Media Context

Minimizing Knowledge Scepticism – Resourcing Students through Media and Information Literacy

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Globally connected and commodified digital means of communication offer a wealth of information across age-bands and across formal and informal sites of learning, yet few students obtain systematic training in transforming this information to knowledge that is tailored to their level of understanding and to the settings of learning. This gap between access to unsorted and often unsolicited information across boundaries of space, learning and generation and training in the formation of valid knowledge poses a threat to democratic societies that are based on informed citizens' joint debate and decision-making. This article addresses the gap between students' information access and their knowledge formation and discusses the challenges and possible solutions with empirical focus on the transition between upper-secondary and tertiary education. Globally connected social network sites ('social media') are key information sources for many students. Owing to their commodified, algorithmic and non-transparent character, these sites offer little guidance in terms of validation and verification of claims. I propose Media and Information Literacy (MIL) as an important means of minimizing the gap between information access and sound knowledge formation. This is because MIL goes beyond training of access to digital technologies and information search and retrieval. It also trains skills in applying communication technologies for validation, critique and knowledge production. I discuss the challenges posed to education to apply (MIL) as a key pathway to minimizing the gap in order to advance public value and societal resilience and suggest that educational systems shift their focus from teaching to learning in tandem with more inclusive approaches to where learning takes place.

Through human history there have been people doubting aspects of reality or, indeed, reality itself. The professionalization of doubt is scepticism, which is a tenet

in most philosophical systems. In the global north, the uneven process of modernization from the eighteenth century on sets up an opposition between secular veracity or fact and religious faith or belief. This opposition serves to relegate the basis of doubt to the private realm of faith and simultaneously minimize the grounds for public traditions of scepticism.

Yet, today, this division between private doubt and public scepticism seems to be blurring. Scepticism about what can be known and who can be trusted is fast becoming a global phenomenon that is shared by people in public and impacting their decisions and actions in daily life. Is President Trump right in claiming that the turnout for his inauguration ceremony in 2017 is bigger than Obama's in 2009? Should my baby get a vaccination? Does the radiation of mobile phones cause cancer? This type of scepticism I will term *knowledge scepticism*. It is not a concept encompassing a denial of truth itself, nor of reality as encountered and experienced. Hence, the concept does not capture conspiracy theorists, staunch cryptozoologists (in search of, for example, abominable snowmen) or believers in telepathy or UFOs. As noted, it is rather a default denunciation of public trust and of empirical knowledge within particular domains or themes and, importantly, this mundane scepticism is publicly shared.

While it is impossible to fully determine, whether we live in an era of 'postfactual relativism' (van Aelst *et al.* 2017) where knowledge scepticism is on the increase, the concept certainly stands in opposition to knowledge imparted by institutions such as schools and universities. They feed on and foster knowledge formation through argumentation, validation and critique of claims. My contention is this: the gap between knowledge scepticism and educational knowledge formation is accelerated by trends towards knowledge diversification, yet these trends are also to be taken seriously as catalysts in closing the gap. In what follows, that contention is underpinned by arguments in two steps. First, I explore why knowledge scepticism flourishes today, focusing on trends towards knowledge diversification. Such an exploration provides insights that are necessary to make the second step. Here, I analyse how educational institutions may minimize, if not close, the gap between knowledge scepticism and their time-honoured educational ideals of knowledge formation. Based on existing literature, I propose media and information literacy (MIL) as an important means of minimization.

To study and minimize the gap is important because the educational ideals have reality effects in terms of scientific validity and public trust. If these forms of validity and trust diminish, many practical interactions and inventions become unfeasible. On a grander canvas, it is vital for democratic societies to minimize the gap because these societies are based on informed citizens with the requisite resources to make sound decisions for themselves and society and with a willingness to debate issues of public interest.

