Digital and Information Literacy as Discursive Mapping of an Information Landscape

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Abstract. This paper presents observations drawn from a dataset in which are recorded dialogues between groups of learners as they propose, negotiate and enact digital and information literacy practices. Members of the groups can be observed introducing and validating informational and technological resources to other group members, and working to configure their information landscape ([10] in ways that then allow them to make judgments about found or encountered information in ways that could not have been possible for them prior to the dialogue. Following David Harvey [5], we propose that the groups are creating "discursive maps" of their information landscapes, used to both define and explore the context. Groups can be observed mapping both real and simulated contexts.

Keywords: Information literacy, information landscapes, discursive mapping.

1 Introduction

When developing information and digital literacy it is important to bring to bear a *repertoire* of techniques for information seeking and use [9]. This repertoire can encompass ways of making sense of found or encountered information. To illustrate how learners develop configurations of information, and use these as the basis for practice, this paper draws on records of how students have made judgments about the informational and digital resources they need in order to undertake collective tasks, and observes how they develop *discursive maps* [5] as criteria against which they then make informed judgments about the relevance of found information. The idea that developing information literacy (IL) is akin to learning to map an "information landscape" is raised by Lloyd (e.g. [10, p. 2]) but not developed in any detail. This paper presents three examples of how mapping, as a discursive practice, is manifested in actual learning dialogues. Space precludes a more systematic investigation here, but for that see [18].

2 Mapping and information literacy

2.1 Mapping as a tool

Mapping is a way that we construe and then construct lived space, a way of not only representing the world as it is, but projecting forward, pre-visualizing a different (and, implicitly, more desirable) place [2]. Mapping involves bounding and delimiting a field of interest, then extracting entities — the phenomena to be observed — and the relations between them from the part of the world being mapped, then plotting these on the field, using some kind of mode of representation [2, pp. 229-30]. A map thereby makes propositions about the world, stating not only "X is there", but that X is in a specific relationship with other phenomena, and things can be inferred about X's positioning and connections in the 'real world' from the depiction on the map [3, pp. 13-14]. Thus, mapping is a medium with *discursive power,* a way of encouraging people to see the world in the same configuration as the mapmaker and make judgments accordingly [3].

Mapping has long been applied to information landscapes as well as geographical ones. A classic organisation chart is a map: elements have been extracted from the mapped space (roles) and plotted to show relations between them (chains of command and reporting). Concept or mind mapping allows the plotting of ideas, concepts and relations between them as elements on a map. Various authors have described how the use of concept mapping can help learners make connections between concepts and, thus, engage in a self-reflective exploration of what they know, making underlying mental models explicit and depicting them visually (e.g. [11]).

2.2 Prior studies of mapping and IL

Steinerova [15] engages students with mapping their 'information horizons'. Her "ecological" approach identifies IL as manifest in *sense-making*, at two levels — the relationships between individuals and information systems, and then those between individuals, connected through social networks and social media. The information ecology is shaped by information behavior and judgments of *relevance* [15, p. 4]:

> *Two stages of information seeking were determined… the orientation and the analytic stages. In the orientation stage it can be productive to build an information horizon as part of information literacy development ([13], [14])…. a map of information sources including experts, criteria of source preferences, issues of interest and information pathways…. By depicting an information horizon we develop information strategies as a special approach to solving an information problem…*

Hultgren [8] uses similar techniques (and also quotes [14]) to study the information seeking of Swedish school leavers as they make choices regarding future study and/or career options. Her research subjects are asked to visualise their information horizons at two points in her study. There is thus a longitudinal aspect — the map (visualisation) becomes a record of how these information horizons change over the study. For both Steinerova and Hultgren, these visualisations can be considered maps because they de-

pict a *positionality* that represents a real-world relation, that of *relevance*, and judgments and choices are represented in the depiction. On the maps, information sources [8, p. 101] "are positioned in order of personal relevance, where the most important in a particular issue are placed closest to the participant and those least relevant are placed further away; that is, the horizon encompasses only those information sources that have been selected as relevant to the issue at hand."

