



Memory of Europe: Historical intersections and their message  
for the contemporary generation  
Short-term joint staff training events



## **Module 3 – Innovative cross-curricular methodologies and lesson plans**

### **Technological advancement caused by WWII**

#### **Expert-Teachers Open class activity**

#### **Teacher experts on history, IT and physics**

*(C6 - Short-term joint staff training event in Greece)*



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## Lesson plan 1

### ABOUT INVENTIONS DURING THE WWII

<b>Title</b>	<b>Innovative cross curricular methodologies and lesson plans - Inventions during the WWII</b>
<b>Subject area</b>	<b>Science and Technology</b>
<b>Description of educational activity</b>  (duration, students age, organisation of the class of pupils; The aim of the lesson; Support materials; Evaluation and assessment method; Description of the activities)	<p><b>Duration:</b> 2 lessons (90 min)  <b>Students age:</b> 15 - 17  <b>Organization of the class of pupils:</b> frontal, individual, group work  <b>The aim of the lesson:</b> To allow students to experience how ciphers can conceal and protect information, demonstrate effective written, oral, and graphic communication skills.</p> <p><b>Support materials:</b></p> <ul style="list-style-type: none"> <li>● Internet</li> <li>● Short videos – Enigma - Kate Winslet &amp; Dougray Scott, Keeping It a Secret</li> <li>● genial.ly</li> <li>● liveworksheets</li> <li>● learningapps</li> </ul> <p><b>Handouts :</b></p> <ul style="list-style-type: none"> <li>● Liveworksheet</li> <li>● YouTube videos</li> <li>● Study material in genial.ly</li> </ul> <p><b>Description of the activities</b>            During this lesson students will learn about new technology’s impact on the Second World War, they will identify advanced technologies utilised during WWII.</p> <p><b>Task 1: WARM UP (7 minutes)</b>  <b>Teacher:</b> Have you heard of enigma machines?            Students who have heard about the enigma machine will explain to the others.            The teacher explains that they are going to be introduced vocabulary concerning the enigma machine and its use.            Students will become familiar with the vocabulary related to the enigma machine  <a href="https://learningapps.org/watch?v=ph1xh1c6323">https://learningapps.org/watch?v=ph1xh1c6323</a></p> <p><b>Task 2: INTRODUCING ENIGMA (15 minutes)</b>  <b>Teacher:</b> You are going to watch a short part of a film called Enigma. Watch carefully.            The teacher prepares questions about the video, gives each student 1 question (several students can have the same question) the students concentrate on the questions and try to find answers in the video.</p> <p>Video source: <a href="https://www.youtube.com/watch?v=wOrdd0y2ujE">https://www.youtube.com/watch?v=wOrdd0y2ujE</a>            Question and answer sheet: <a href="https://www.liveworksheets.com/yq3418359rn">https://www.liveworksheets.com/yq3418359rn</a></p>

	<p><b>Task 3: How the enigma machine works – THE SIMPLEST CIPHER IS A SHIFT CIPHER (25 minutes)</b></p> <p>The teacher tells the students they are going to encrypt and decrypt messages. Before they do so, they need to study the simple process of encrypting and decrypting.</p> <p><a href="https://view.genial.ly/643fd4de4cb90f0012915156/interactive-content-the-simplest-cipher-is-a-shift-cipher">https://view.genial.ly/643fd4de4cb90f0012915156/interactive-content-the-simplest-cipher-is-a-shift-cipher</a></p> <p>Students work in small groups. The teacher gives each group the encrypting and decrypting circles, students create a message (5 words) and encrypt it. A message with more words requires more time.</p> <p>The groups exchange encrypted messages and try to decrypt them.</p> <p><b>Task 4: CRITICAL THINKING QUESTIONS (38 minutes)</b></p> <p>The teacher divides the class into 2 groups and asks them a question: <b><i>Should the results of science and technology always be declassified?</i></b> One group tries to agree on 3 arguments why the results should be declassified, and the other group why they shouldn't be declassified. The groups present their arguments and try to make a conclusion. (15 minutes)</p> <p>The teacher asks: <b><i>What do you think, how was it with the breaking of enigma code?</i></b> Students also give arguments to support their viewpoint. (allow 5 – 10 minute discussion)</p> <p>Students watch a scene from the Enigma movie to see what really happened after breaking the enigma code. After watching it, the teacher asks the students if their opinion has been supported in the video/if they were right to keep it secret/... (allow 5 – 10-minute discussion)</p> <p>Video source: <a href="https://www.youtube.com/watch?v=Qdfp5Za0XVg">https://www.youtube.com/watch?v=Qdfp5Za0XVg</a> (3 minutes)</p> <p><b>Task 5: Fixing (5 minutes)</b></p> <p>Using a mind map, students are asked to summarise the positive and negative side of breaking enigma code. They should come up with the fact that thanks to breaking the enigma code, the war was shortened and there were less casualties.</p>
<p>Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills,</p>	<p><b>Grade: Secondary:</b> 1.-2. Grade</p> <p><b>Curriculum:</b> ABOUT INVENTIONS DURING THE WWII</p> <p><b>Knowledge:</b> Students understand the new technology's impact on the Second World War, they can identify advanced technologies utilised during WWII. They learn and understand</p>

