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## LEARNING UNIT PLAN

### DALFYS

Data Literacy competences For Young students towards STEAM education  
2020-1-IT02-KA226-SCH-095305

<b>Title</b>	Data Literacy for students by students explained through a website
<b>Outcome</b>	Students will learn and be aware about Data Literacy concepts and how to apply them in the real world
<b>Target (Indicate the age of students)</b>	5th year Informatics course students from ITET G. Caruso (approximately eighteen-nineteen years old)
<b>Pre-requisites (Indicate what student should know before starting this learning unit contents)</b>	Students must know the basic of HTML and CSS languages for building web pages
<b>Period of application (Indicate when you start and when you end the learning unit)</b>	October - November 2022
<b>Assessment (How does this lesson relate to assignments/homework/readings)</b>	Self- assessment of knowledge about data literacy contents by multiple choice questions by Google Classroom modules. Mind map on each case study by each group.
<b>Goals of the unit</b>	Students will work in groups, and, by the end of the unit, they will develop a cooperative website. The goal of the web site is to share with other students the basic concepts about data literacy and how to apply them to the case studies realised by each group of students.

<p><b>Competence/s</b></p>	<p><b>Disciplinary competencies</b></p> <ul style="list-style-type: none"> <li>• Use the strategies of rational thought in dialectical and algorithmic aspects to deal with problematic situations, developing appropriate solutions.</li> <li>• Computer applications development for local networks or remote services.</li> </ul> <p><b>DALFYS competencies</b></p> <ul style="list-style-type: none"> <li>• <b>Data collections:</b> distinguish between reliable and unreliable sources of information. Data collection and its analysis and visualization.</li> </ul> <p><i>Level 5 DALFYS reference system:</i></p> <ul style="list-style-type: none"> <li>○ <b>knowledge:</b> knowing where else (strategic transfer). Knowing how to adapt and adjust the methodologies in accordance with different contexts. Knowing how to help other students to leverage Web sources and use them successfully in different fields of study.</li> <li>○ <b>skills/capabilities:</b> Developing, constructing, transferring. Being able to transfer information seeking strategies</li> </ul>
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	<p>into new fields of interest and personal contexts. Actively planning and creating new valuable activities. Being ready to share created strategies with others.</p> <ul style="list-style-type: none"> <li>○ <b>attitudes/values:</b> Incorporation. Having a Web search and visualisation as a personal and professional key competence and the respective mindset. Being an inspiration for others in their Web search and visualisation activities and promoting transparency and responsibility.</li> <li>● <b>Teamwork – Collaboration:</b> creatively collaborating with team members to make a presentation, solve a problem or do a specific task involving digital skills.</li> </ul> <p><i>Level 5 DALFYS reference system:</i></p> <ul style="list-style-type: none"> <li>○ <b>knowledge:</b> knowing where else (strategic transfer). Knowing the perfect balance between interactive techniques, creativity, research tools and critical thinking and how to apply them in new and different contexts involving complex data literacy tasks</li> <li>○ <b>skills/capabilities:</b> Developing, constructing, transferring. Being able to develop high performance strategies combining communication techniques, digital content and critical thinking and transfer them to various contexts related to school, work, and life to solve a variety of complex data literacy tasks – proficient communicative digital work strategies developer</li> <li>○ <b>attitudes/values:</b> Incorporation. Having internalised the urgent need to make sustained efforts to be able to develop high performance strategies combining communication techniques, digital content, and critical thinking to solve a variety of complex data literacy tasks. Showing willingness to transfer these strategies to various contexts related to school, work and life.</li> </ul>
<b>Evaluation</b>	The final evaluation will involve the products (presentations, web site and case studies realised) but also the interview during the presentation of them.