Herring [6], Gordon [4] and Hepworth and Walton [7] all use concept mapping as a pedagogical technique. Hepworth and Walton involve HE students in [7, p. 135] "mapping the subject domain, gaining an overview of areas of knowledge that are important in that domain and how they relate to each other". They report [7, p. 147] the positive impact of this technique on peer-to-peer learning and how groups "agree… on the overall domain and understanding this bigger picture". Herring [6] also reports that students give positive feedback about mind mapping as a technique for learning information literacy. Her students use the map as an *aide memoire*, recognising its value for notetaking, categorising information, and reminding them what they needed to include in an essay and what they do not. Mapping is thereby linked to judgments that they make about relevance. "The students did not merely value the *immediate* value of a concept map, for example, to identify keywords, but also the *future* value…. students were engaged in *iterative reflection* in that most students stated that they went back to their questions and/or concept maps before writing their essay" [6, p. 11]. Gordon concludes that students who use concept mapping [4, p. 20]: "were more efficient in the way they used their time to perform more search operations per minute and more thorough in consistently applying a more concise repertoire of search terms…."

Whitworth et al [19] use concept mapping to help with judgments about the relevance of information in a workplace setting. They study how groups create maps together, through a collaborative process. Significance comes with how groups "talk the map into being" [19] – in other words the maps are created not through internal mental processes but open dialogue and the embodied practice of mapping (cf. [10]).

2.3 Discursive mapping

The studies in §2.2 have as their foci the creation of a tangible, visual representation of an information landscape. However, the final point from [19] suggests that it is less the tangible product, the map itself, that is central to the value of mapping (though as [6], for example, notes, the map does become a locus of reference for later judgments); but the dialogic and discursive activity that takes place as the map is developed. Dodge et al [3, p. 231] observe that: "Ethnographically a map is not a map because it looks like a map, rather mapping is defined by how maps are used in practice and how they perform space". Harvey [5, pp. 111-2] notes that:

> *The discursive activity of 'mapping space' is a fundamental prerequisite for the structuring of any kind of knowledge. All talk about 'situatedness', 'location' and 'positionality' is meaningless without a mapping of the space in which those situations, locations and positions occur. And this is true whether the space being mapped is metaphorical or real.*

The map, therefore, does not have to have a visual manifestation to be a way of configuring the landscape and making it the basis for judgments about found information. *Discursive maps* [5] come in many forms, including specifications for information systems; procedural rules that should be followed in order to secure resources within an organisational setting: and so on. An organisational chart can depict chains of command and hierarchies in an organization visually, but the true *operation* of these power relations come in *practices*; and the way that we make judgments about information in a given setting is an outcome of the nexus of practices and relationships in that setting [10]. What *agreements* have been reached about the bases for these judgments, and how much are they taken-for-granted in a setting, or alternatively, held up to scrutiny? More pertinently for our concerns here, how are such discursive maps developed as part of the process, and the practice, of learning information literacy?

3 The study context

As noted in §1, Lloyd [10] suggests that becoming information literate means learning to map and navigate an information landscape, but offers no detail of what this means in practice. We therefore propose that discursive mapping is occurring any time that members of a group engage in dialogue that contributes to the definition, filtering, configuration and development of an information landscape, whether or not a literal, visual representation, or map, of that landscape is one product of this dialogue.

To study these discursive mapping processes is not straightforward, however. Dodge et al [3, p. 231] note that "[g]aining access to natural, vernacular and everyday settings to observe situated mapping activities requires creative solutions and negotiation for scholars…" To set research subjects some kind of mapping task risks bringing in an artificiality to the judgments made (cf. [12]). On the other hand, *post facto* reflections on how judgments were made may not reflect actual practice. Our study has attempted to overcome these empirical, epistemological difficulties by analysing the content of dialogs that have taken place, over two years, on discussion boards in a virtual learning environment (Blackboard) on a postgraduate course in educational technology. As part of their assessment on the unit, students join small groups of 5-7 learners who engage in a series of three online discussion activities, each lasting two weeks (see also [16]), designed to promote independent, problem-based learning. There are similarities to the assessment task analyzed by [1], in which a group of 4-6 students used wikis to co-author reports in an imagined work setting, although that study analyzes only the dialogue of one of these groups whereas the corpus for our study consists of the discussions of 20 such groups, and over 1 million words of text. As well as being coded as qualitative data, this corpus was pulled out of Blackboard using SQL queries that allowed analysis of each post in terms of the identity of the poster, the time of posting and issues such as whether things like images or hyperlinks were included. For the purposes of this paper these latter methods help show when new resources are being introduced and validated by group members.

