DATA LITERACY

Users Engagement International Workshop
18-21 June 2019, Amman, Jordan

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Introduction

- Data allow us to define and develop products, monitor and evaluate progress, predict, support decision making, guide our actions and decisions, etc.

- Big data era: flow of data coming from everywhere – we generate and use data permanently.

- Era of fake news: truncated, falsified information circulates everywhere.

- Increasingly important for citizens to understand data presented in newspapers, on the internet and elsewhere.

- What does it mean to be data literate? How can it be used in the official statistics context?

Outline

1. Literacy: a long trip in the history

2. What is data literacy?

3. Data literacy and official statistics

4. Data literacy for specifics users groups
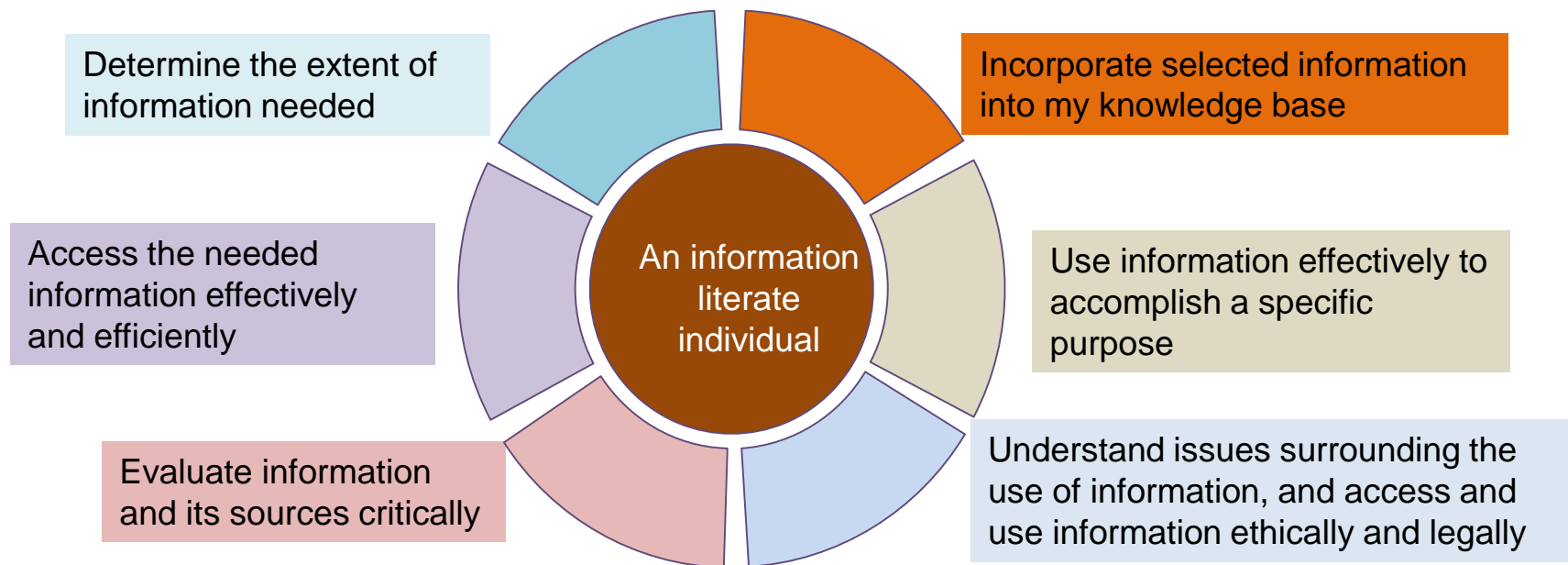
Literacy: a long trip in the history

- History in English: 'literate' meant to be 'familiar with literature' or 'well educated, learned'.

- In nineteenth century: referred to the abilities to read and write text, while maintaining its broader meaning of being 'knowledgeable or educated in a particular field or fields'.

- English word 'literacy' different from its translations in several other languages. Ex. *Alphabétisation* in French refers to 'literacy learning', denote the process of literacy acquisition.

- In statistics: literacy is the ability to read and write a simple sentence in a given language.

- Several issues in is measurement depending mainly on data sources (survey and census) and language used (local vs international language).

Literacy: a long trip in the history

- UNESCO (2003): *'Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society*

- Nowadays: much broader sense to refer to knowledge and competence in a specific area such as 'information literacy', 'visual literacy', 'media literacy', 'scientific literacy', or 'data literacy'.

What is data literacy?

- Early academic efforts to define data literacy were linked to information literacy and statistical literacy

- **Information literacy** *is a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information."*

Determine the extent of information needed

Incorporate selected information into my knowledge base

Access the needed information effectively and efficiently

An information literate individual

Use information effectively to accomplish a specific purpose

Evaluate information and its sources critically

Understand issues surrounding the use of information, and access and use information ethically and legally

What is data literacy?