## Description of the steps

### 1st step - COMPREHENSION

**Name of the teacher:** Giovanni Giuseppe D'Alberti

**Subject:** Computer Science

Knowledge	Skills
Data	Understanding Data
Data Literacy	Finding data
Data Collection	How to Collect Data
Data Visualization	Securing Data
Data Privacy	Finding Your Own Data

<b>Contents(*):</b>	<p>Selections of YouTube video on the Data Literacy topic, listed below:</p> <p>V1. <a href="#">What are Data and Data Literacy</a> (10:00)</p> <p>V2. <a href="#">Misconceptions in Data Analysis</a> (9:51)</p> <p>V3. <a href="#">Visualizing Data</a> (9:55)</p> <p>V4. <a href="#">How to Collect Data</a> (10:03)</p> <p>V5. <a href="#">Data in the News</a> (10:51)</p> <p>V6. <a href="#">Data in Sports</a> (10:07)</p> <p>V7. <a href="#">Election Data</a> (10:15)</p> <p>V8. <a href="#">Health Data</a> (9:41)</p> <p>V9. <a href="#">Social Media Data</a> (10:27)</p> <p>V10. <a href="#">Data Privacy</a> (10:59)</p> <p>V11. <a href="#">Securing Data</a> (10:15)</p> <p>V12. <a href="#">Credible Research</a> (10:31)</p> <p>V13. <a href="#">Data Mistakes</a> (11:18)</p> <p>V14. <a href="#">Data Context</a> (9:51)</p> <p>V15. <a href="#">Finding Your Own Data</a> (11:23)</p>
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<b>Description of the Activity:</b>	<p><b>What does the teacher do?</b></p> <ol style="list-style-type: none"> <li>1. Teacher introduces the Learning Unit: topics, aims and products to make (presentations, web site and case studies).</li> <li>2. Groups of four students (named A, B, C, D) are made by the teacher.</li> <li>3. Student groups are invited to follow instructions on Google Classroom platform where next activities are scheduled</li> </ol> <p><b>What do the students do?</b></p> <p><b><u>First day</u></b></p> <ol style="list-style-type: none"> <li>1. At home each group working cooperatively will watch the video listed above (A → V1, B → V2, C → V3, D → V4)</li> <li>2. At home each group will make a presentation about the video they watched</li> <li>3. In the classroom one or more students of each group will present and share contents and concepts of the video with other students.</li> </ol> <p><b><u>Second day</u></b></p> <ol style="list-style-type: none"> <li>4. At home each group working cooperatively will watch the video listed above (A → V5, B → V6, C → V7, D → V8)</li> </ol>
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	<p>5. At home each group will make a presentation about the video they watched</p> <p>6. In the classroom one or more students of each group will present and share contents and concepts of the video with other students.</p> <p><b>Third day</b></p> <p>7. At home each group working cooperatively will watch the video listed above (A → V9, B → V10, C → V11, D → V12)</p> <p>8. At home each group will make a presentation about the video they watched</p> <p>9. In the classroom one or more students of each group will present and share contents and concepts of the video with other students.</p> <p><b>Fourth day</b></p> <p>10. At home each group working cooperatively will watch the video listed above (A → V13, B → V14, C → V15)</p> <p>11. At home each group will make a presentation about the video they watched</p> <p>12. In the classroom one or more students of each group will present and share contents and concepts of the video with other students.</p>
<b>Time</b> (indicate how many hours of lessons are needed)	9
<b>Used resources:</b>	YouTube videos listed above
<b>Students' accomplishment:</b>	Make presentations on video contents and concepts about Data Literacy
<b>Method</b>	Flipped classroom – Cooperative learning
<b>Tools</b>	Google Classroom – Google Presentation – Google Forms - IWB (Interactive White Board)

(\*)

