts. *Journal of Computer-Mediated Communication*, 20(2), 171–187. <https://doi.org/10.1111/jcc4.12105>
- Koltay, T. (2017). Data literacy for researchers and data librarians. *Journal of Librarianship and Information Science*, 49(1), 3–14. <https://doi.org/10.1177/0961000615616450>
- Leaning, M. (2017). *Media and information literacy: An integrated approach for the 21st century*. Cambridge, MA: Chandos Publishing.
- Loh, S. G. von, & Henkel, M. (2014). Information and media literacy in kindergarten. In *European Conference on Information Literacy*. Cham: Springer, 253–262. https://doi.org/10.1007/978-3-319-14136-7_27
- Mackey, T., & Jacobson, T. (2014). *Metaliteracy: reinventing information literacy to empower learners*. Chicago: ALA Neal-Schuman.
- Mayring, P. (2014). *Qualitative content analysis: theoretical foundation, basic procedures and software solution*. Klagenfurt. URN: <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-395173>
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, 59, 210–220. <https://doi.org/10.1016/j.pragma.2013.07.012>
- Morgan, S. (2018). Fake news, disinformation, manipulation and online tactics to undermine democracy. *Journal of Cyber Policy*, 3(1), 39–43. <https://doi.org/10.1080/23738871.2018.1462395>
- NLQ Hildesheim (2015). *Orientierungsrahmen „Medienbildung in der Schule“*. [Arbeitsfassung – Stand: 30.10.2015]. <https://www.nibis.de/uploads/rediedl/me->

[dienportal/OR/Orientierungsrahmen%20Medienbildung%20in%20der%20Schule%20-%20Arbeitsfassung.pdf](#)

- SCONUL Advisory Committee on Information Literacy (1999). Information skills in higher education: A SCONUL position paper. https://www.sconul.ac.uk/sites/default/files/documents/Seven_pillars2.pdf
- Travis, T. A. (2017). From the classroom to the boardroom: the impact of information literacy instruction on workplace research skills. *Education Libraries*, 34(2), 19–31. <http://dx.doi.org/10.26443/el.v34i2.308>
- UNESCO (2013). *Global Media and Information Literacy (MIL) Assessment Framework: Country Readiness and Competencies*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000224655>
- Wang, D. Y., Der, M., Karami, M., Saul, L., McCoy, D., Savage, S., & Voelker, G. M. (2014). Search + Seizure: The Effectiveness of Interventions on SEO Campaigns. In *Proceedings of the 2014 Conference on Internet Measurement Conference*. ACM, 359–372. <https://doi.org/10.1145/2663716.2663738>
- Warner, J. (2019). Getting Beyond the CRAAP Test: A Conversation with Mike Caulfield. *Inside Higher Ed*. <https://www.insidehighered.com/blogs/just-visiting/getting-beyond-craap-test-conversation-mike-caulfield>
- Weisel, L. (2017). Ten years after – Stand und Perspektiven der DGI-Initiative für Informationskompetenz, Teil I – Sachstand. *Information – Wissenschaft & Praxis*, 68(4), 246–252. <https://doi.org/10.1515/iwp-2017-0058>
- White, R. W. (2016). *Interactions with Search Systems*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139525305>
- Wineburg, S., & McGrew, S. (2017). Lateral Reading: Reading Less and Learning More When Evaluating Digital Information. Stanford History Education Group-Working Paper No. 2017-AI. SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3048994
- Wineburg, S., McGrew, S., Breakstone, J., & Ortega, T. (2016). Evaluating Information: The Cornerstone of Civic Online Reasoning. Stanford Digital Repository. <http://purl.stanford.edu/fv751yt5934>
- Zurkowski, P. G. (1974). The Information Service Environment Relationships and Priorities. Related Paper No. 5; Report to the National Commission on Libraries and Information Science. <http://files.eric.ed.gov/fulltext/ED100391.pdf>

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