In the quotes given below, metadata are structured as follows: [year of cohort/ group identifier/number of activity], hence [15/Blue/2] means the quote comes from the discussions of the Blue group, 2015-16 academic year, during activity 2.

4 Findings

What follows are not generalizable conclusions about how students invoke discursive mapping to make sense of information, but three cases of how groups develop discursive maps of contexts *about* and *within* which they are making judgments. For more detailed assessment of the impact on learning and development of IL, see [18].

4.1 Mapping the group's digital habitat

When students begin the course, they enter a 'digital habitat' [17] that has been constructed by the course tutor, with provided informational resources such as the reading list; technological tools like the discussion boards; and an overall configuration set by structuring devices like the curriculum, intended learning outcomes and the assessment specification and marking rubric. At this starting point, this is a habitat without inhabitants, and in this respect, the same for each group. However, based on their prior experience and judgments of relevance, oriented by influences such as their own subjective understanding of tool affordances and their interpretation of how best to set up the habitat so the group can meet its shared learning needs most effectively [17], groups introduce new resources into this 'starter' habitat. These resources may be informational, and come from online sources and/or the literature, as these quotes illustrate:

Here is the link for the text "Knowledge for Literacy" as a reference: http://www.shankerinstitute.org/blog/knowledgeliteracy [15/Purple/1]

In my university… to be innovative in technology or deliver teaching in a different way is questioned, not by the faculty, but by higher management who see it as not conforming to the standard norms students are used to. [15/Black/1]

Since technologies are changing very fast, we must also relearn and readapt our own teaching practice. Mishra and Koehler say that technological knowledge is "the ability to learn and adapt to new technologies" (page 1028). [15/Purple/1]

We see here, respectively, the provision of information via URL; via narrative and personal experience; and via academic citation.

As well as these informational resources, students introduce technological tools into the landscape. This is rare in activity 1, but after that experience, groups frequently note that the discussion boards have limited functionality, and so, through a series of informed judgments, introduce alternative resources into their habitat. For example:

Me, [D] and [S] just had a Skype planning meeting to think things over; here's a summary of the discussion and what we will be doing [16/Blue/2]

Both Skype and the posted summary are resources that the group can now draw on. Other groups use different tools. For example, Padlet becomes part of the habitat configured by [15/Blue], [16/Diamond], [15/Black] and [15/Gold] but not the other groups.

Student [B] here introduces Padlet to [15/Blue]. He draws on his professional experience, and suggests associated information practices, to align the group's work with expectations defined in the starter landscape, referring to instructions given by the tutor:

In class I like to use padlet.com to create discussion boards and students have even used it to do group work. I've created a padlet with the information. It's a huge poster board where we can all add information. I've added all the information [tutor] has provided and a quick comment. Let me know what you think? Should we give it a try? http://padlet.com/[URL truncated]

**If you want add information, please add you name to posts or register (it's free) so [tutor] can view it for assessment.* [15/Blue/2]

On occasion, individuals suggest reasons to avoid particular technologies (remember, these suggestions are being made to other group members as they work):

The main problem I find with LinkedIn is that it's overrun with recruitment agents, so I rarely use it. Twitter is OK for some stuff, but because it's so transient I find I miss things a lot and it feels like a lot of effort to keep up with it. [16/Blue/2]

By the end of the series of activities, each group's learning environment looks different from those of other groups and different from the starter landscape. The landscape has become a record of the judgments of relevance that have been made by individual group members. These judgments are based on the prior experience of individuals, and the ways they exhibit digital and information literacy in work and everyday life [7, pp. 137-8], but they are then validated by other group members according to their relevance for the specific, shared task that the group has to fulfil. The group learn to develop practices that help them work together as a group and that are in a dynamic, mutually-reinforcing relationship with the technologies and sources that they introduce into the landscape. As Wenger et al [17, p. 137] write: "Shared assumptions about how to use [the technologies] constitute practice."

These practices are taken forward from activity to activity without needing to be renegotiated. Groups also reflect on their prior performance and consider how the practices, technologies and resources in the habitat might be better used this time:

Me, [Y] and [S]… have already discuss on how we should form our thread in this forum so that it'll better organized than our previous discussion (Hehehee.. we think it was pretty cluttered). [16/Black/2]

In each group, what is emerging is a set of shared assumptions about the landscape, and ways of navigating it most effectively: in short, a discursive map.

