EU OPEN DATA DAYS

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Integrating Data and AI Literacy in Learning Pathways

19 – 20 MARCH 2025

Who am I?

Davide Taibi is a senior researcher of the Institute for Educational Technology at the National Research Council of Italy. His research activities are mainly focused on the application of innovative technologies in the educational field, with particular emphasis on **mobile learning**, **the semantic web** and **linked data for education**, standards for educational process design, **learning analytics**, **open science, augmented reality,** and **AI in** education. He coordinated in the years 2019-2022 the projects **DATALIT**-Data Literacy at the interface of higher education and business, Erasmus+, Knowledge Alliances for higher education, and **DEDALUS** - DEveloping DAta Literacy courses for University Students, Erasmus+, KA2 Strategic Partnership for higher education. At present, he is coordinating **SMERALD**—SMEs Raising Awareness and Learning on Digital Data, Data Analysis, and Artificial Intelligence—and **IDEAL**—Integrating Data Analysis and AI in Learning Experiences, two Erasmus+ Cooperation partnerships projects, respectively, in the Vocational Education and Training and Higher Education sectors.

Something more

Contract professor of *Open Data Management* at the University of Palermo

Co-founder of *OnData*, NGO promoting initiatives related to Open Data and Open Government in Italy
http://ondata.it

Member of *opendatasicilia*, an online community on Open Data and civic engagement
https://opendatasicilia.it

What is data literacy?

"Data literacy is the ability to read, write, critically assess, and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied — and the ability to describe the use case, application, resulting value, and its implications."

Is it information/media/digital literacy?

Information and Data Literacy DigComp 2.2

DIMENSION 1 • **COMPETENCE AREA**

1. INFORMATION AND DATA LITERACY

DIMENSION 2 • **COMPETENCE**

1.1 BROWSING, SEARCHING AND FILTERING DATA, INFORMATION AND DIGITAL CONTENT

To articulate information needs , to search for data, information and content in digital environments, to access them and to navigate between them. To create and update personal search strategies.

DIMENSION 2 • **COMPETENCE**

1.2 EVALUATING DATA, INFORMATION AND DIGITAL CONTENT

To analyse, compare and critically evaluate the credibility and reliability of sources of data, information and digital content. To analyse, interpret and critically evaluate the data, information and digital content.

DIMENSION 2 • **COMPETENCE**

1.3 MANAGING DATA, INFORMATION AND DIGITAL CONTENT

To organise, store and retrieve data, information, and content in digital environments. To organise and process them in a structured environment.

What is data literacy?

"Data Literacy" straight translates to "*Datenkompetenz*" which translates literally back to "data competence". Literacy translates to *Alphabetisierung*, which translates back to alphabetization. The term ‘data literacy’ is in very limited use in German speaking countries.

Term "data literacy" in Serbia is not recognized nor translated, common related terms are information literacy and data science. In Croatia it is translated as "*podatkovna pismenost*".

The term ‘data literacy’ isn’t well known in most of the countries analysed. The most widely used terms are ‘digital literacy’, ‘information literacy’, ‘data competence’, ‘media literacy’, ‘statistical literacy’, ‘computer/IT literacy’, among others. In most countries is closely related to digital skills.

Data and AI Literacy: experiences from EU funded projects

DATALIT

Data Literacy at the interface of higher education and business

Erasmus+ Knowledge Alliances for higher education - Cooperation for innovation and the exchange of good practices

612561-EPP-1-2019-1-IT-EPPKA2-KA

http://datalit.itd.cnr.it/

DEDALUS

DEveloping DAta Literacy courses for University Students

Erasmus+ KA203 - Strategic Partnerships for Higher Education

2019-1-IT02-KA203-063359

http://dedalus.itd.cnr.it/

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Data and AI Literacy: experiences from EU funded projects

SMERALD

SMEs – Raising Awareness and Learning on Digital data, data analysis and artificial intelligence

Erasmus+ KA220-VET - Cooperation partnerships in Vocational Education and Training