Why Knowledge Scepticism Flourishes

More people than ever before receive some sort of formal education today and get access to tools for systematic knowledge formation. At the same time, educational

institutions no longer hold a privilege to model what counts as valid knowledge. The same is seen with other institutional gatekeepers of knowledge formation such as the church, legacy media corporations (newspapers, broadcasters) and publishers of non-fiction, including encyclopaedias and teaching materials. The institutional loci of knowledge formation are being diversified, and we are far from having an elite exercising their power to select and certify knowledge claims. This diversification may facilitate more democratic knowledge formation, challenging social and cultural privilege. But it also fundamentally blurs which knowledge institutions people can trust and hold accountable for their practices.

The trend towards institutional diversification of knowledge production is accompanied by a global commodification of knowledge dissemination and use. In academia, this is seen, for example, in journal publishers' introduction of gold open access where often steep page charges and access barriers serve to widen inequities of professional knowledge. In the wider educational sector, online learning resources and platforms are increasingly provided by a handful of global software companies. While publishers of print materials are also part of a commercial publishing tradition, the new players operate across the public life of school and the private lives of educators and students because the players can transfer data and user access across platforms without users' knowledge. For example, when Google for Education delivers the software system GSuite for education to schools, students, irrespective of age, can also log on to Google-owned Blogger and YouTube, unless local school authorities interfere.

The educational commodification is part of a wider process of knowledge dissemination that one may term 'evidence-light'. In much public discourse, not least on social media, independent knowledge brokers, such as academics, vie for the attention of audiences with experts from communication agencies, marketing companies and consultancies. In many fields, academic knowledge becomes just one voice among a choir of other contenders. Even people trained to understand the difference between personal claims and opinions and professional evidence-based arguments do not necessarily trust evidence over opinion. For example, a study in the USA found no correlation between knowledge of science and belief in an array of pseudoscientific claims (Goode 2002).

Since the 1990s, trends towards institutional diversification of knowledge production and commodification of knowledge dissemination have been greatly accelerated by global networks of digital communication, for example platforms such as Facebook, search engines such as Google and digital infrastructures such as the World Wide Web. Together, they serve to hugely increase both the production, distribution, use and storage of information as digital data. Individual knowledge production based on this information and its near-instant distribution hold significant democratic potentials as demonstrated in everything from mobilization of social movements (Coban 2016) to depression support groups (Griffiths *et al.* 2012). Yet, such democratic potentials are to be realized within systems of concentrated ownership of the digital networks. These networks have the power to gather, select and prioritize data and information without being subject to transparent public

control. Currently, two models of control operate on a global scale: a model of state control as seen in China and a model of corporate control by a few mega players as seen in the USA (van Dijck *et al*. 2018).

Under these conditions, how do people generate and share knowledge? Largely as a personal option and obstacle rather than a public good. Selecting and transforming distributed bits of information to relevant knowledge becomes a paramount individual task. Very few people understand how their data are used, and how they can protect their privacy and rights of expression online. Even fewer are in a position to exercise regulatory powers to curb state surveillance or corporate algorithmic logics. So, a default approach is to trust what other individuals seem to favour online as illustrated through likes, recommendations and reviews, but without knowing how and why these responses appear. There is no evidence to support that such an approach leads to filter bubbles; that is, algorithmic biases in information search. Nor is there sustained evidence documenting alleged echo chambers online; that is, interaction only with like-minded groups thus reinforcing, rather than challenging, existing political values (Dutton *et al*. 2017). Rather, the occlusion of online accountability, the distribution of trust and the individualization of knowledge formation lead many people to doubt or disband with established criteria of knowledge assessment. Hence, knowledge scepticism is the result of default options rather than a decisive opposition.

Taken together, institutional diversification, commodification and a dramatic, if uneven, take-up of globally connected digital communication are key catalysts in the flourishing of knowledge scepticism, thus widening the gap described above between that scepticism and formal educational knowledge formation. The educational sector is keen to close the gap, and it is joined by stakeholders such as legacy media corporations, scientific societies and NGOs. Across the various players, two 'closing' approaches stand out. One approach is to counter knowledge scepticism by professional advancement of the general public's knowledge through the application of (more) effective communication to people. The other approach is to counter knowledge scepticism by fostering people's own knowledge resources by communication with and by people.