Competencies)	<p>how to encrypt and decrypt messages.</p> <p><b>Skills:</b> Pupils are able to summarise the positive and negative side of breaking enigma code. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools.</p> <p><b>Competence:</b> Students are able to identify and separate out the key components of problems and situations. They actively participate in a team, encouraging cooperation. They are aware of the needs of others and respond flexibly. They share information and support other team members.</p>
Bibliographic reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year	
Short description of digital sources (applications, games, webpages, FB pages etc.)	<p><a href="https://learningapps.org/watch?v=ph1xh1c6323">https://learningapps.org/watch?v=ph1xh1c6323</a> (digital tool for interactive classroom for vocabulary related to the enigma machine)</p> <p><a href="https://www.youtube.com/watch?v=wOrdd0y2ujE">https://www.youtube.com/watch?v=wOrdd0y2ujE</a> (internet source for film called Enigma)</p> <p><a href="https://www.liveworksheets.com/yq3418359rn">https://www.liveworksheets.com/yq3418359rn</a> (digital tool for interactive classroom for Question and answer sheet about Enigma)</p> <p><a href="https://view.genial.ly/643fd4de4cb90f0012915156/interactive-content-the-simplest-cipher-is-a-shift-cipher">https://view.genial.ly/643fd4de4cb90f0012915156/interactive-content-the-simplest-cipher-is-a-shift-cipher</a> (digital tool for interactive classroom for the simple process of encrypting and decrypting)</p> <p><a href="https://www.youtube.com/watch?v=Qdfp5Za0XVg">https://www.youtube.com/watch?v=Qdfp5Za0XVg</a> (internet source for a scene from the Enigma movie to see what really happened after breaking the enigma code)</p>

**Lesson plan 2**  
**TECHNOLOGY LESSON PLAN**  
**MEDICAL INVENTIONS DURING WORL WAR II**

<b>Title</b>	<b>MEDICAL INVENTIONS DURING WORL WAR II</b>
<b>Subject area</b>	<b>TECHNOLOGY</b>
<p><b>Description of educational activity</b></p> <p>(duration, students age, organisation of the class of pupils; The aim of the lesson; Support materials; Evaluation and assessment method; Description of the activities)</p>	<p><b>Duration:</b> 3 hours (125 min)  <b>Students age:</b> 16 - 18  <b>Organization of the class of pupils:</b> frontal, individual, group work</p> <p><b>The aim of the lesson:</b></p> <ol style="list-style-type: none"> <li>1. Practising vocabulary – SCIENTIFIC AND MEDICAL VOCABULARY</li> <li>2. Revising the main events of WWII</li> <li>3. Get to know the 3 main medical inventions made in WWII: flu vaccines, penicillin and blood plasma transfusion</li> <li>4. Get to know the first researchers of the time in the medical field</li> <li>5. Understanding the key features of vaccines, penicillin, and blood plasma</li> <li>6. Understanding how diseases were treated before and after the 3 inventions</li> <li>7. Developing civic and digital competences</li> </ol> <p><b>Support materials:</b></p> <ul style="list-style-type: none"> <li>• YouTube</li> <li>• Online newspapers (The Conversation, The Washington Post, The National WW2 Museum)</li> <li>• Genially</li> </ul> <p><b>Handouts:</b></p> <ul style="list-style-type: none"> <li>• Quiz in Genially</li> <li>• Worksheets</li> <li>• Presentation in Canva</li> </ul> <p><b>Description of the activities</b></p> <p>This lesson plan will provide a revision on WWII’s main events.</p> <p><b>Task 1 (15 min)</b>  After watching a YouTube video (<a href="https://www.youtube.com/watch?v=tGIRJKsRozA">https://www.youtube.com/watch?v=tGIRJKsRozA</a>) to revise the main events of WW2, the students will answer the following questions:  - What was the cause of World War II?  - Which countries fought in World War II?  - Which were the turning points of World War II?  - Why did Adolf Hitler start World War II?  - How did World War II end?</p> <p><a href="https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions">https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions</a></p> <p><b>Task 2 (10 min)</b>  Presentation of photos to the students to guess which were the main inventions made in the medical field during WWII.</p>

