

Europeana Learning Scenario

Title

The digital evolution, from our artisans to today's digital information.

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Abstract

This learning scenario focuses on the evolution of devices used by the society and the way they are connected with the development of our digital era. The stories of technological development, the evolution of the devices by amazing engineers or artisans are integrated in a curious way. The ICT classes focus on the evolution of the computers, the binary code and how they are connected to the evolution of societies and engineers and inventors along the time. The mathematics subjects can be integrated in the way to explore the development of the calculus process till the major computers of today.

Keywords

Inventors, engineers, evolution, computers, society

Table of summary

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Subject	ICT; Mathematics
Topic	The evolution of societies, artisans and engineering and the impact on the modern computer machines.
Age of students	14-16 years old
Preparation time	60 minutes
Teaching time	200 minutes
Online teaching material	Padlet Google docs Europeana Collections Wikipedia Rubistar
Offline teaching material	Computer lab Whiteboard.
Europeana resources used	The Jacquard Loom: Picture 1 Picture 2

[Text](#)

Charles Babbage

[Europeana Collections](#)

[Picture 3](#)

Hollerith

[Picture 4](#)

Blaise Pascal

[Picture 5](#)

Lee De Fores

[Picture 6](#)

Licenses

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Integration into the curriculum

The curriculum for the ICT subjects integrates the following topics:

- Understanding the evolution of information and communication technologies (ICT) and their role in the contemporary world.
- Searching for information on the Internet in digital encyclopedias, repositories, etc., or using search engines, in a systematic and consistent manner, according to specific objectives;
- Understanding the basic functionalities of the search engine and implementing strategies to redefine the search criteria to filter the results obtained;
- Respecting copyright and intellectual property rights.

These subjects along with the topics of studies like History and Mathematics could be connected with the resources of Europeana, and other credible resources and ICT tools, to develop a more dynamic and students' centered classes.

Aim of the lesson

Present the EUROPEANA and the resources as well the Creative Commons licensing structure;

Develop research skills;

Develop argumentation and communication, because students should be encouraged to question, and try to imagine future developments, communicate and debate between them;

Development of critical thinking by questioning the development of society and the ways it took and could have taken;

Development of the knowledge of our society and their achievements;

Be aware that machines and men are connected in an intrinsic way.

Outcome of the lesson

In the development of a collaborative process, to raise the students’ awareness of the importance of the engines and inventions along the times to the development of the modern technologies. Also, to have an insight in how this process took place and could have taken different paths.

To use a creative process to focus on the “state of the art” of today’s technology and the ways it has evolved and can evolve and interfere in the society.

Trends

Collaborative learning: a strong focus on group work;

Peer Learning: students learn from peers and give each other feedback;

STEM Learning: Increased focus on Science, Technology, Engineering, Mathematics subjects in the curriculum

Visual Search & Learning: images and multimedia are more powerful than verbal stimuli;

Learning materials: shift from textbooks to web resources and open source books.

21st century skills

Collaboration: students will work in groups and can distribute the tasks among themselves. by working as team students will need to interact, plan, make decisions as a group to develop the tasks of this LS.

Critical Thinking: ability to propose different ways of development and possibilities, and defend that, argument and give valid considerations based on evidences.

Communication: students will present and explain to the class the topic using ICT tools and their description of their work in the LS and within the group.

Media Literacy: students will access, analyze, evaluate and create **media** in a variety of forms. They will explore and interpret and present various media forms (pictures, video) in the way to include in and develop the LS.

ICT Literacy: students will manipulate digital devices and tools to search, organize, comment and present online content.