2023-1-IT01-KA220-VET-000151990

http://smeraldproject.eu/

IDEAL

Integrating Data Analysis and AI in Learning experiences

Erasmus+ KA220-HED - Cooperation Partnerships in Higher Education

2024-1-IT02-KA220-HED-000251425

http://project-ideal.eu/

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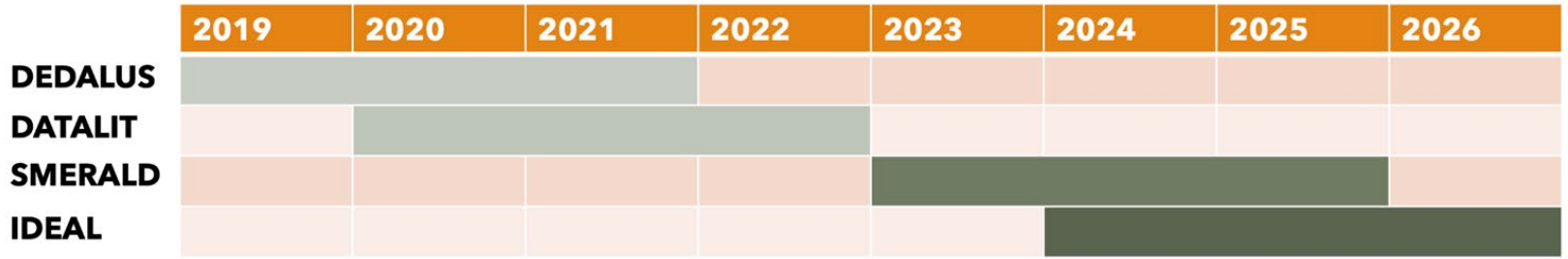
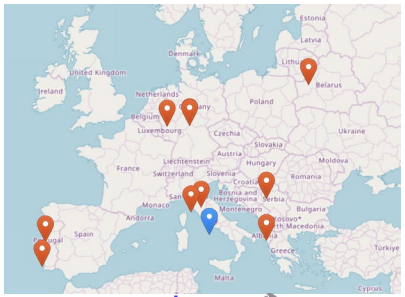
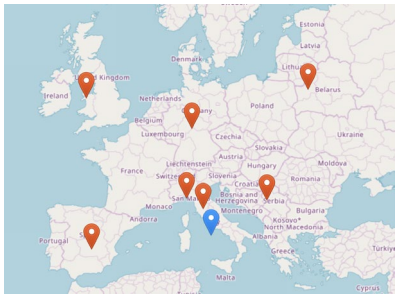
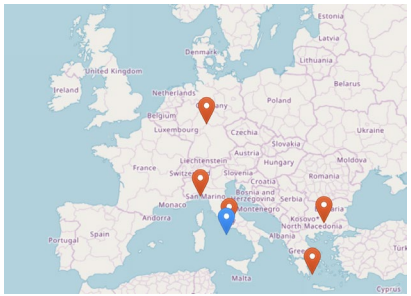
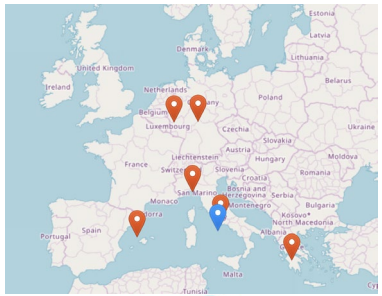
A long story *in time and space*