<https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions>

**Task 3 (50 min)**

The students are divided into 3 groups in order to become experts on their topic. They have to analyse the articles present in the presentation in Genially and then answer the following questions:

GROUP 1 – FLU VACCINES (<https://theconversation.com/how-world-war-ii-spurred-vaccine-innovation-39903>):

- Who was the inventor of the first flu vaccines and why did it become an urgent necessity to invent them during WW2?
- How did WW2 spread the development of the flu vaccine?
- In what sense the approach to vaccine development was a cooperative, duty-driven one?

GROUP 2 – PENICILLIN

(<https://www.washingtonpost.com/history/2020/07/11/penicillin-coronavirus-florey-wwii-infection/>):

- Who discovered penicillin?
- Why was it important to speed up medical research during WW2, especially after the USA's entry into the war?
- How did Florey and Heatley finally manage to mass-produce penicillin?

GROUP 3 - BLOOD PLASMA TRANSFUSION

(<https://www.nationalww2museum.org/sites/default/files/2017-07/blood-plasma-fact-sheet.pdf>):

- What is the difference between blood and plasma?
- How did blood plasma transfusion help in WW2?
- Who was the first scientist able to preserve plasma?

<https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions>

**Task 4 (10 min)**

QUIZ - In Genially the students have to take a quiz of 16 questions about the medical inventions made during WW2.

<https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions>

**Task 5 (40 min)**

As final task, the students have to write and then present in Canva an impossible interview to the inventors.

[https://www.canva.com/it\\_it/](https://www.canva.com/it_it/)

Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills, Competencies)

**Grade: Secondary:** 1.-2. Grade

**Curriculum: MEDICAL INVENTIONS DURING WORLD WAR II**

**Knowledge:** Students understand what were the main inventions made in the medical field during WWII. They learn and understand the medical inventions made during WW2.

**Skills:** Pupils are able to discuss the medical inventions made during WW2. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools. Computer

	<p>programming</p> <p><b>Competence:</b> Students are able to pick up and assimilate relevant information quickly and easily. They learn new tasks rapidly. They respond swiftly and appropriately. They can think on their feet in rapidly changing environments. They actively participate in a team, encouraging cooperation. They are aware of the needs of others and respond flexibly. They share information and support other team members.</p>
<p>Bibliographic reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year</p>	
<p>Short description of digital sources (applications, games, webpages, FB pages etc.)</p>	<p><a href="https://www.youtube.com/watch?v=tGIRJKsRoZA">https://www.youtube.com/watch?v=tGIRJKsRoZA</a> (internet source for the main events of WW2)</p> <p><a href="https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions">https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions</a> (digital tool for interactive classroom for what was the cause of World War II)</p> <p><a href="https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions">https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions</a> (digital tool for interactive classroom for the main inventions made in the medical field during WWII)</p> <p><a href="https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions">https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions</a> (digital tool for interactive classroom to analyse the articles present in the presentation in Genially)</p> <p><a href="https://theconversation.com/how-world-war-ii-spurred-vaccine-innovation-39903">https://theconversation.com/how-world-war-ii-spurred-vaccine-innovation-39903</a> (internet source for FLU VACCINES)</p> <p><a href="https://www.washingtonpost.com/history/2020/07/11/penicillin-coronavirus-florey-wwii-infection/">https://www.washingtonpost.com/history/2020/07/11/penicillin-coronavirus-florey-wwii-infection/</a> (internet source for PENICILLIN)</p> <p><a href="https://www.nationalww2museum.org/sites/default/files/2017-07/blood-plasma-fact-sheet.pdf">https://www.nationalww2museum.org/sites/default/files/2017-07/blood-plasma-fact-sheet.pdf</a> (internet source for BLOOD PLASMA TRANSFUSION)</p> <p><a href="https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions">https://view.genial.ly/64423e84f8bb270019d335a1/interactive-content-world-war-ii-medical-inventions</a> (digital tool for interactive classroom for a quiz of 16 questions about the medical inventions made during WW2)</p> <p><a href="https://www.canva.com/it_it/">https://www.canva.com/it_it/</a> (digital tool for interactive classroom for an impossible interview to the inventors)</p>

