

Pedagogical Sequence Structure (WP3-A2)

1. General Information

Field	Description
Title	Saving lives with data
Topic	Graphic representation, data analysis
Age group	Lower secondary (13–15 years old)
Duration	90 min.
STEAM fields involved	Mathematics, Arts (Social Sciences), Technology

2. Learning Objectives

General objectives	• Develop students' understanding of how data can be collected, organised, and interpreted • Encourage the use of visual representations to support reasoning and communication • Promote awareness of how data-driven decisions can impact real-world situations
Subject-related objectives	• Identify patterns in datasets and understand the basic logic behind AI systems (data → patterns → decisions) • Understand how data collection supports decision-making • Interpret simple visualisations (charts, diagrams) • Understand how data can be transformed into a visual representation
Link to national curriculum	• Data handling and statistics (interpreting charts, graphs, and tables)

	• Representing data visually • Understanding factors affecting health and hygiene • Use of evidence to support scientific conclusions • Data literacy and interpretation • Introduction to data analysis processes (linked to AI logic) • Study of the Crimean War • Role of key historical figures (Florence Nightingale)
Key competences	• Data literacy • Digital literacy • Critical thinking • Problem-solving • Pattern recognition • Collaboration • Communication

3. Links with other project resources

Resource	Additional information
Video (WP2-A2)	Video about Nightingale's impact
Adventure (WP2-A3)	Saving Lives with Data Genially based mission: the player boards the ship that takes Nightingale to Crimea and supports her in her discoveries. Saving Lives with Data Genially
Manipulation (WP3-A1)	Rebuilding Nightingale's Graph Through hands-on manipulation of Nightingale's graph, students will discover how she represented and communicated complex data.

4. Required materials

Low-cost materials	How to use
Annex 1: Puzzle	To be printed and cut out (one per group)
Annex 2: Correction + explanation of the graph	To be printed (one per group)
Annex 3: Modified graph	To be printed and cut out (one per group)
Annex 4: table of estimated deaths in the Crimean War	To be printed (one per group)

5. Lesson outline

Activity	Description&learning process	Materials	Time
Introduction	The teacher asks students if they have heard about Florence Nightingale and what they already know about her. Then shows the video about Florence Nightingale. The teacher briefly introduces Florence Nightingale and her impact.	Smartboard, tablets/ smartphones/ laptops	5 min.
Adventure on Genially	The teacher invites students to play the adventure, to live a part of Nightingale's experience. Saving Lives with Data Genially	Smartboard, tablets/ smartphones/ laptops + internet	20 min.
Teacher conceptual bridge	The teacher introduces the concept of AI and explains that it works in a similar way to the activity students have just completed: data are collected, patterns are identified, and decisions are made (data → patterns → decisions).		5 min.
Teacher conceptual	The teacher asks students how the data collected by Florence Nightingale (which	Graph paper	25 min.

bridge	was much larger than in the adventure) could be made easier to understand. Students should be guided to conclude that graphical representations help make complex data clearer and more accessible. Working in groups of three or more, students then attempt to create their own graph using the data from Annex 4. After this activity, the teacher introduces the original form of Nightingale's chart, explaining that it was circular in shape.		
Manipulation	1. Puzzle The teacher invites the students to rebuild Florence Nightingale's graph. 2. Add the legend to the graph Using Annex 4, students match each colour to the correct cause of death. 3. Correction Using Annex 2, students check their understanding of the graph. They read the explanation together and ask any questions they may have. 4. Comparison Using Annex 3, students compare the number of deaths for each cause. Throughout the activity, students answer the following questions: Legend the graph: • Which colour represents deaths caused by preventable diseases? • Which colour represents deaths caused by injuries? • Which colour represents deaths caused by other causes? Analysis: • Which cause led to the highest number of deaths? • Which colour is the most	Printed and cut out material + observation sheet	30 min.

	represented in the graph? The teacher can then encourage students to discuss why Florence Nightingale's graphical representation was more effective than a simple table, helping them reflect on the role of data visualisation in scientific communication.		
Conclusion	The teacher highlights that what students have done is exactly the first step of data analysis: turning raw data into a meaningful visual representation to make it interpretable. They discuss the link between data analysis and AI.		5 min.

6. Adaptations & Inclusion

Suggestions for learners with specific learning disorders (SLDs)	• If possible, print the puzzle on A3 paper. • Ensure that the observation sheet (with questions for the manipulation) uses an inclusive font, 1.5 line spacing, and no italics or underlining. • Divide the class into groups of approximately three students and assign roles, especially for students with SLDs, based on their strengths. • The teacher may provide modified graph paper with larger grids and pre-labelled axes.
Gender-inclusive approaches and strategies to promote equity in STEAM participation	• Highlight Florence Nightingale as a pioneer in data analysis to challenge stereotypes about who can work in STEAM. • Ensure equitable participation by assigning rotating roles within groups and encouraging all students to contribute equally. • Think time and structured questioning support balanced participation and reduce self-censorship.

- The activity also values multiple skills (logic, communication, collaboration) to allow all students to engage confidently.

7. Assessment

Item	Guidance
Teacher Observation	Participation in the adventure, creation of a graph before the manipulation, participation in group work (and allowing others to participate), completion of the observation sheet
Learner Self-Assessment	Students can answer simple questions such as: "Can I describe the impact of Florence Nightingale? Can I explain why it is important to analyse data? Can I explain Nightingale's chart?"
Peer Assessment (optional)	Students compare their initial graph with the one produced during the manipulation and discuss the choices made to represent the data in different ways.
Discussion & Reflection	A guided class discussion highlighting the importance of data analysis and how it can sometimes reveal unexpected results. The teacher then links this to AI and explains how it works using data.