Professional Communication to People

This approach to counter knowledge scepticism can be defined as a translational approach, by which is meant a translation of valid knowledge from the specialized domains of science (in the widest sense of the word) to the domain of public discourse and public opinion. Its key tradition is science communication, which took hold in the global North in the 1960s and today is a vibrant and diverse area. It is also an expanding research field with its own journals, conferences, and educational programmes.

Science communication is a tradition closely related to legacy media such as newspapers, popular journals, radio and television. Audiences span the general public and groups sharing specific interests. In addition, communication of scientific output is a

key source of policy advice (Renn *et al.* 2019), an aspect that is less relevant in the current context. In principle, the concept covers all academic disciplines, while in reality the focus in mainly on science, technology, engineering and mathematics (Guenther and Joubert 2017). Most science communicators are journalists whose professional training makes them focus on what is novel, unexpected or conflictual. So science communicators will mostly report on scientific results, not least those results that are tangible (innovations), surprising or contentious.

The aims of communication have changed somewhat over the years. Early on, the aim was to enhance what was seen as the public's general lack of knowledge by having professionals impart correct and valid knowledge. This so-called deficit model of communication (Bucchi and Trench 2014) has since been supplemented by a greater focus on popular understanding of science. Here, the aim is to have professionals impact people's motivations and attitudes towards scientific themes. Science centres, festivals and guided tours are all established means to advance popular understanding of science by activating a wide range of senses and modes of interaction. Yet, the mode of communication is still mainly determined and directed by professionals towards the public. Much scientific evidence is counter-intuitive – it takes a leap of the imagination to understand the dynamics of the solar system – and so much effort is spent on imparting unlikely, but accurate, hard evidence, even if the means of doing so involves more than reading and reasoning.

More recently, popular understanding of science combines communication of facts or results with initiatives to help motivate individuals to engage with scientific processes. This combination is popular with science museums, natural history museums and other sites, whose semi-formal learning is often directed at students of school age. Intermittently, action-based initiatives spring up, such as the March for Science, which started on Earth Day, 22 April 2017. With the aim to advance evidence-based policymaking in the common interest, the initiative has spread to many cities around the world.

Perhaps, the recent focus on scientific processes and their entanglements with contextual factors is seen most clearly in the actions taken against fake news online. In the research literature, the phenomenon is termed misinformation (Waisbord 2015), by which is meant that the epistemic conditions of information veracity and factual knowledge become a source of doubt. Misinformation challenges established traditions of context-free science communication without providing audiences with the requisite resources to assess how particular communicative, political or personal contexts impact on the validity and truthfulness of the claims made. Thus, misinformation may add to knowledge scepticism as a default stance.

A range of initiatives have been taken to combat disinformation. Fact-checking websites have sprung up, such as PolitiFact and PunditFact, where people can test the accuracy of political statements. In Sweden, a network, #Hurvetdudet? [#how do you know that?], started during a national election campaign in 2018 and is now backed by more than 70 organizations, including large funding bodies, trade unions and universities. It aims to advance scientific knowledge as a basis for policymaking

by having participants in public debate simply ask for arguments or evidence behind claims made.

The evidence is still inconclusive when it comes to documenting whether the aims are fulfilled to advance scientific knowledge, motivations or political accuracy by having professionals impart valid and correct knowledge to the public. A number of studies indicate that much depends on the theme, the professionals and their modes of address and, not surprisingly, on people's prior values and personal networks (Chan *et al.* 2017; Fischhoff 2019). These are important insights to all who want to minimize the gap between knowledge scepticism and educational knowledge formation. For while science communication is but one key approach to minimize that gap, its definition of valid knowledge and its model of communication are widely shared. It is therefore in order to explore whether alternative approaches may deliver better.