**Lesson plan 3**  
**TECHNOLOGY LESSON PLAN**  
**TECHNOLOGICAL INVENTIONS DURING WORLD WAR II**

<p>Title</p>	<p style="text-align: center;"><b>TECHNOLOGICAL INVENTIONS DURING WORLD WAR II</b></p>
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Subject area	TECHNOLOGY
<p><b>Description of educational activity</b></p> <p>(duration, students age, organisation of the class of pupils; The aim of the lesson; Support materials; Evaluation and assessment method; Description of the activities)</p>	<p><b>Duration:</b> 3 hours (140 min)  <b>Students age:</b> 15 - 16  <b>Organization of the class of pupils:</b> frontal, individual, group work</p> <p><b>The aim of the lesson:</b></p> <ol style="list-style-type: none"> <li>8. Practising vocabulary – TECHNOLOGICAL VOCABULARY</li> <li>9. Revising the main events during WWII</li> <li>10. Get to know the main technological inventions in WWII: radar, jet engines, cavity magnetron, computer, atomic bomb</li> <li>11. Get to know the first researchers of the time in technological field</li> <li>12. Understanding how technological inventions changed the life of people during and after WW2</li> <li>13. Developing civic and digital competences</li> </ol> <p><b>Support materials:</b></p> <ul style="list-style-type: none"> <li>● YouTube</li> <li>● Genially</li> <li>● Excerpts of web articles</li> </ul> <p><b>Handouts:</b></p> <ul style="list-style-type: none"> <li>● Quiz in Genially</li> <li>● Worksheets</li> <li>● StoryboardThat</li> </ul> <p><b>Description of the activities</b></p> <p>This lesson plan will provide a revision on WWII’s main events.</p> <p><b>Task 1 (15 min)</b>            After watching a YouTube video (<a href="https://www.youtube.com/watch?v=tGIRJKsRozA">https://www.youtube.com/watch?v=tGIRJKsRozA</a>) to revise the main events of WW2, the students will answer the following questions:            - What was the cause of World War II?            - What countries fought in World War II?            - What were the turning points of World War II?            - Why did Adolf Hitler start World War II?            - How did World War II end?  <a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a></p> <p><b>Task 2 (20 min)</b>            Presentation of the main technological inventions made during WW2.  <a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a></p> <p><b>Task 3 (15 min)</b>            QUIZ – In Genially the students answer 10 questions about the technological inventions made during WW2.  <a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a></p> <p><b>Task 4 (40 min)</b>            The students are divided into groups of 4 and are given the following task:</p>



	<p>In groups of 4, try to find out which were the many other technological inventions made during WW2, using these questions as a guide for your research:</p> <ol style="list-style-type: none"> <li>1. Who invented the technology?</li> <li>2. How was the technology used in the war?</li> <li>3. Who used the technology during the war?</li> </ol> <p><a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a></p> <p><b>Task 5 (50 min)</b> Students can create a storyboard on Storyboard that represents how the war and world would have changed without the technology being invented. <a href="https://www.storyboardthat.com/it">https://www.storyboardthat.com/it</a></p>
<p>Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills, Competencies))</p>	<p><b>Grade: Secondary:</b> 1.-2. Grade</p> <p><b>Curriculum: TECHNOLOGICAL INVENTIONS DURING WORLD WAR II</b></p> <p><b>Knowledge:</b> Students understand the main technological inventions in WWII: radar, jet engines, cavity magnetron, computer, atomic bomb. They learn and understand the first researchers of the time in the technological field and they understand how technological inventions changed the life of people during and after WW2.</p> <p><b>Skills:</b> Pupils are developing civic and digital skills. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools. Computer programming</p> <p><b>Competence:</b> Students are able to actively participate in a team. They can encourage cooperation. They are aware of the needs of others and respond flexibly.</p>
<p>Bibliographic reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year</p>	
<p>Short description</p>	<p><a href="https://www.youtube.com/watch?v=tGIRJKsRoZA">https://www.youtube.com/watch?v=tGIRJKsRoZA</a> (internet source for revision on WWII's</p>



<p>of digital sources (applications, games, webpages, FB pages etc.)</p>	<p>main events)</p> <p><a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a> (digital tool for interactive classroom for revision on WWII's main events)</p> <p><a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a> (digital tool for interactive classroom for the main technological inventions made during WW2)</p> <p><a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a> (digital tool for interactive classroom for 10 questions about the technological inventions made during WW2)</p> <p><a href="https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions">https://view.genial.ly/64491adb398eab0013fc2f8f/interactive-content-world-war-ii-technological-inventions</a> (digital tool for interactive classroom for other technological inventions made during WW2)</p> <p><a href="https://www.storyboardthat.com/it">https://www.storyboardthat.com/it</a> (digital tool for interactive classroom for creating a storyboard how the war and world would have changed without the technology being invented)</p>
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**Lesson plan 4**  
**TECHNOLOGY LESSON PLAN**  
**EVERYDAY INVENTIONS DURING WORLD WAR II**