1. [https://www.youtube.com/watch?v=yhO\\_t-c3yJY&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=2](https://www.youtube.com/watch?v=yhO_t-c3yJY&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=2)
2. [https://www.youtube.com/watch?v=nd\\_oOOXeN3A&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=3](https://www.youtube.com/watch?v=nd_oOOXeN3A&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=3)
3. [https://www.youtube.com/watch?v=YDT5ZPcMZWM&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=4](https://www.youtube.com/watch?v=YDT5ZPcMZWM&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=4)
4. [https://www.youtube.com/watch?v=zGFuj9tF33Q&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=5](https://www.youtube.com/watch?v=zGFuj9tF33Q&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=5)
5. [https://www.youtube.com/watch?v=3Vt6K-hx09A&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=6](https://www.youtube.com/watch?v=3Vt6K-hx09A&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=6)
6. [https://www.youtube.com/watch?v=rUjpCXCKjig&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=7](https://www.youtube.com/watch?v=rUjpCXCKjig&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=7)
7. [https://www.youtube.com/watch?v=IQSzVGM13Mo&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=8](https://www.youtube.com/watch?v=IQSzVGM13Mo&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=8)
8. [https://www.youtube.com/watch?v=gaiTBQlppXk&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=9](https://www.youtube.com/watch?v=gaiTBQlppXk&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=9)
9. [https://www.youtube.com/watch?v=gjLpTovhKEw&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=10](https://www.youtube.com/watch?v=gjLpTovhKEw&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=10)
10. [https://www.youtube.com/watch?v=N9I7smAOspM&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=11](https://www.youtube.com/watch?v=N9I7smAOspM&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=11)
11. [https://www.youtube.com/watch?v=AO3PB9vezUw&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=12](https://www.youtube.com/watch?v=AO3PB9vezUw&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=12)
12. [https://www.youtube.com/watch?v=16X2ZUacmDw&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=13](https://www.youtube.com/watch?v=16X2ZUacmDw&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=13)
13. [https://www.youtube.com/watch?v=HQ4dboRW7tM&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=14](https://www.youtube.com/watch?v=HQ4dboRW7tM&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=14)
14. [https://www.youtube.com/watch?v=oYcG5OxkMZU&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=15](https://www.youtube.com/watch?v=oYcG5OxkMZU&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=15)
15. [https://www.youtube.com/watch?v=HMYpfwlUiY&list=PLNrrxHpJhC8m\\_ifiOWI1hquDmdgvcviOt&index=16](https://www.youtube.com/watch?v=HMYpfwlUiY&list=PLNrrxHpJhC8m_ifiOWI1hquDmdgvcviOt&index=16)

2nd step - PRODUCTION	
<b>Name of the teacher: Giovanni Giuseppe D'Alberti</b>	
<b>Subject: Computer Science</b>	
<b>Knowledge</b>	<b>Skills</b>
Meaning of pattern	Understanding data
User interface	Using data
Design patterns for websites	
<b>Content:</b>	HTML and CSS languages – Design patterns for website
<b>Description of the Activity:</b>	<p><b>What does the teacher do?</b></p> <ol style="list-style-type: none"> <li>1. Teacher introduces the concept of design patterns</li> <li>2. Teacher explains and shows the most used user interface design patterns for websites</li> </ol> <p><b>What do the students do?</b></p> <ol style="list-style-type: none"> <li>1. Students discuss about the several design patterns and decide which one to choose for building the website</li> <li>2. Students into each group work cooperatively in the computer laboratory to build a section of the website.</li> <li>3. All the groups of students collaborate in the computer laboratory to build the whole website.</li> </ol>
<b>Time (indicate how many hours of lessons are needed)</b>	<b>9</b>
<b>Used resources (**):</b>	Products made in the previous step – <a href="#">Internet resources about website design</a> – <a href="#">website hosting services</a>
<b>Students' accomplishment:</b>	Building and publishing the website on Data Literacy
<b>Method</b>	Active Lessons - Laboratory Teaching - Cooperative Learning - Collaborative making
<b>Tools</b>	Computer Laboratory - Visual Studio Code - Google Classroom – Google Presentation – Google Forms - IWB (Interactive White Board)