Communication With and By People

As a starting point of exploration, one may ask what the basic elements are in the formation of educational knowledge. Depending on the level and mode of education, it is important that students learn how to acquire and exercise types of knowledge that include systematic investigation: search and validation of existing knowledge, argumentation and critique of claims. Here, the ability to reason through argumentation offers itself as a key element. As is well-known from moral philosophy (Toulmin 2003 [1958]), argumentation is basically a practice of underpinning normative claims by solid documentation. To recognize and express an argument is a fundamental aspect of democratic deliberation and decision-making, and hence it resonates with the aims of education in democratic societies to foster rounded character formation as a social practice. Naturally, argumentation is also a basic foundation of valid scientific evidence across scientific disciplines.

Depending on age, socio-cultural background and educational level, students come with varying training in how to distinguish between claims-making and solid documentation. So, an immediate answer to curb knowledge scepticism would be to merely train students in argumentation across all subjects. In a manner of speaking, to replace everyday knowledge scepticism by scientific scepticism as a method of enquiry, where all claims undergo rational questioning. Yet, this choice would be to underestimate how contextual factors impact learning and, importantly, to disregard why knowledge scepticism flourishes as noted above. Instead, my proposition is to apply some of the same mechanisms that make knowledge scepticism flourish as catalysts to foster valid knowledge formation.

Knowledge scepticism is underpinned by hugely popular digital modes of communication such as social network sites that, to the untrained eye, seem immediate, networked, dialogic and relevant to one's everyday life. These features can be used to train communicative distinctions of substance: between genres, means of expression and modes of address – including attention to (lack of) arguments. In addition, the

training can usefully mime the dialogic and networked nature of communication, which many students find relevant and appealing. Such an approach implies that students, rather than being objects of one-way communication as in the tradition of science communication, become subjects of communication as producers, critics and designers.

MIL is an umbrella term for training multimodal communication competencies in a digitized, networked era with students and by students themselves. MIL goes beyond training literacy in relation to particular areas (e.g. science literacy), particular communication technologies (e.g. print literacy, computer literacy) or particular aspects of communication (e.g. information literacy). Rather, MIL 'empowers citizens to understand the functions of media and other information providers, to critically evaluate their content, and to make informed decisions as users and producers of information and media content' (UNESCO n.d.). According to this definition, all types of media technologies are contextualized means of communication. This implies that teaching focuses on the shaping and sharing, the critical assessment and safe archiving of content. Content may be text, words, numbers, images or sound, all of which are semiotic tools through which users articulate meaning. Importantly, a focus on communication invites a dialogic understanding of media and a student-centred approach to teaching. The MIL concept deviates from more prevalent technology-driven teaching that defines digital media as neutral infrastructures with no impact on the type of knowledge they convey. Such teaching will focus on students' access to, search and retrieval of a plethora of information or be attuned to human–computer interaction and digital design.

MIL is an important means of minimizing the gap between educational knowledge formation and knowledge scepticism. This is because it builds on, rather than debunks, most students' attraction to digital media as networked modes of communication. It is also because it acknowledges that students are not digital natives (Prensky 2001) but need systematic training to achieve literacy. Furthermore, MIL is important because its training involves critical and contextualized assessment of knowledge in different domains. Here, the difference between claims-making and argumentation is key, but also validation of sources (who speaks, in whose interest, from which institution). Last, but not least, MIL is important because it fosters students' own modes of expression as social practices that involve not merely having a voice but also listening to others with whom one may disagree.

Training MIL With and By Students: What is the Evidence?

Existing training in MIL is uneven and subject to competing discourses on technological upskilling with a focus on coding and design of digital infrastructures (Drotner *et al.* 2017). For Europe, perhaps the most comprehensive picture can be gleaned from a large-scale, comparative study, EU Kids Online. It reveals that about a quarter of children aged 9–16 reach what the authors term 'the most advanced and creative step' on the 'ladder of opportunities', which includes

filesharing, blogging and visiting chatrooms (Livingstone *et al.* 2011, 14). So, in terms of the dimensions inherent in MIL, training students in the basic skills of access and validation of information is more prevalent than the more advanced dimensions of analysis, critique and production.