<b>Title</b>	<b>EVERYDAY INVENTIONS DURING WORLD WAR II</b>
<b>Subject area</b>	<b>TECHNOLOGY</b>
<b>Description of</b>	<p><b>Duration:</b> 3 hours (135 min)</p> <p><b>Students age:</b> 16 - 18</p>

<p><b>educational activity</b></p> <p>(duration, students age, organisation of the class of pupils; The aim of the lesson; Support materials; Evaluation and assessment method; Description of the activities)</p>	<p><b>Organization of the class of pupils:</b> frontal, individual, group work</p> <p><b>The aim of the lesson:</b></p> <ol style="list-style-type: none"> <li>14. Practising vocabulary – EVERYDAY VOCABULARY</li> <li>15. Revising the main events of WWII</li> <li>16. Get to know the main inventions made in WWII that changed everyday life</li> <li>17. Get to know the first researchers of the time in the field</li> <li>18. Developing civic and digital competences</li> </ol> <p><b>Support materials:</b></p> <ul style="list-style-type: none"> <li>● YouTube</li> <li>● <a href="https://www.findmypast.co.uk/blog/history/10-everyday-inventions-you-owe-to-ww2">https://www.findmypast.co.uk/blog/history/10-everyday-inventions-you-owe-to-ww2</a></li> <li>● Genially</li> </ul> <p><b>Handouts:</b></p> <ul style="list-style-type: none"> <li>● Worksheets</li> <li>● Presentation in Canva</li> </ul> <p><b>Description of the activities</b></p> <p>This lesson plan will provide a revision on WWII’s main events.</p> <p><b>Task 1 (15 min)</b> After watching a YouTube video (<a href="https://www.youtube.com/watch?v=tGIRJKsRozA">https://www.youtube.com/watch?v=tGIRJKsRozA</a>) to revise the main events of WW2, the students will answer the following questions:</p> <ul style="list-style-type: none"> <li>- What was the cause of World War II?</li> <li>- Which countries fought in World War II?</li> <li>- Which were the turning points of World War II?</li> <li>- Why did Adolf Hitler start World War II?</li> <li>- How did World War II end?</li> </ul> <p><a href="https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions">https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions</a></p> <p><b>Task 2 (10 min)</b> Presentation of photos to the students to recognize which were the main inventions made during WWII that changed everyday life.</p> <p><a href="https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions">https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions</a></p> <p><b>Task 3 (40 min)</b> After watching a video on YouTube (<a href="https://youtu.be/1Vn1lOeMLI4">https://youtu.be/1Vn1lOeMLI4</a>) the students, in couple, have to answer the following questions:</p> <ul style="list-style-type: none"> <li>- What disease did he develop?</li> <li>- Why did he want to improve the copying process?</li> <li>- What is photo conductivity? Who invented it?</li> <li>- What test did they use to prove their invention?</li> <li>- What was the potential of his invention?</li> </ul> <p><b>Task 4 (30 min)</b></p>
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	<p>After watching a video on Youtube (<a href="https://youtu.be/Tead7EJ3Pu0">https://youtu.be/Tead7EJ3Pu0</a>) the students, in couple, have to answer the following questions:</p> <ul style="list-style-type: none"> <li>- Who was the inventor of superglue and where did he work?</li> <li>- What was Eastman 910?</li> <li>- What were the powers of superglue in everyday life?</li> </ul> <p><b>Task 5 (40 min)</b> As final task, the students have to write and then present in Canva an impossible interview to one of the inventors. <a href="https://www.canva.com/it_it/">https://www.canva.com/it_it/</a></p>
<p>Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills, Competencies))</p>	<p><b>Grade: Secondary:</b> 1.-2. Grade</p> <p><b>Curriculum: EVERYDAY INVENTIONS DURING WORLD WAR II</b></p> <p><b>Knowledge:</b> Students understand the main inventions made in WWII that changed everyday life. They learn and understand the first researchers of the time in the field.</p> <p><b>Skills:</b> Pupils are able to discuss the everyday inventions made in WWII. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools. Computer programming</p> <p><b>Competence:</b> Students are able to identify and separate out the key components of problems and situations. They actively participate in a team, encouraging cooperation. Able to pick up and assimilate relevant information quickly and easily. Learns new tasks rapidly. Responds swiftly and appropriately.</p>
<p>Bibliographic reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year</p>	
<p>Short description of digital sources (applications, games, webpages, FB pages etc.)</p>	<p><a href="https://www.youtube.com/watch?v=tGIRJKsRoZA">https://www.youtube.com/watch?v=tGIRJKsRoZA</a> (internet source for the main events of WW2)</p> <p><a href="https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions">https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions</a> (digital tool for interactive classroom for the main events of WW2)</p> <p><a href="https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions">https://view.genial.ly/644a71d8ded2040010626569/interactive-content-world-war-ii-everyday-inventions</a> (digital tool for interactive classroom for the main inventions made during WWII that changed everyday life)</p> <p><a href="https://youtu.be/1Vn1lOeMLI4">https://youtu.be/1Vn1lOeMLI4</a> (internet source for the main inventions made during WWII that changed everyday life)</p>