data lit

DEDALUS

SMERALD

IDEAL

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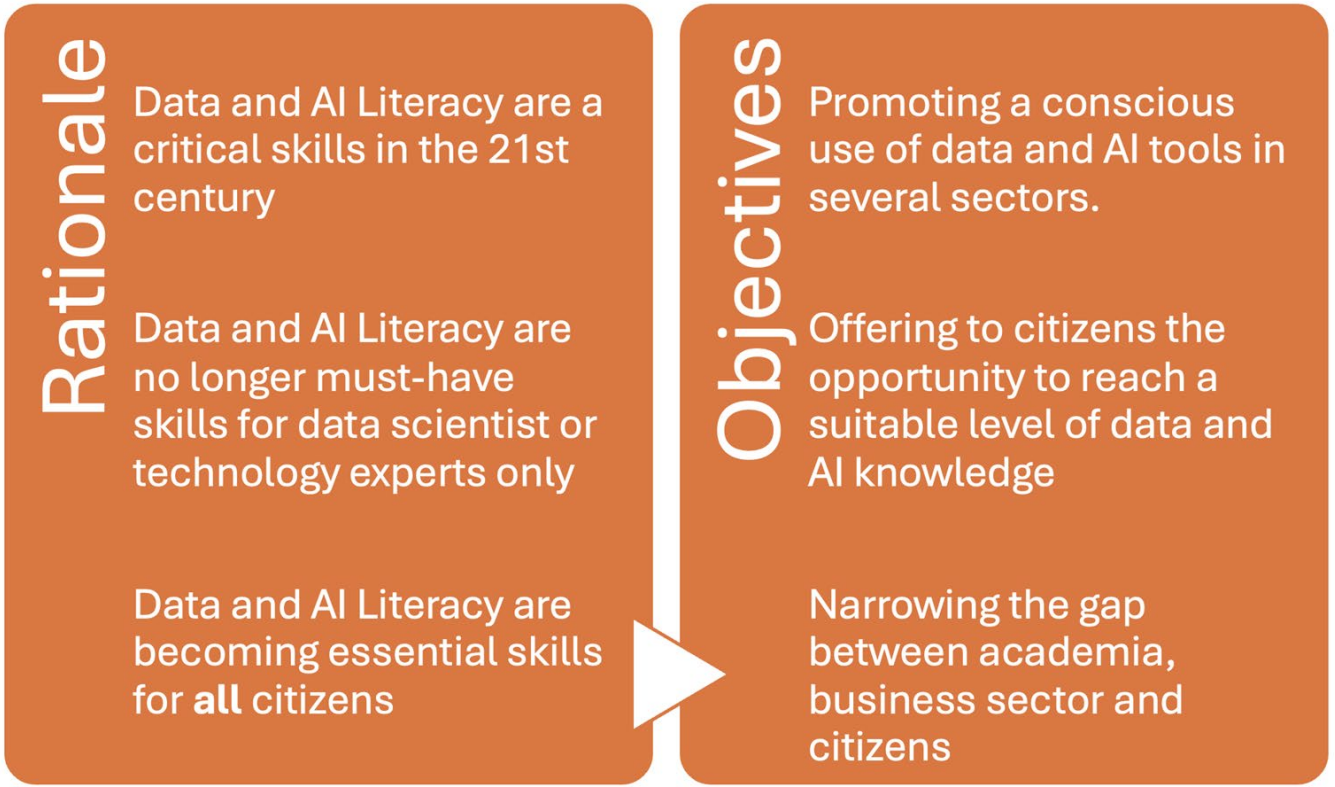
Inception


Rationale
Data and AI Literacy are a critical skills in the 21st century
Data and AI Literacy are no longer must-have skills for data scientist or technology experts only
Data and AI Literacy are becoming essential skills for **all** citizens
Objectives
Promoting a conscious use of data and AI tools in several sectors.
Offering to citizens the opportunity to reach a suitable level of data and AI knowledge
Narrowing the gap between academia, business sector and citizens

Projects' outcomes in a nutshell

Research highlights

- Data and AI literacy courses are fragmentary
- The syllabus of data and AI literacy courses are very different
- Need for a qualification system at European level specific on data and AI literacy
- Needs of job market related to data and AI literacy have not been adequately analysed

