

POLICY BRIEF 28

June 2019

The Databuzz: Data Literacy for the Data Society

Wendy Van den Broeck, Leo Van Audenhove, Karen Triquet, Andy Demeulenaere and Pieter Ballon

1. The Databuzz: bringing data literacy to schools

One of SMIT's current flagship projects, the Databuzz, focuses on data research and data literacy. The Databuzz is a high-tech mobile lab that increases the data literacy of young people aged 10 to 18 through inclusive and participatory educational activities. The Databuzz, was recently launched with the support of the VGC (Vlaamse Gemeenschapscommissie), Vrije Universiteit Brussel, and imec.



Figure 1: Side profile of the Databuzz

Thematic workshops

The Databuzz will initially deliver **thematic workshops** for children and young people to schools in Brussels. These workshops nurture more affinity with the intangible and intimidating complexity of data. The bus raises awareness on the value, limitations, risks and prominence of data by letting pupils handle data relevant to their everyday reality.

imec-SMIT partnered with **Mediawijs, imec, MICT UGent, AI-lab, VRT and Gluon** to develop these. Other supporting partners are Telenet, BILD VUB and OCB.

During these workshops children playfully discover all aspects of data while solving real-world problems. They capture data, process and analyse it, interpret it critically and visualize it. The Databuzz not only familiarizes them with these uses and contexts, but also helps them actively analyse, evaluate and reflect on the importance and consequences of data in society. Children are confronted with the opportunities of data, as well as the potential risks, limitations and barriers. In this way we equip children with the necessary critical data skills they need today and in the future.



The Databuzz currently offers seven educational workshops on data:

- Escape the Databuzz: an escape room focused on the basics of data,
- Personal Data Sharing: digital footprints and personal data value,
- Data Journalism: analyzing and visualizing collected data to inform society,
- Smart Schools & Space: collecting data on your surroundings with sensors and using it,
- Mobile DNA: tracking and evaluating the data on your smartphone use,
- Artificial Intelligence: programming intelligent systems and data mining,
- Quantified Self: using your own physiological metrics and behavioral change dashboards.

Focus on research

On the other hand, the Databuzz serves as a way to gather data for **research**. It does so co-creatively and guided by ‘the third wave of self-regulated learning’¹. The current Databuzz research programme focuses on student motivation, collaboration and self-regulated learning strategies. Real-time insights gained on student motivation and behaviour will be used to co-create student and teacher dashboards, enabling feedback loops and the search for more scientifically underpinned student-centered learning and personalisation.



Figure 2: Inside the Databuzz

For this we apply living-lab cases in the Databuzz and the school environment. The Databuzz will enhance our data literacy research agenda, conceptualising a data literacy model and developing best-practice cases.

All this makes the Databuzz a **unique vehicle** that **enhances synergies between educational practice, edtech awareness, hands-on experience and state-of-the-art research with data literacy as its main focus.**

2. Why do we need to focus on data literacy?

‘Data’ is considered to be the new oil. It is omnipresent in today’s society. While the usage and adoption of data-driven and informed practices provide many **advantages**, there are also a number of **disadvantages** linked to their increasing societal value and roles. Current issues like fake news, misuse of data monitoring, profiling in political campaigns, learnification, data breaches and the overarching privacy dimensions of data, indicate that data are not always used for good.

¹ Ernesto Panadero, Julia Klug & Sanna Järvelä (2016) Third wave of measurement in the self-regulated learning field: when measurement and intervention come hand in hand, *Scandinavian Journal of Educational Research*, 60:6, 723-735, DOI: [10.1080/00313831.2015.1066436](https://doi.org/10.1080/00313831.2015.1066436)

This **duality in the societal impact of 'data'** has raised the need for specific knowledge, skills and attitudes referred to as data literacy. Debates on datafication, big data, open data and artificial intelligence all indicate a clear need for **data literacy**. But how can we conceptualise data literacy? And what do we already know from research? It is clear that datafication and its evolution reaches far beyond the scope of the media field as we know it. To develop a clear framework of data literacy and how its conceptualisation might serve our research, we can build on digital and media literacy research and the framework of digital and media literacy developed over the past decades.

3. What can we adopt from the Flemish Media Literacy competence model?

In Flanders, the concept of media literacy was established with the development of the *Conceptnota Mediawijsheid*² by the Flemish government in 2012. Since then different governments, departments and ministers have supported digital and media literacy initiatives. The definition of media literacy in the concept paper still forms the cornerstone of the current policies.