Activities

Name of activity	Procedure	Time
Introduction	Present the project to the students and the goals we want to achieve by studying this subject in a particular context. The	15 min

Name of activity	Procedure	Time
	<p>importance of the technological evolution and the implications in today's life and computers.</p> <p>Also, concerning the development of the project:</p> <ul style="list-style-type: none"> - what is expected; - goals; - activity assessment. 	
<p>Presentation/Demonstration The Europeana page and resources and CC</p>	<p>The resources of Europeana should be presented, as well as ways to search and get the correct sources. The importance of CC should also be stressed.</p> <p>This presentation should be made with access to a computer lab so students can make an approach to the concepts and experience the Europeana platform.</p>	15 min
<p>Presentation/Demonstration Technological resources for collaboration and organization</p>	<p>Students need to be aware of the evolution of the technological tools. An introduction should be arranged by the teacher to present some collaborative tools for the teams to work on.</p> <p>4 main big themes must be presented, given the opportunity to students to choose between them. They are important beacons to the development of the computer, binary communication:</p> <ol style="list-style-type: none"> 1- The Jacquard Loom - Perforated Cards - 1801 Joseph-Marie Jacquard developed a loom that weaved quite complex patterns. This loom was programmed by a series of punched cards. This machine clearly contained the entire input-output processing. 2- Babbage Analytical Machine - 1833 Fully programmable machine, which received a series of commands through punched cards, which were then processed by the machine. It is considered the first computer - Charles Babbage is considered the father of the current computer. The Analytical Machine consisted of 50000 components, included input devices in the form of perforated cards containing the operating instructions and a storage system. 3- Hollerith Machine - 1890 It was a set of punch cards where the data was recorded. The success of his invention was such that Hollerith created a company for the serial 	20 min

Name of activity	Procedure	Time
	<p>production of his invention, the Tabulating Machine Company which, later, associating with other companies, gave rise to International Business Machines Corporation (IBM).</p> <p>4- First generation - valves (1943-1955) The electronic valve was invented in 1906, by Lee De Forest. It came to replace the electromechanical relays, since it is faster, takes up less space and consumes less energy.</p>	
<p>Organization of groups and work in peers. Research and organization of the information.</p>	<p>The teams should be arranged according to the historical time topics students want to investigate and study. In the way to implement the collaborative work the groups should be arranged with 3 or 5 students, giving them different tasks. The groups should start and share a sketch of their work through a Padlet or by using Google Docs.</p>	<p>50 min</p>
<p>Development of the work. Research and organization of the information.</p>	<p>For each topic students should organize the presentation based on the resources giving, stressing the innovation and the importance of it in the context of time and era and in the society integration. Also, they should try to imagine how people reacted to that innovation.</p>	<p>50 min</p>
<p>Presentation of the work</p>	<p>In turns and following a chronologic order, groups present their innovation, or artifact underlining the chronological time, the importance and what it brought as an "achievement" to the society. They should present the importance of it for that time and the evolution for today's technology.</p>	<p>20 min</p>
<p>Debate and conclusion.</p>	<p>A debate should be developed between groups and should arise some conclusion about the importance and consequences of that technological improvement had for the society. Also, some ideas should be included about what could happen in the future if that had not happened yet. Would the world today be different? An overall idea of the development of technologies and the importance of European engineers should be made. It could be registered in a collaborative tool or a white board.</p>	<p>30 min</p>

Assessment

For the debate there is no correct answers. But the process of development of the work can be assessed by some rubrics:

Teacher's assessment of the group work using [rubrics](#) – oral presentation

Students' assessment using the [rubrics](#) prepared by the teacher – collaborative working skills:

***** AFTER IMPLEMENTATION *****

Student feedback

Students presented their work and ideas about the technologies involved and their importance in the society and today's digital world. The ideas were shared on a white board and by using a collaborative tool.

Teacher's remarks

The process of “discovering” the development behind today's technologies may be increased if the curiosity and the resources are promoted. Discussing the impact on today's society can be difficult because it takes a process of imagination and is hard to predict the possibilities. If successful, it can be some interesting rewarding work. Teachers could share their opinions about the implementation of the LS through social media, a blog or writing an article for a specialized magazine or any other institutions related with the topics of the Learning Scenario.

About the Europeana DSI-4 project

[Europeana](#) is Europe's digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe's museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

[European Schoolnet](#) (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet's task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.