Common Syllabus

Competences related to Data Literacy

Domain Specific ("Data") Competences

1. Digital Literacy
2. Data Processing Literacy
3. Data Management Literacy

Social Competences

1. Teamwork (Intercultural)
2. Communication
3. Leadership: Conflict resolution
4. Client orientation, Mobilising others

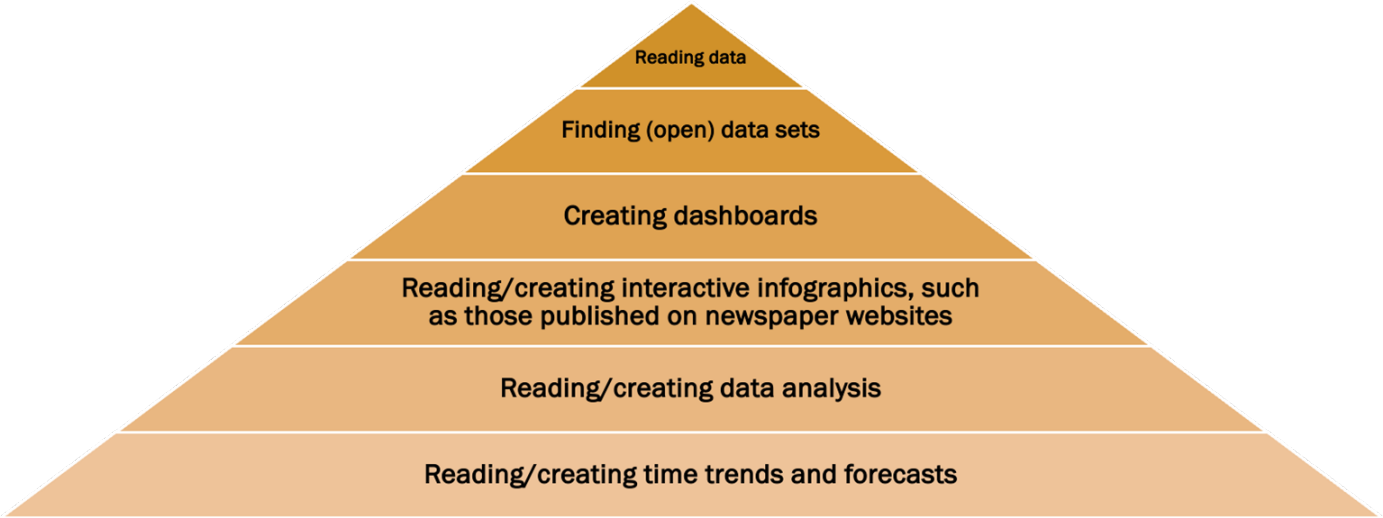
Organisational Competences

1. Project development
2. Resource Planning; Mobilising resources
3. Evaluation
4. Networking
5. Entrepreneurial Competences *Creating Idea and opportunities*