“Media literacy is ‘(...) the whole of knowledge, skills, and attitudes that allow citizens to act in a complex, changing and mediatised world in a conscious and critical way. It is the ability to use media in an active and creative way, aimed at societal participation”³.

This definition accurately reflects the philosophy and tone of digital and media literacy policy in Flanders. Flemish digital and media literacy policy views the role of media in society as emancipatory. It finds that our view of the world mediated. As a consequence, citizens need to be aware of the role of media, their possibilities, and their effects. The definition stresses that users can become active and creative participants who are—or should be—able to use media for self-expression and societal participation.

As recommended in the *Conceptnota Mediawijsheid*, a Knowledge Centre for Media Literacy, ‘Mediawijs’ was established in 2013. The centre’s goal is to play a key role in media literacy policy, strategy and implementation in Flanders. It is independent, but plays a mediating role between the public, the socio-cultural field, education, public/private media players, policy and the research community. Mediawijs develops different programmes focusing on knowledge sharing and training targeting schools, teachers, parents, libraries, youth work, digital inclusion projects, heritage workers, the social care sector and the general public.

To guide its work on digital and media literacy, Mediawijs developed a competence framework.⁴ With **competence** (as an individual) we refer to having the necessary knowledge, skills and attitudes to act adequately in a specific situation. Competences related to media literacy can be subdivided into two competence clusters: **using media** and **understanding media**.

By **using media**, we mean **active, technical and creative use of media**. This ranges from very simple activities such as being able to handle a mouse or saving a document, to more complex actions such as being able to edit a video or creating a vlog or a website.

By **understanding media**, we mean **dealing with media consciously and critically**. That ranges from seeing what the (im)possibilities of media are and for what purposes they are intended or suitable, to being aware of your own media skills, those of others or of societal consequences and how to change these.

The **circle of media literacy competencies** is a **continuum**. The different competencies partly overlap, are used in combination, in a sequence, or without a sequence. Users might be performing

² Conceptnota Mediawijsheid:

https://mediawijs.be/sites/default/files/artikels/bestanden/conceptnota_mediawijsheid.pdf

³ our translation, Conceptnota Mediawijsheid, 2012.

⁴ The development of the model is the result of a joint effort and participatory process led by Hadewijch Vanwynsberghe. See: <https://mediawijs.be/dossiers/dossier-mediawijs-competentiemodel/>

high in a specific competence, but lacking in others. Media literacy initiatives can therefore choose to help strengthen users' specific competences, or their media literacy more generally.

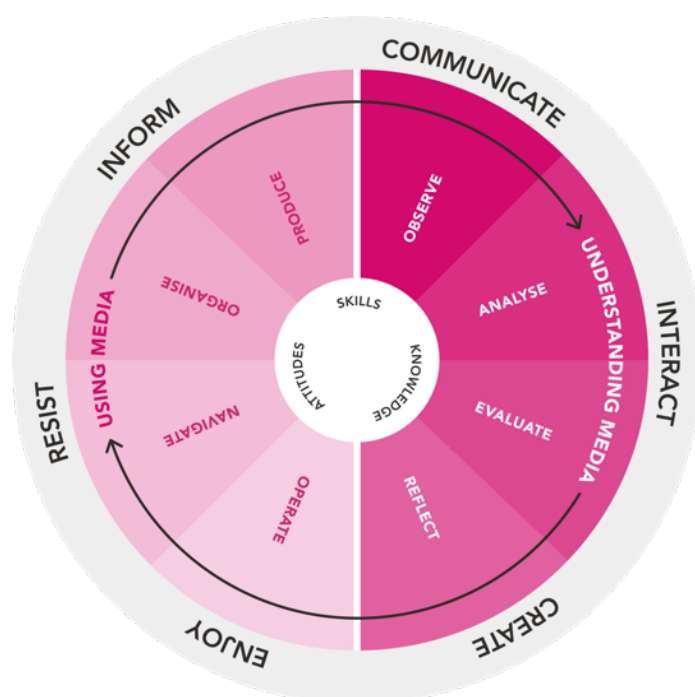


Figure 3: Circle of media literacy competencies

An analysis of 27 models of media literacy and digital skills led Mediawijs to the conclusion that in our current times, media literacy and digital literacy are essentially two sides of the same coin, one cannot go without the other and both mostly overlap.