(\*\*)

1. Internet resources about website design → [https://www.youtube.com/watch?v=Sv\\_NAXi\\_jNs](https://www.youtube.com/watch?v=Sv_NAXi_jNs)
2. website hosting services → <https://www.freehostingeu.com/>

### 3rd step - APPLICATION

<b>Name of the teacher: Giovanni Giuseppe D'Alberti</b>	
<b>Subject: Computer Science</b>	
<b>Knowledge</b>	<b>Skills</b>
Tools for working with data	Observing data
Chart function, chart form	Evaluating data
Tools for visualising data	Analysing data
Tools for charts and graphs	Interpreting data
Tools for infographic and dashboard	Presenting data
<b>Content:</b> Tools for working with and presenting data	
<b>Description of the Activity:</b>	<p><b>What does the teacher do?</b></p> <ol style="list-style-type: none"> <li>1. Teacher manages a brainstorming activity with the students to find topics for the case studies to exemplify about Data Literacy (the number of topics to find must be at least eight, the teacher will provide some of them)</li> </ol> <p><b>What do the students do?</b></p> <ol style="list-style-type: none"> <li>1. Each group of students discuss about what topic to chose for realising the case study</li> <li>2. At home, each group of students, working cooperatively, will collect, analyse, and think about how to present data for their own case study, just applying the concepts and the contents of the website about Data Literacy</li> <li>3. Int the computer laboratory each group will develop and will add to the website another section holding their own case study</li> <li>4. Once the case studies are finished and added to the website, each group of students will show and explain them to the other students</li> </ol>
<b>Time (indicate how many hours of lessons are needed)</b>	<b>9</b>
<b>Used resources:</b>	Website made in the previous step – Internet resources about the case studies on Data Literacy – website hosting services
<b>Students' accomplishment:</b>	Case studies to add at the website on Data Literacy
<b>Method</b>	Active Lessons - Laboratory Teaching - Cooperative Learning - Collaborative making
<b>Tools</b>	Computer Laboratory - Visual Studio Code - Google Classroom – Google Presentation – Google Forms - IWB (Interactive White Board)

#### 4th step - EVALUATION

<b>Name of the teacher: Giovanni Giuseppe D'Alberti</b>	
<b>Subject: Computer Science</b>	
<b>Knowledge</b>	<b>Skills</b>
Evaluation criteria	Peer evaluation
	Self-evaluation
<b>Contents:</b>	Grid and Forms
<b>Description of the Activity:</b>	<p><b>What does the teacher do?</b></p> <ol style="list-style-type: none"> <li>1. Teacher makes two evaluation grids for himself to use.               <ol style="list-style-type: none"> <li>a. One to evaluate the oral performance on the step 1 and 3 of each student</li> <li>b. The other one to evaluate the products of step 2 (website) and step 3 (case studies) made by each group</li> </ol> </li> <li>2. Teacher makes three Google Forms for students to use.               <ol style="list-style-type: none"> <li>a. The first one allows students to evaluate the output of step one</li> <li>b. The second one allows students to evaluate the output of step two</li> <li>c. The third one allows students to evaluate the output of step three</li> </ol> </li> </ol> <p><b>What do the students do?</b></p> <ol style="list-style-type: none"> <li>1. Students will fill the three Google Forms mentioned above, each one at the end of the related step, to evaluate themselves and the other students about the performances in doing the learning unit tasks</li> <li>2. Students can also collaborate with the teacher to define the criteria used to make the Google Forms.</li> </ol>
<b>Time (indicate how many hours of lessons are needed)</b>	<b>3</b>
<b>Used resources:</b>	Grids - Forms
<b>Students' accomplishment:</b>	Filled forms
<b>Method</b>	Self/peer evaluation – Summary evaluation
<b>Tools</b>	Computer Laboratory - Google Classroom - Google Forms - IWB (Interactive White Board)