4.2 Mapping a simulated context

The next case shows more explicitly how groups use a discursive map to make judgments about the relevance of encountered information. In their second activity, a role-playing simulation, groups are provided with a scenario involving a fictional HE institution, "Mackenzie College", seeking to enhance its use of educational technology. Each group plays the role of a stakeholder (e.g. management, academics, IT services, students). The task parameters require each group, through consulting academic litera-

ture and subsequent dialogue, to establish a collective position on "Mackenzie's" situation, then contribute information to the management group who draft a decision that is publicized to the other groups. Each group should then respond to this document. Thus, in terms used by [15] and noted above, the task has two stages: an *orientation* stage (what is our interpretation of the scenario, what are our priorities?), then, an *analytic* stage (what do we think of the management group's draft decision?).

The provided scenario offers brief notes about issues that each group might like to consider in their discussions: in effect it is the tutor's initial discursive map of the context. But the landscape is a very limited one. The marking rubric for this assignment encourages *practices* whereby, in the orientation stage, group members must broaden their information landscape, incorporating other resources that they judge as relevant.

As a result of these searches and consequent dialogues, each group then develops their own perspective on that initial scenario. This differs from group to group. Contrast these posts, from groups playing the same role, that of the IT services department. These two groups have begun with the same *initial* information; but agreed on different priorities. Both groups discuss different technical issues (wifi for the Diamond group, the virtual learning environment (VLE) for Green); for the Diamond group, training and teaching are also considered important, but the Green group's focus is more on the students. speed and students' accessing the environment after graduation:

> *So far our ideas seem to be around: Changes in infrastructure: potential investment in wifi; Changes in teaching: potential changes in the adoption of apps as an IT team we need to look at how we could support this both through infrastructure and possible training. This might be a potential digital change agent project (students and staff working together)* [15/Diamond/2]
>
> *Questions we (the IT team) have to deal with by the end of this week: What should/can we do to make [the imaginary virtual learning environment] a faster platform? Can we get in touch with the provider and see if they have any updates coming up next year? For sure, we don't want to move into a different VLE. Is there a possibility for us to help the students maintain their access after they graduate? This might be a real satisfier for the students.* [16/Green/2]

What is significant is how this interpretation – the discursive map – is carried through into the analytic stage and used as the basis for judgments made there. The transition from one to the other takes place after the group playing the managers in this simulation announce their decision (a draft e-learning strategy for 'Mackenzie'). Groups are then asked to present a group reaction to this judgment.

This quote highlights a significant issue:

> *Hi guys, the [group playing the role of] students have posted these answers…. [detail follows]… this is good information for us to use and saves us time…. this strengthens our argument for 'going it alone' and they recognise us as being well trained* [15/Gold/2]

The basis for the judgment made in it — that the information provided by the other group strengthens the argument of this group for "going it alone" with educational technology — is authentically made, even though it *refers to a simulated context*. There is no external "reality" to Mackenzie, and therefore, no criteria against which the group

can base its judgments *except those which they negotiate and agree upon*. Through dialogue, each group has reached an agreement on certain basic informational constructs such as priorities and problems for "Mackenzie". There has developed an agreed-upon configuration of information that has subsequently become the basis for the judgments of relevance that each group makes regarding the decision posted by the "senior management". For example, responding to this decision, [R] writes:

> *Have the management integrated the librarians, the students want this and we do too. How is the new situation an improvement for us? Will it make any difference to our teaching and delivery of our courses and our research? I think we need more support from the management and more recognition.* [15/Gold/2]

[A] brings in information from the starter landscape (the provided scenario) to integrate it into the mapping (the quote indented below), then builds on it to make judgments about what is best for, and what 'happens' within, this *simulated* context:

> *we already have long experience with this issue because we manage to teach distance learners. In other words, our expertises have formed as a respond to learning process which is distance learning.*
>
> > *" Mackenzie's distance learning programmes are highly rated and are led by a team of academics/researchers who are internationally regarded as innovators in the teaching of History at a distance. "*
>
> *So, I suggest to contact with managers team to discuss the idea of introduce our experience to other colleagues either IT team or other academic team?*
> *[S], I see your point regarding Web 2.0 tools which is inconvenient as a learning environment, I agree with this. I think in our context Twitter and Blogs are used as strategies of e-learning.* [15/Gold/2]