An important question is **whether the media literacy competence model is also sufficient to include the necessary skills related to data gathering, data analysis and data interpretation.** Given data's ubiquitous nature, the focus on media might be too narrow. On the other hand, the existing competence model provides several clear goals and competences that prove relevant in laying the groundwork towards developing a data literacy framework.

4. Towards a Data Literacy Model

The discussion on data literacy is a more recent one. It resonates with former debates on digital literacy during the digital turn and with current ones on algorithmic literacy, big data literacy, coding literacy, platform literacy, etc., It also has links to much older discussions about numeracy and statistical literacy. The literature on the topic highlights different competences targeting several different groups and populations. Making sense of and finding consensus in this emerging body of literature is a challenging, but necessary task. It is clear that the clustering in **using media** and **understanding media** in the Media Literacy Competence model, can also be applied to data literacy. Some general data literacy definitions do point to these two clusters. The often-cited Data-Pop Alliance for instance, defines data literacy as 'the desire and ability to constructively engage in society **through** and **about** data'⁵. Yet, most literature focuses only on '**using**' data and not on '**understanding**' data as used in de Media Literacy Competence model. Moreover, most existing approaches assume that the technical use of data will automatically lead to the understanding of the personal and societal dynamics of the use of data.

The work on using data starts from the observation that data permeates all aspects of our current society. This body of work argues that being able to use datasets will enable citizens to use and work with data for their own good or to actively participate in and influence policy in terms of the public good. The open data movement for instance typically sees data literacy as complementary to opening up access to public data. These views tend to focus on technical, computational and statistical competences for finding, structuring and working with and building services on the basis of datasets. Although they do refer to core processes in analysing, evaluating and understanding data, these interpretations are often confined to understanding the hard data as such. The focus is less on how and when data are generated, how and why data are gathered, how they are processed and used in different decision-making processes and what the social and

⁵ Bhargava, Rahul, Erica Deahl, Emmanuel Letouzé, Amanda Noonan, David Sangokoya, and Natalie Shoup. *Beyond Data Literacy: Reinventing Community Engagement and Empowerment in the Age of Data*. Data-Pop Alliance White Paper Series. Data-Pop Alliance & Internews, 2015.

economic consequences are. In other words, much of the literature **lacks a critical understanding** of the role of data in the data society.

A balanced approach to data literacy needs to emphasise both dimensions: **using data** and **understanding data** in equal ways. They need to be integrated into a comprehensive model. The assumption mentioned above, that using data automatically leads to understanding data, needs to be questioned. For digital literacy, it is known that different age groups score differently for the two clusters. Older people are often good at understanding digital media but less good at using digital media. Younger people are often very good at using digital media but perform less on critical skills that can help them understand digital media. For data literacy, not much is known on the relationship between the two. Data, statistics and numeracy are often intimidating or intangible to people, especially in an educational context. A focus on understanding data in its societal context with a focus on applications, technology, social media and innovation close to the everyday experiences of the audience might raise interest in the subject, more than hard (seemingly irrelevant) data analysis.



Figure 4: SMIT researchers interacting with the Databuzz smart boards

In line with the competence model on media literacy we propose the following working definition for data literacy:

Data literacy refers to the knowledge, skills and attitudes to actively, creatively, critically and consciously use and understand data to promote individual autonomy, security, fulfilment and social, economic and political participation. It comprises the skills to collect, organise, analyse, evaluate, scrutinise, visualise and present data. It encompasses an understanding of the role of data in the emerging data society of automated decision making through algorithms and AI.

Data literacy competences cannot be exercised in a vacuum. They depend on a **context** in which citizens can use their competences. Access to open data at the city level for instance, is rather useless if citizens are not allowed to actively engage with decision-making processes. Being aware of how social media platforms store users' data is not helpful when those platforms do not allow users to change privacy settings. To reflect this notion, we complement our former definition as follows:

In order for data literacy to function, **rights, regulations** and measures need to be in place for citizens to make informed choices based on their competences. Industry and governments need to guarantee a **trusted environment** in which citizens' fundamental rights to privacy, freedom of speech, movement etc., are guaranteed and in which citizens are not discriminated against by automated decision-making processes.

This proposed definition indicates that the Media Literacy Competence model remains relevant, however it needs to be broadened with a focus on the contextual factors linked to data in society. **Additional research is needed to investigate the relationship between using and understanding data in specific contexts.**

In the following years, data literacy and the role of data in society will be important research topics in imec-SMIT's core domains: media, smart cities and health. This focus will also provide us with

the necessary insights to establish a clear data literacy model that can encompass the necessary skills related to data in these different domains.