- Statistical literacy "*is the ability to **understand** and critically **evaluate** statistical results that permeate our daily lives – coupled with the ability to **appreciate** the contributions that statistical thinking can make in public and private, professional and personal decisions*" Katherine K. Wallman (1993)

"*The actions implemented during my mandate have contributed to a significant reduction in poverty, decreasing the proportion of the population living below the poverty line from around **92%** to almost **70%**.*"

92% - National poverty line
70% - International poverty line

These two statistics are not comparable

What is data literacy?

Min **18°C** Max **29°C**
A few showers

Chance of any rain: **60%** ▮▮▮▮▮▮▯▯▯▯
Possible rainfall: **2 to 10 mm**

Consider the three green colored numbers related to rain in the weather forecast above. What do these numbers tell you and which of these do you think is correct?

- – A. 60% chance of rain between 2mm and 10mm
- – B. 60% chance of rain in a 24-hour period
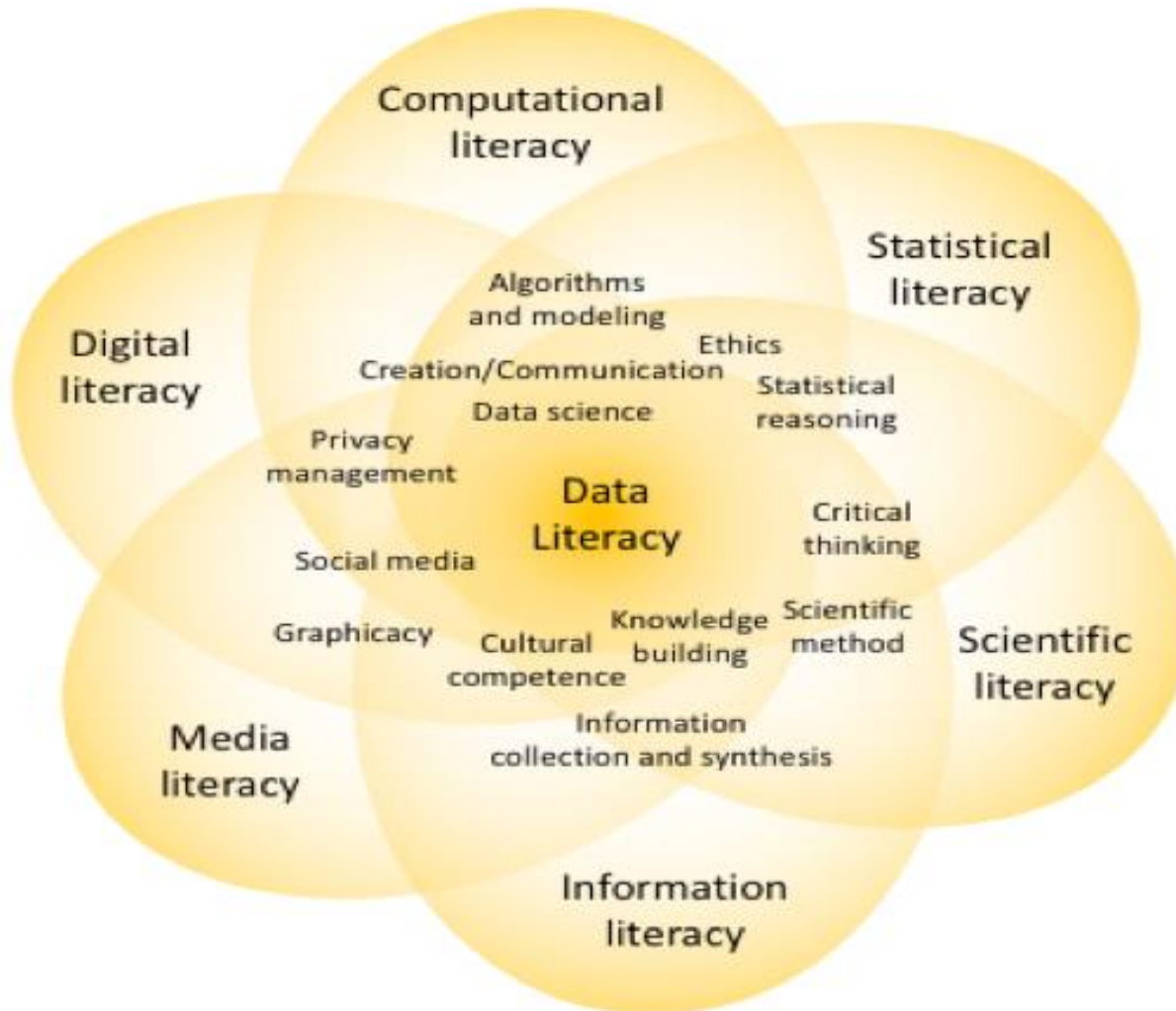- – C. 40% chance of rain less than 2mm

Mac Bryla in Data literacy: A critical skill for the 21st century

Requires level of literacy specific to weather forecasting

What is data literacy?

