

## Chapter 9

# Big Data Literacy: A New Dimension of Digital Divide, Barriers in Learning via Exploring “Big Data”

**Dimitar Christozov**

*American University in Bulgaria, Bulgaria*

**Stefka Toleva-Stoimenova**

*State University of Library Studies and Information Technology, Bulgaria*

### ABSTRACT

*The chapter addresses the problems of digital divide in the light of learning from data in the era of accumulated, available, and accessible Big Data. The phenomenon of Big Data arose in the last years and offered new dimensions of digital divide: the challenge that the human society faces since the appearance of computer technology. Objectives of this chapter are to highlight problems and barriers in learning from Big Data and to initiate discussion on the ways to overcome those new challenges. The chapter tries to define the “Big Data Phenomenon,” to identify the phases and activities in the process of learning from data, and to relate them to learning from Big Data. As a result, a paradigm of competences and barriers for acquiring Big Data literacy are proposed as a new dimension of literacy in dividing the human society.*

### INTRODUCTION

The objectives of this book is to discuss “Data-Based Wisdom as the use of technology, leadership and culture to create, transfer and preserve the organizational knowledge embedded in its data, with a view to achieving the organizational vision.” Learning from data, knowledge transfer

and building a deep understanding of processes, forces cause-and-effect relationships which are essential in guiding rational behavior. Preserving knowledge is another essential aspect, which allows a continuance to following rational behavior. These two major objectives require mastering the skills to learn from data. Those skills have evolved over the centuries and we now face a new round of

DOI: 10.4018/978-1-4666-8122-4.ch009

this evolution, which might be marked as literacy to learn from Big Data. Skills to learn from Big Data are becoming more and more important for organizations, but also for individuals. We are facing a new dimension of digital division, which affects both social entities and individuals. Understanding the opportunities provided by Information Technologies to record all facts associated with events that happen inside and outside of an organization in a searchable media to learn about the forces which cause the given behavior is just a first necessary condition. Equally important is how to extract the useful knowledge from data and how to utilize this knowledge. These represent the challenges of the day.

### **Literacy as the Ability to Learn from Data**

In the past, literacy was identified with the ability to learn from particular type of data: “reading” is associated with learning from a written form in a natural language text; “writing” addresses an ability of sharing data in a way to externalize the knowledge (assuming terminology of Nonaka’s SECI model); “doing arithmetic” is related to the ability to understand and process numerical data in a way to learn quantitative properties and relationships.

Recently, literacy were related to the ability to learn from extensive data resources: “information literacy” addresses the ability to locate, identify and retrieve relevant data. Use of information technology added a new dimension in learning from data - “computer literacy” refers to the ability to use computer technology in data processing to learn. Currently we may speak about “informing literacy” and “social network literacy” (Christozov & Toleva, 2013).

Any of those literacy types can divide the human society into two categories, of course with quite fuzzy boundaries, the categories include

literate and illiterate members of the society. Any literacy offers advantages to the group of literate and disadvantages to illiterate members. The history of evolution of the human civilization over centuries can be considered as overcoming those divisions by spreading competence of learning from data within the society.

Currently we are in the beginning of the next round of this evolution - the Big Data challenge. This challenge addresses the human ability to learn from an amount of data significantly beyond the human cognitive capacity. Such competence incorporates skills to learn from data developed by all “literacies”, identified so far, but needs also additional expertise - knowledge, skills and experience. This chapter addresses what represents these additional skills and competences and marks them as “Big Data Literacy”. The aim is to initiate discussions on several important issues:

- What are the major attributes of Big Data literacy?
- What processes and competences are needed to learn from Big Data?
- Whether abilities to learn from Big Data are actually new specific literacy or just new dimensions of those well-known?
- Whether the existing educational systems are prepared to respond to the challenge of Big Data?
- What to do to avoid possible consequences of the divided society?

Many other questions will likely appear in the near future, when the current Big Data grows to Bigger and even Biggest Data and when the new words used to describe the volume of Data start to appear in our everyday vocabulary more and more frequently. The time between the appearance of “KB” and “MB” was double the time between the appearance of “MB” and “GB”; which itself was twice the time between appearing “GB” and

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/big-data-literacy/125051](http://www.igi-global.com/chapter/big-data-literacy/125051)

## Related Content

---

### A Predictive Analytics Framework for Blood Donor Classification

Kavita Pabrejaand Akanksha Bhasin (2021). *International Journal of Big Data and Analytics in Healthcare* (pp. 1-14).

[www.irma-international.org/article/a-predictive-analytics-framework-for-blood-donor-classification/277644](http://www.irma-international.org/article/a-predictive-analytics-framework-for-blood-donor-classification/277644)

### Teleworker Experiences in #COVID-19: Insights Through Sentiment Analysis in Social Media

Rigoberto García-Contreras, J. Patricia Muñoz-Chávez, David Valle-Cruzand Asdrúbal López-Chau (2022). *Handbook of Research on Opinion Mining and Text Analytics on Literary Works and Social Media* (pp. 388-412).

[www.irma-international.org/chapter/teleworker-experiences-in-covid-19/298881](http://www.irma-international.org/chapter/teleworker-experiences-in-covid-19/298881)

### Robotics in Surgical Techniques Robotics in Surgical Techniques: Present and Future Trends

Vassilia Costarides, Apollon Zygomas, Kostas Giokasand Dimitris Koutsouris (2020). *Data Analytics in Medicine: Concepts, Methodologies, Tools, and Applications* (pp. 2033-2047).

[www.irma-international.org/chapter/robotics-in-surgical-techniques-robotics-in-surgical-techniques/243208](http://www.irma-international.org/chapter/robotics-in-surgical-techniques-robotics-in-surgical-techniques/243208)

### Data Mining Problems Classification and Techniques

Nayem Rahman (2018). *International Journal of Big Data and Analytics in Healthcare* (pp. 38-57).

[www.irma-international.org/article/data-mining-problems-classification-and-techniques/209740](http://www.irma-international.org/article/data-mining-problems-classification-and-techniques/209740)

### A Survey on Prediction Using Big Data Analytics

M. Supriyaand A.J. Deepa (2017). *International Journal of Big Data and Analytics in Healthcare* (pp. 1-15).

[www.irma-international.org/article/a-survey-on-prediction-using-big-data-analytics/197438](http://www.irma-international.org/article/a-survey-on-prediction-using-big-data-analytics/197438)