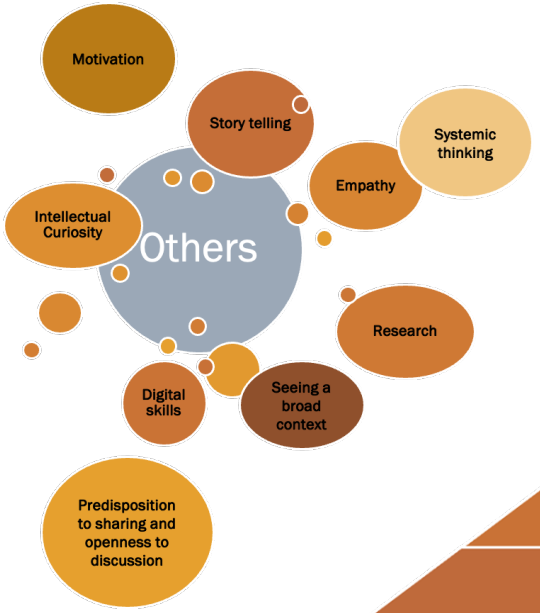
Personal Competences

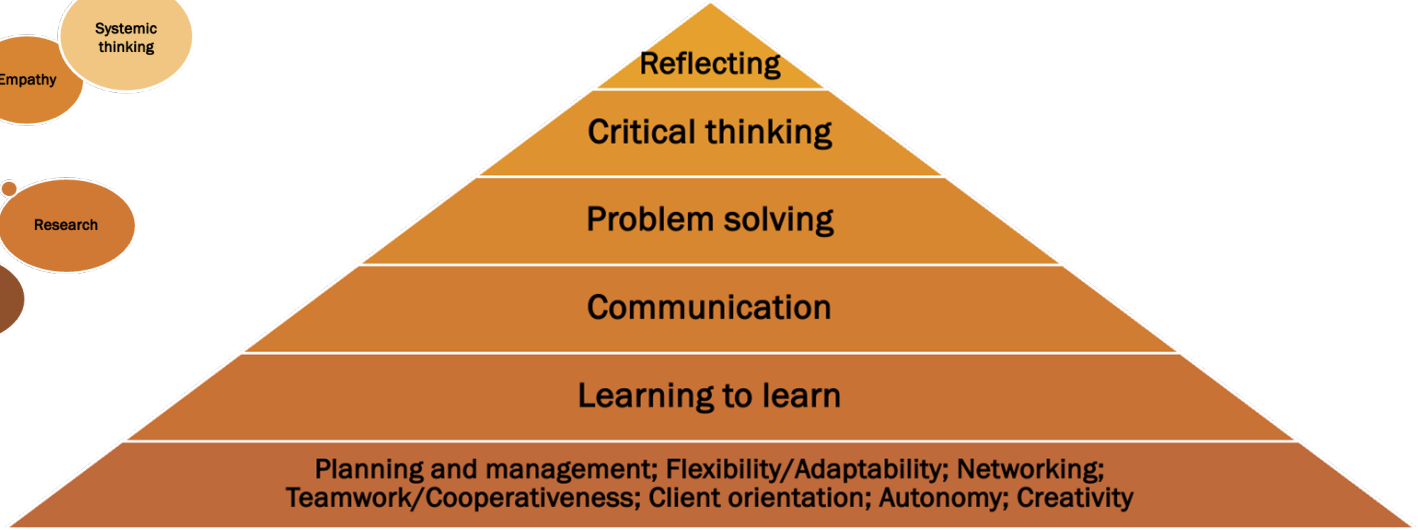
1. Creativity
2. Problem Solving
3. Critical (Ethical and sustainable) thinking
4. Flexibility Coping with ambiguity, uncertainty and risk