[R] agrees with [A] that this will have benefits for their group:

> *this could be a good opportunity for us to improve our profile at the university and therefore to get some recognition for the quality of teaching we deliver in the department.* [15/Gold/2]

These things can be stated confidently about an unreal context because the agreed discursive map that they have negotiated has been integrated into their information landscape, and for each group, is now no less "real" than their collectively negotiated perception of the assessment task. The map has helped the group *make connections* between informational resources, and it has become *an agreed-upon basis for action* that does not need to be renegotiated and can serve as the basis for *group judgments of relevance* regarding found and offered information.

4.3 Mapping a real context

The third activity in the series, discussed in more detail in [16], requires groups to propose designs for technological enhancements to two museums, like a new exhibit, app or video. Unlike in the first two activities, the information students need here is not provided to them, but gathered on a field trip. As members do not all visit the same museum, to make a choice about which to work with, they need to share information

about these contexts within the group and discursively map them: which in this case means reaching agreement on what aspects of the museums are relevant and how these relate to the proposal they must collectively make, to succeed at the assignment task.

To configure the information landscape accordingly, students introduce and validate information gathered from the field trip. Here [C] introduces his colleagues to the museum he visited, although then suggests they discount it as a case study:

my museum was the Cu Chi Tunnels just outside Saigon. …. Unfortunately, I don't think this is a good example for the application of digital technologies for this task…. as someone who hates violence, I don't think we should go there. [15/Orange/3]

[W] brings in a relevant online resource to propose an alternative, that is then validated by a third group member:

I visited the Origins centre in Johannesburg - you can view it at http://www.origins.org.za/ [15/Orange/3]

I like [W]'s suggestion about Origins museum, so I vote to it with [C]. I have checked the website and it sounds interesting. [15/Orange/3]

Past experience is also drawn on (this from a different group):

Before moving to Asia I lived and worked in Europe at [a contemporary art museum]. I was part of the education department creating and imparting guided tours. [15/Black/3]

All group members begin to contribute to the judgments needed, around information and technology, that meet the parameters of the design task. This even for museums they have had no personal experience of (for more detailed discussion of this see [16]). Here, [B] outlines the features of their field trip he considers relevant, thus, suggesting elements to plot on the emergent discursive map:

What about the lighting and layout [of the museum]? Was there a set path? Were you guided along … or could you move around freely and revisit other exhibits?...Can I ask a few questions..... [15/Blue/2]

[U] states that the political message of a museum in Africa is rejected by local people and not grasped by tourists:

I think [the museum] have got a good marketing ability or strategy that is why people keep coming there as a tourist centre. Basically i think that foreigners are the ones who will believe their message because some of them are naive of the political situation in [African Country] right now. [15/Diamond/3]

Validation of this follows, with acknowledgement from other group members that this changes their view of the museum:

I've googled and found this website: [war museum name]… which I think is the official website of the war museum. I found your point of view very interesting when you said that only foreigners are likely to believe the message of the museum…. I can imagine that if I visited the museum… I would definitely take the message it tries to convey for granted, but having insider knowledge as you do can unveil many different facts that are not very obvious. [15/Diamond/3]

The group then goes on and makes judgments against this revised map:

To be honest, based on what [U] describes I don't think that the one she visited could be a good example for our task: there is too much bias and political issues involved…

so how can we apply technology in a Museum with all those barriers? [15/Diamond/3]

This quote, from activity 3, shows how this student is aware of the process, the importance of developing the map *before* making judgments about the proposed solution:

we need first share our experiences about the field trip to museums as informal learning environments explore how these museums communicate with users or visitors? and how the contents or subject matter presented?…. let us share our experiences here and from that we can think and list the important aspects of our design. I think this is a good starting point! [15/Blue/3]

The students are using a non-visual, but agreed-upon representation of a context, unique to each group, as the basis for judgments. As we write in [16, p. 82], group members have: "collectively (re-)organised their information landscape to allow each other to make critical and informed judgements about contexts… that they had no experience of prior to the start of the dialogue."