	<p><a href="https://youtu.be/Tead7EJ3Puo">https://youtu.be/Tead7EJ3Puo</a> (internet source for the main inventions made during WWII that changed everyday life)</p> <p><a href="https://www.canva.com">https://www.canva.com</a> (internet source for an impossible interview to one of the inventors)</p>
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## Lesson plan 5 TECHNOLOGY AND WAR

<b>Title</b>	<b>Technology in the service of war</b>
<b>Thematic section</b>	<b>Technology / Society</b>
<b>Description of the educational activity</b>	<b>Duration:</b> 2 hours ( 100 minutes) <b>Students aged:</b> 15 - 17 <b>Working method :</b> Frontline , Working groups <b>Objective i of the lesson:</b>

<ul style="list-style-type: none"> <li>• Duration</li> <li>• Age</li> <li>• Working method</li> <li>• Goals</li> <li>• Sources</li> <li>• Means, materials</li> <li>• Purpose of the lesson</li> <li>• Course description, assignments</li> <li>• An assessment</li> </ul>	<ol style="list-style-type: none"> <li>1. What is the purpose of technology development?</li> <li>2. What factors create the development of technology?</li> <li>3. What are the ethical barriers to the means used to develop technology?</li> <li>4. In what areas did technology develop during World War II?</li> <li>5. What means were used for this development?</li> <li>6. What was the application of these developments during and after the war?</li> </ol> <p><b>Sources :</b></p> <ul style="list-style-type: none"> <li>• School library / individual</li> <li>• Newspaper articles</li> <li>• Compositions</li> <li>• Internet</li> <li>• Interview</li> <li>• Organisations / bodies</li> </ul> <p><b>Tools</b></p> <ul style="list-style-type: none"> <li>• Mobile phones</li> <li>• PC</li> <li>• Applications / programs ( PowerPoint or Prezi , Padlet )</li> <li>• Brainstorming app</li> <li>• Stationery</li> </ul> <p><b>Description of the activities</b></p> <p>In this lesson plan, an approach to the development of technology, the means it uses, the rules of ethics, the consequences of its increase will be attempted. There will also be concerns about the use and development of technology in wars and especially in World War II. Will be sought and relevant proposals will be made.</p> <p><b>Task 1</b></p> <ul style="list-style-type: none"> <li>• Introduction: Watch a short video about an application of technology to a young child with mobility problems. (5 minutes) <a href="https://youtu.be/-J0tByEfPzY">https://youtu.be/-J0tByEfPzY</a></li> <li>• Students are asked to look for the moments in the video that are mentioned <ul style="list-style-type: none"> <li>- the conditions that impose technological solutions - the conditions to create technological achievements</li> <li>- the good of technology</li> <li>- the possible negatives of the processes they saw and the possible negative results</li> </ul> And to record their thoughts. This task will be done in groups (10 minutes). At the end they will present their conclusions (10 minutes).</li> </ul> <p><b>Task 2</b></p> <ul style="list-style-type: none"> <li>• Students will look for technological advances during World War II and record</li> </ul>
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	<p>some of them (5 minutes).</p> <ul style="list-style-type: none"> <li>Workers in groups will recognize, as they did in task 1, <ul style="list-style-type: none"> <li>- the conditions that impose technological solutions</li> <li>- the conditions to create technological achievements - the good of the technology - the possible negatives from the processes they saw and the possible negative results. (10 minutes)</li> </ul> </li> <li>Students will present their research findings (10 minutes)</li> </ul> <p><b>Task 3</b></p> <ul style="list-style-type: none"> <li>With critical thinking and reflection the students, divided into new groups: <ul style="list-style-type: none"> <li>- will find the similarities between the elements they have discovered in tasks 1 and 2.</li> <li>- they will find the differences between the elements they have discovered in tasks 1 and 2.</li> <li>- they will present their findings (10 minutes)</li> </ul> </li> <li>In the plenary session and with brainstorming, we will look for <ul style="list-style-type: none"> <li>- the purpose of technology</li> <li>- the ethical limits that must be set in the process of developing technology</li> <li>- the mechanism that will impose the rules on technology</li> <li>- the processes that will make technology acceptable to society (15 minutes)</li> </ul> </li> </ul> <p><b>Task 4</b></p> <ul style="list-style-type: none"> <li>Students in plenary will check the degree of achievement of the objectives</li> <li>Students will suggest ways to improve the process and whether or not to continue the action (10 minutes)</li> <li>Each group will create a presentation related to the topic they worked on (15 minutes)</li> </ul>
<p>Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills, Competencies)</p>	<p><b>Grade: Secondary: 1.-2. Grade</b></p> <p><b>Curriculum: Technology in the service of war</b></p> <p><b>Knowledge:</b> Students understand the concerns about the use and development of technology in wars and especially in World War II. They learn and understand the development of technology, the means it uses, the rules of ethics, the consequences of its increase.</p> <p><b>Skills:</b> Pupils are able to discuss the everyday inventions made in WWII and the development of technology in wars and especially in World War II. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools.</p>