Data Literacy functional competences



Data, AI Literacy and soft skills



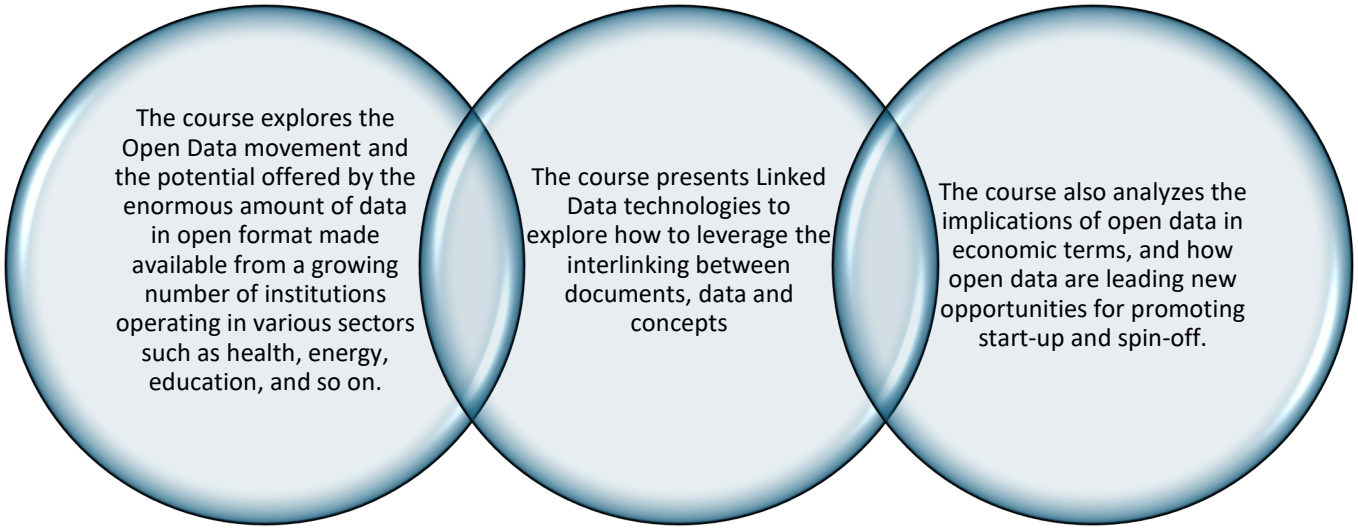


Piloting

Piloting activities in the different contexts addressed by the projects were implemented to investigate the introduction of the data literacy learning path in university, business and VET real case scenarios

Guidelines and concrete recommendations were produced to facilitate the implementation of the approach and the transfer to different educational sectors and learning contexts.

Pilot Example: the Open Data Management course at UniPa



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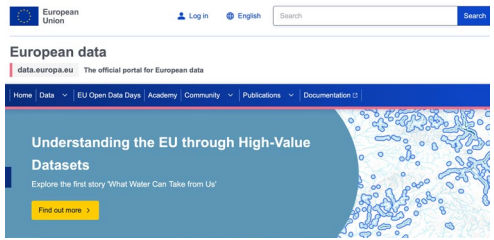
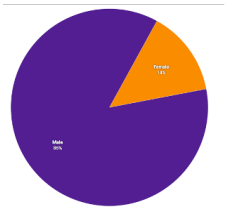
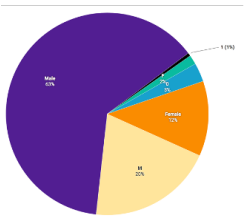


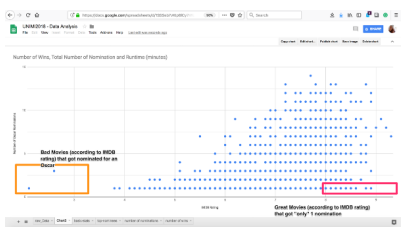




Finding, Cleaning and Analysing Data

GenAI to support Data Analysis

Presenting and Reporting



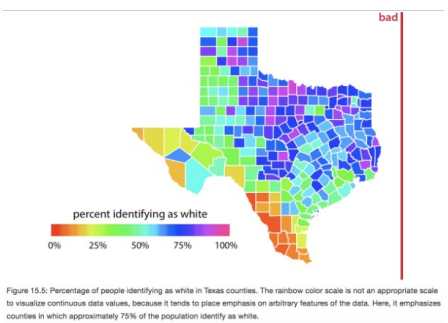
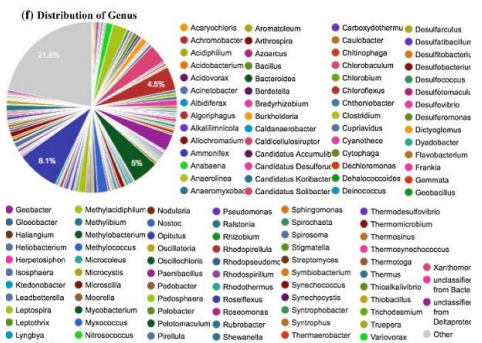


Figure 15.5: Percentage of people identifying as white in Texas counties. The rainbow color scale is not an appropriate scale to visualize continuous data values, because it tends to place emphasis on arbitrary features of the data. Here, it emphasizes counties in which approximately 75% of the population identify as white.



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Short and long term impact

Universities

Continuous refining process

Inclusion of data literacy as cross-cutting subject

Harmonizing learning paths

Provide competences and know-how for future employees

Enterprises

Contributing to standardize data literacy educational

Network with universities

Contribute to tackle current skill mismatch

Improving hiring strategy

Citizen

Fostering a culture of data and AI literacy among European citizens

Acquiring data and AI skills to actively take part in the civil society

Promoting a common understanding of what a data and AI literate person is supposed to know and is able to do

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