One might surmise that this situation is mostly the case for primary and lower-secondary education and that older students might demonstrate a better proficiency. Limiting my documentation to a Danish context, this does not seem to be the case. Studies demonstrate that students at upper-secondary and the first years of tertiary education find it difficult to distinguish between claims and documentation, are uncertain about locating existing knowledge about issues of relevance for them, and are often at a loss about producing valid documentation themselves (Blom *et al.* 2017; Drejer 2018). Academic streams of upper-secondary education as well as tertiary education require that students in their written exams demonstrate skills of documentation as well as location and referencing of valid knowledge sources. Not surprisingly, a number of initiatives are underway to solidify these dimensions of MIL. A study encompassing nine Danish upper-secondary schools, 1000 students and about 50 teachers found that a key pathway to quality improvement is to make students' documentation of systematic information search a more important part when grading assignments. In addition, students need easier access to validated knowledge databases (and not in English only) so as to avoid Google, YouTube and unsolicited digital sources as key reference points (Grønning and Mortensen 2018).

When it comes to the key dimension of critical analysis, including argumentation, the situation is no brighter. Many students have difficulties acquiring this training, and many institutions have difficulties in providing this training – or, at least offering formats that students find relevant and useful (Hagström 2005; Wingate 2012; Widhiyanto 2017). Training with students, and not merely of students, seems to be an important way forward. Such an approach includes that teachers acknowledge students' everyday modes of communication and their knowledge formation beyond school as immediate reference points (Arnseth *et al.* 2016). This acknowledgement also means taking students' knowledge scepticism seriously as a mode of understanding, even if educators reject its substance. Without analytical training grounded in students' own understanding, education in argumentation and critical thinking may result in just another form of rote learning.

Relating educational knowledge to other types of knowledge formation is a useful starting point if educators want to counter knowledge scepticism. But to have a long-term effect such a relation needs to be combined with contextualized MIL training that reaches beyond students' existing knowledge horizons. For example, most students (and many educators) fail to understand the algorithmic structure of digital search engines and platforms (if something is popular, it must be right) and their commodified nature (if something is top on the list, it must be important, even if it is wrong). To avoid individual shaming, students need to be made aware of structures underlying the large platform operators whose business models feed on datamining and opaque terms of use (van Dijck *et al.* 2018).

Yet training critical analysis and solid argumentation is not enough if MIL is to minimize knowledge scepticism in the longer term. It is key to advancing students' own production skills beyond the skills most commonly trained at school: oral presentations and written assignments. Students should receive systematic training in multimodal expression to be able to counter knowledge sceptics on their own turf, so to speak: producing small videos, brief podcasts or chat entries. Yet, students' digital production skills beyond written and oral modes are the most poorly developed and understood (Drotner 2019). This situation poses a potential risk of solidifying knowledge scepticism in the digital domain, because students lack the tools necessary to express their own opinion with a view to others who may disagree.

On a grander canvas, this most advanced dimension of MIL is important to foster because it is fundamental to students exercising their freedom of expression in the twenty-first century. Citizens' right to freedom of expression is a cornerstone in democratic societies. In 2016, the UN Human Rights Council updated this right to fit the twenty-first century by codifying that internet access is a basic human right and that internet access 'can be an important tool for fostering citizen and civil society participation' (Human Rights Council 2016, 4). In 1989, the Convention on the Rights of the Child extended freedom of expression across all types of media to citizens under the age of 18. Article 13 of the Convention states that children's right of expression 'shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child's choice' (*Convention* 1989, n.p.). Irrespective of age, then, citizens have formal rights of expression that fit the digital age. Yet, without proper training these rights cannot be exercised. In that sense, minimizing the gap between educational knowledge and knowledge scepticism forms part of a wider, more contentious, and ultimately more decisive process.

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