	<p>Computer programming</p> <p><b>Competence:</b> Students are able to identify and separate out the key components of problems and situations. They actively participate in a team, encouraging cooperation. Able to pick up and assimilate relevant information quickly and easily. Learns new tasks rapidly. Responds swiftly and appropriately.</p>
<p>Bibliographic reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year</p>	
<p>Short description of digital sources (applications, games, webpages, FB pages etc.)</p>	<p><a href="https://youtu.be/-J0tByEfPzY">https://youtu.be/-J0tByEfPzY</a> (internet source for application of technology to a young child with mobility problem)</p>

## Lesson plan 6

### Breaking the „Enigma” – the most essential contribution to the victory of the Allies in World War II

<b>Title</b>	<b>Innovative cross curricular methodologies and lesson plans - Inventions during the WWII</b>
<b>Subject area</b>	<b>Science and Technology</b>
<p><b>Description of educational activity</b></p> <p>(duration, students age, organisation of the class of pupils; The aim of the lesson; Support</p>	<p><b>Duration:</b> 1 hour (45 minutes)  <b>Students age:</b> 15 - 17  <b>Organization of the class of pupils:</b> frontal, individual, group work  <b>The aim of the lesson:</b> To allow students to experience how ciphers can conceal and protect information, demonstrate effective written, oral, and graphic communication skills.</p> <p><b>Support materials:</b></p> <ul style="list-style-type: none"> <li>● Internet</li> <li>● Short videos – Enigma - Kate Winslet &amp; Dougray Scott, Keeping It a Secret</li> <li>● genial.ly</li> <li>● liveworksheets</li> <li>● learningapps</li> </ul>



materials;  
Evaluation and  
assessment  
method;  
Description of  
the activities)

**Handouts :**

- Liveworksheet
- YouTube videos
- Study material in genial.ly

**Description of the activities**

During this lesson students will learn about new technology's impact on the Second World War, they will identify advanced technologies utilised during WWII.

**The aim of the lesson:**

**Objectives of the classes**

- General: a reminder of the most important contribution of Poles to the victory of the Allies in World War II - breaking the Enigma code and awareness of its contemporary effects.

**Specific:**

- The presence and role of cryptology in the history of the world - students understand the importance of secrets in the history of the world and can indicate examples of measures used to protect it.
- The importance of breaking the Enigma code in the historical dimension - students know about breaking the Enigma code and are able to indicate its impact on the fate of the war.
- Long-term effects of the success of cryptographers: digital civilization, cryptology around us - students understand the connection between war effort of cryptographers and the creation of the earliest electronic computers; they can point out examples of modern applications of cryptology in our immediate environment.

**Support materials:**

- Internet
- Student books
- Short video – Ed puzzle
- Pictures and photos of the main characters of the story of breaking the Enigma; Marian Rejewski, Jerzy Różycki and Henryk Zygalski, photos of the Enigma machine, photos of the Castle in Poznań and the Saski Palace in Warsaw.
- Learningapps
- Kahoot