5 Conclusions

We suggest that information literacy is manifested explicitly in this kind of dialogic work, where group members make collective judgments about how new informational resources will be positioned in their information landscape. This is more than just an 'understanding' of a situation: as these agreed-upon judgments have been used as the basis for further judgments about the relevance of information. A dialogic artefact of some kind has been created: a discursive map, unique to each group.

These are not mature maps, of the sort applied in workplaces (implied throughout [10]). Such discursive maps will be much more implicit, the bases for judgments less directly articulated. Here, the visibility of the dialogue is due largely to the fact that these processes are subject to assessment, and the impact this has on how 'free' students are to engage in information practices is obviously significant. The question of whether the agreements mentioned above are inclusive of all members of groups or whether some members conceal their true judgments and/or protest by withdrawing from the dialogue is also an important one. Both are issues beyond the scope of this paper but will be handled in [18].

Nevertheless, in each case reported above, both individual members and the group as a whole are able to make informational judgments based on aspects of a context that they could not have known about prior to the start of the activity. Through the dialogues that have taken place, these students have learned to apply *new* criteria for judgments about found information. They have, in short, shown evidence of having learned to map their information landscape: and to use these maps as the basis for bringing in new resources into that landscape, making judgments about their relevance, and placing them in relation to the other resources and the practices which are already there.

References

1. Alyousef, H. S., Picard, Y. P.: Cooperative or collaborative literacy practices: Mapping metadiscourse in a business students' wiki group project. Australasian Journal of Educational Technology 27(3), 463-480 (2011).
2. Corner, J.: The agency of mapping: Speculation, critique and invention. In: Cosgrove, D. (ed). Mappings, pp. 213-252. Reaktion: London (1999).
3. Dodge, M., Kitchin, R. and Perkins, C.: Rethinking maps: new frontiers in cartographic theory. Routledge, London (2009).
4. Gordon, C. A.: Methods for measuring the influence of concept mapping on student information literacy. School Library Media Research 5 (2002).
5. Harvey, D.: Justice, nature and the geography of difference. Blackwell, Oxford (1996).
6. Herring, J.: A grounded analysis of year 8 students' reflections on information literacy skills and techniques. School Libraries Worldwide 15(1), 1-13 (2009).
7. Hepworth, M., Walton, G.: Teaching information literacy for enquiry-based learning. Chandos, Oxford (2009).
8. Hultgren, F.: Approaching the future: a study of Swedish school-leavers' information related activities. Valfrid, Borås (2009).
9. Limberg, L.: Informing information literacy education through empirical research. In J. Henri & M. Asselin (Eds.), The information literate school community 2: issues of leadership (pp. 39-50). Wagga Wagga, Australia: Centre for Information Studies, Charles Sturt University (2005).
10. Lloyd, A.: Information Literacy Landscapes: Information Literacy in Education, Workplace and Everyday Contexts. Chandos, Oxford (2010).
11. Novak, J. D. : Learning, Creating, and Using Knowledge: Concept Maps as Facilitative Tools in Schools and Corporations. Routledge, London. (2010)
12. Saracevic, T.: Relevance: A Review of the Literature and a Framework for Thinking on the Notion in Information Science, Part III: Behavior and Effects of Relevance, Journal of the American Society for Information Science and Technology 58, 2126-2144. (2007)
13. Savolainen, R.: Everyday information practices: a social phenomenological perspective. Lanham, MD: The Scarecrow Press. (2008)
14. Sonnenwald, D. H., Wildemuth, B. M. & Harmon, G. L.: A research method to investigate information seeking using the concept of information horizons: an example from a study of lower socio-economic students' information seeking behaviour. The New Review of Information Behaviour Research, **2**, 65-86. (2001)
15. Steinerová, J.: Ecological dimensions of information literacy. Information Research 15(1) (2010).
16. Webster, L., Whitworth, A.: Distance learning as alterity: facilitating the experience of variation and professional information practice. Journal of Information Literacy 11(2). (2017).
17. Wenger, E., White, N., Smith, J. D.: Digital Habitats: Stewarding Technology for Communities. CPSquare, Portland OR. (2009).
18. Whitworth, A.: Information, mapping and power [working title]. Facet, London. (forthcoming)
19. Whitworth, A., Torras i Calvo, M., Moss, B., Amlesom Kifle, N.: How groups talk information literacy into being. In Proceedings of the European Conference on Information Literacy (pp. 109-118) (2016).