5. Food for thought for policy and research

Based on our work, originating from our expert group at Mediawijs, the Databuzz and the Smart Education approach, it is clear that there is a need for a policy framework that focuses on the specific challenges of a datafied society.

As mentioned, data literacy can only function in a targeted **contextual framework**, providing a trusted environment, safeguarding citizens' fundamental rights to privacy, freedom of speech and movement.

- + As the technological developments in data, algorithms and artificial intelligence are changing society, making the public well informed and resilient is essential. To be able to make informed choices, citizens need transparency, trust and appropriate measures. It is up to governments to develop adequate policies and to regulate industries. Our research can inform these processes.
- + Data literacy, digital literacy and media literacy diverge in the research and disciplines that inform them. Especially in terms of data literacy, fields such as mathematics, statistics, engineering, coding and programming should further engage in dialogue with the social and educational sciences to
 - + study the impact of data, artificial intelligence and algorithms on society,
 - + formulate the ethical implications and proposals for the necessary measures,
 - + and develop inclusive data literacy initiatives and content.
- + Data literacy, digital and media literacy share a common approach in terms of using and understanding data and media. They also share a common goal to contribute to better educated, more resilient and more critical citizens, that can shape their own lives and participate in public life. Data literacy, digital literacy and media literacy are part of rethinking literacy for the data age that is upon us. In this way media literacy, digital literacy and data literacy form some of the many different faces of the same literacy coin.
- + An initiative like the Databuzz that focuses on increasing data literacy among children and young people through education, offers the necessary skills and tools to live in a datafied society. This kind of initiatives is important and necessary. The Databuzz is one of many possible efforts to put data literacy on the agenda of schools and teachers. In the long run, schools and the educational sector in general should integrate data literacy in courses and curricula.
- + From an educational perspective, it is important to question what practical approaches work best to stimulate data literacy. A lot of approaches start from *using data* with a strong focus on stats and maths. This might scare off a sizeable portion of pupils. We therefore propose to work on initiatives that start from *understanding data* or, ideally, both, in an integrated, tangible and interactive way. The *Databuzz* is our attempt to contribute practically—but also in terms of research—to these challenges.

Wendy Van den Broeck (wendy.van.den.broeck@vub.be) is a professor at the Media and Communications studies department of the Vrije Universiteit Brussel where she teaches several international and national courses related to research methodology. She is head of the Living Lab cluster at SMIT and a senior researcher in SMIT's media unit. Her research focuses on personalised and immersive media, living lab research and the Databuzz.

Leo Van Audenhove (leo.van.audenhove@vub.be) is head of department of Media and Communication Studies at the Vrije Universiteit Brussel. He is the academic director of the Flemish Knowledge Centre for Digital and Media Literacy www.mediawijs.be and senior researcher at imec-SMIT. He is extra-ordinary professor at the University of the Western Cape. His research focuses on media literacy, digital inclusion, ICT4development and internet governance.

Karen Triquet (Karen.Triquet@vub.be, @k.triquet) is a researcher in the department of Media and Communication Studies at the Vrije Universiteit Brussel. Leading the research dimension of the imec-SMIT Smart Education Project and The Databuzz; her work and research focuses on self-regulated learning within and through technology-enhanced and enabled environments, digital literacy development, and more holistically, systemic digitalisation processes (systems, human and machine) towards more learner-empowered uptake.

Andy Demeulenaere (andy.demeulenaere@mediawijs.be) is the coordinator of Mediawijs, the Flemish Knowledge Centre for Digital and Media Literacy. He has coordinated the vision and educational policy of the largest youth movement in Belgium and the main Flemish organisation on digital youth work and presided over the board of the Flemish umbrella organisation for youth work. As a long time professional and volunteer youth worker empowering people is at the core of his work, as an experienced organisation manager achieving societal impact with reasonable resources is an essential focus, as a historian critical thinking and connecting the current trend to historical evolutions is in his nature.

Pieter Ballon is a professor at the Media and Communications Studies department of the Vrije Universiteit Brussel and the Director of the research group SMIT (Studies on Media, Innovation and Technologies). He was appointed the first Brussels Smart City Ambassador and is also the International Secretary of the European Network of Living Labs. His expertise lies in the Smart City area for both Brussels and the Flanders Region.

The Databuzz is a project supported by VGC, VUB and imec. For more information on the Databuzz, visit: <https://Databuzz.be/>