- The example, apparently simple, shows that data literacy is:

  not just the ability to read the numbers, but also the ability to find meaning in the numbers and derive meaningful information from data.

- Current approaches to define data literacy focus on:
  - Identification of data
  - Understanding data
  - Operating on data
  - Using data

What is data literacy?

Computational literacy · Statistical literacy · Digital literacy · Media literacy · Information literacy · Scientific literacy · Data Literacy · Algorithms and modeling · Creation/Communication · Data science · Ethics · Statistical reasoning · Privacy management · Social media · Graphicacy · Cultural competence · Knowledge building · Scientific method · Critical thinking · Information collection and synthesis

- Practical definition: *ability to find data, work with data, analyzing data and arguing with data.*

Source: Beyond Data Literacy: Reinventing Community Engagement and Empowerment in the Age of Data

Data literacy and official statistics

- The NSS stakeholders should promote data literacy among users of official statistics to:
  - Prevent misuse of statistics (Principle 4 of the FPoS)
  - increase awareness and knowledge of official statistics and data
  - Increase effective, efficient and multiple use of statistics and data
  - Assist users in their decisions and choices
  - Break down barriers between people and data

- NSS stakeholders should incorporate data literacy in their work programmes - continuously works to promote statistical and data literacy in the community - Make it more visible!
- It is key component of user engagement

Data literacy and official statistics

DL components	What the NSS stakeholders can do
Find data	• Facilitate data access
Work with data	• Facilitate data understanding and use (dissemination, data presentation, etc.)
Analyze data	• Build skills: in critical analysis, interpretation, combination of various data, manipulation, etc.
Arguing with data	• Develop capacities: use of data in one's work, acting based on data

But should be adapted to users groups which are different
➔ Adopt different approaches

Economic | Commission
Commission for | économique pour
Africa | l'Afrique
1958 - 2018

Data literacy for the media

Why? *Because of the important role the media play in the transmission of data and statistical information to the public.*

How?

– Trainings of statistician/demographers/etc. in media relation

– Building the capacity of journalists in statistics

– Implementation of Data Dissemination standards

The aim is to heighten awareness of the journalistic world amongst statisticians/demographers …

Covers:
- Writing for the media or following media style (KISS, reverse pyramid writing)
- Making statistical products and services easier to access and more understandable
- Product development more user oriented

Some Illustrations:
- Courses on writing skills for experts to produce better releases and publications
- Media relations training to help staff acquire the skill to deal effectively with the media
- Guidelines for press contacts
- Guidelines on how to release statistics and templates for press releases

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The aims:
- Educate the Media to use statistics in the right way
- develop a profound understanding of the key statistical concepts
- Introduce the thinking methodology behind statistical thinking
- Increasing familiarity with causal thinking concepts when analyzing data
- Polish objective critical thinking' skills

Some Illustrations:
- To second statisticians in the Media
- Background information seminars
- General and thematic trainings and e-learnings
- Formal and informal contacts with Journalists
- Develop and disseminate key documents used in statistical activities such as manual of concept and definitions of terms
- Investigating media practice

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The aims are to facilitate interpretation of data, retain trust in official statistics (Principles 3 and 4 – FPOS)

Some illustrations:

- Present data and statistics in a clear and comprehensible form (Principle 4 – ACS)
- Data available, easy accessible and accompanied by the requisite metadata and analytical commentaries (Principle 4 – ACS)
- Availability of subject specialists during press conferences to answer questions
- Press centre, PR accessible by modern means of communication for easy interactions with the media (Online Press Room)
- Pre-release calendar
- User research

Data literacy for Literacy for Researchers/academia

Why? *To facilitate access, knowledge and use of microdata and statistics for research, scientific works and teaching*

How?

- Microdata dissemination policy
- Data archive
- Data enclave for sensitive microdata
- Trainings on programmes and surveys
- Background information seminars

Data literacy for students

Why? Prepare the next generation to be data literate in this era of big data, promoting statistical thinking

How?

– Content for teachers

– Content for students

– Dedicated web pages

– Influence school programmes

– Competitions

References

- [Designing Tools and Activities for Data Literacy Learners](#)
- [Education for All Global Monitoring Report – Chapter 6, Understandings of literacy](#).
- [Enhancing Statistical Literacy: Enriching Our Society](#).
- [Information Literacy, Statistical Literacy and Data Literacy](#)
- [ISLP Strategy Project](#)
- [Making data meaningful - Part3: a guide to communicating with media](#)
- [Promoting statistical literacy.](#)
- [Supporting the Dialogue between the Users and Producers of Statistics with a special focus on social statistics in the Southern & Eastern Mediterranean Countries](#)
- [The Plurality of Literacy and its implications for Policies and Programs"(2004)](#)
- [Statistical literacy](#)
- [Training of statisticians for media relations and training of journalists and media specialists in statistics](#)
- [Understandings of literacy](#)

THANK YOU

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