**Description of the activities**

1. The first part of the lesson describes the main ways of hiding information:
  - Steganography;
  - Codes;
  - Cyphers

	<p>2. The teacher gives a lecture (15 min) to the class introducing and briefly explaining the topic:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> the beginning of encryption machines such as „Enigma”</li> <li><input type="checkbox"/> brief description of the beginning „Cipher Bureau” in the structure of Polish intelligence</li> <li><input type="checkbox"/> photos of „Enigma” machine and photos of Marian Rejewski, Jerzy Różycki and Henryk Zygalski <a href="https://enigmacentrum.pl/index.php?id=1892">https://enigmacentrum.pl/index.php?id=1892</a></li> </ul> <p>3. Students are introduced to the topic of breaking the „Enigma” codes through questions and video (Edpuzzle). Exercise 1: <a href="https://edpuzzle.com/media/644c16198017d442c0c9c183/edit">https://edpuzzle.com/media/644c16198017d442c0c9c183/edit</a></p> <p>4. Exercise 2. <a href="https://learningapps.org/watch?v=pqtr9aw9j23">https://learningapps.org/watch?v=pqtr9aw9j23</a></p> <p><b>5. Evaluation:</b></p> <p>Exercise 3. Kahoot <a href="https://create.kahoot.it/share/breaking-the-enigma/62a1baba-00d4-4f36-841f-2e3ea21972b9">https://create.kahoot.it/share/breaking-the-enigma/62a1baba-00d4-4f36-841f-2e3ea21972b9</a></p> <p><b>6. Homework:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Students are supposed to find examples of cryptology applications in our immediate environment <ul style="list-style-type: none"> <li>● encryption of transmission between the ATM and the bank's IT system</li> <li>● HTTPS protocol - encrypted http; secure online transactions</li> <li>● A3 and A5 algorithms, used to encrypt conversations via mobile phones</li> <li>● programs for encrypting SMS and telephone calls</li> </ul> </li> </ul>
<p>Connection to curriculum (grade, related objectives, KSC (Knowledge, Skills, Competencies)</p>	<p><b>Grade: Secondary:</b> 1.-2. Grade</p> <p><b>Curriculum:</b> Breaking the „Enigma” – the most essential contribution to the victory of the Allies in World War II</p> <p><b>Knowledge:</b> Students understand the importance of breaking the Enigma code in the historical dimension - students know about breaking the Enigma code and are able to indicate its impact on the fate of the war. Students understand the new technology's impact on the Second World War, they can identify advanced technologies utilised during WWII. They learn and understand how to encrypt and decrypt messages.</p> <p><b>Skills:</b> Pupils are able to summarise the positive and negative side of breaking enigma code. They are improving their critical thinking about sources and information. Development of Solving problems; Development of critical thinking; Team work; Using ICT tools.</p> <p><b>Competence:</b> Students are able to identify and separate out the key components of problems and situations. They actively participate in a team, encouraging cooperation. They are aware of the needs of others and respond flexibly. They share information and support other team members.</p>
<p>Bibliographic</p>	

<p>reference to be used during the activity (book, story, magazine, review, periodical, journal, etc.): author(s), title, publishing house, ISBN, no. of pages, year</p>	
<p>Short description of digital sources (applications, games, webpages, FB pages etc.)</p>	<p><a href="https://enigmacentrum.pl/index.php?id=1892">https://enigmacentrum.pl/index.php?id=1892</a> (internet source for „Enigma” machine)  <a href="https://edpuzzle.com/media/644c16198017d442c0c9c183/edit">https://edpuzzle.com/media/644c16198017d442c0c9c183/edit</a> (digital tool for interactive classroom for the topic of breaking the „Enigma” codes through questions and video (Edpuzzle)  <a href="https://learningapps.org/watch?v=pqtr9aw9j23">https://learningapps.org/watch?v=pqtr9aw9j23</a> (digital tool for interactive classroom)  <a href="https://create.kahoot.it/share/breaking-the-enigma/62a1baba-00d4-4f36-841f-2e3ea21972b9">https://create.kahoot.it/share/breaking-the-enigma/62a1baba-00d4-4f36-841f-2e3ea21972b9</a> (digital tool for interactive classroom for a Kahoot game)</p>
<p><b>Results/ What we learned / Outcomes</b></p>	<p><b>The expected Outcomes and Effects of the Activity on students and teachers of the Technological advancement caused by WWII</b></p>
	<p>The interdisciplinary teaching provides students with educational experiences that are more authentic and of greater importance. Using this approach we want students to recognize that there are many perspectives which can be brought to make an effort to understand most issues easier. The activities will result in engagement and learning of students. We expect that such a way of teaching will enable all students to relate and contribute to the dialogue and we hope they will learn to think critically.</p> <p>We focus on different technological achievements which were accelerated by WWII. During the event we will discuss the invention of enigma code.</p> <p>Teachers participating in the activity had the opportunity to share and compare their ideas and methods they used. They were able to practise and reinforce their skills in working in teams. Methodologies and lesson plans are available for wider use which means that not only schools participating in the project can use them but all the materials are open to the public. Students will have the opportunity to experience different ways of learning and obtain new skills and ideas.</p>