

Lesson Plan Inspired by Eleni Mazarakioti

From Lab to Leadership: Inspiring Girls in STEM through the Story of a Female Chemical Engineer

1 – GENERAL INFORMATION

Lesson Title:

- *Beyond Chemistry: Eleni Mazarakioti's Path from PhD to Innovation*
- *Alternative: Sustainability, Science, and Women in STEM – Eleni's Inspiring Story*

Teacher's Name:

[To be filled in – name, institution, and country]

Target Group:

- Girls aged 13–15 (lower secondary or preparatory high school)
- Can also be adapted for mixed-gender groups, focusing on STEM encouragement, career orientation, and sustainability awareness.

Subjects:

- Science / Chemistry
- Career Education / Guidance
- Environmental Studies & Sustainability
- Social Studies / Citizenship
- English / Creative Writing (optional support material)

Duration:

- Two consecutive 40-minute lessons (can also be split across two days).

Materials/Tools:

- Eleni's bio and story (short text or video)
- Inspirational quotes
- Projector/screen or printed story handouts
- Post-it notes, large paper, colored markers
- STEM roadmap templates
- Reflection cards

References:

- CodingGirls WP3 Guidelines
- Living Book (Eleni's bio & story)
- CodingGirls Lesson Plan Template

2 – LEARNING OBJECTIVES

By the end of this lesson, students will be able to:

Knowledge

- Recall the academic path of Eleni Mazarakioti, from engineering studies to PhD research.
- Identify at least three obstacles faced by women in STEM and how they can be overcome.
- Understand the link between chemistry/engineering and sustainability challenges.

Skills

- Work collaboratively in groups to design projects and solutions.
- Practice critical thinking and problem-solving using real-world contexts.
- Present findings clearly to peers, using visual and verbal communication.

Attitudes & Values

- Appreciate the importance of female representation in STEM.
- Feel encouraged to pursue ambitious academic or career goals despite obstacles.
- Develop environmental and social responsibility through STEM solutions.

Extended Objective:

- Students will connect STEM careers to the **United Nations Sustainable Development Goals (SDGs)**, e.g., SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 7 (Affordable & Clean Energy), and SDG 13 (Climate Action).

3 – KEYWORDS & THEMES

Keywords

Women in STEM – Chemical Engineering – PhD Journey – Sustainability – Global Collaboration – Research & Innovation – Resilience – Leadership – Mentorship – Lifelong Learning – Breaking Stereotypes

Themes

- Women scientists as role models
- Academic perseverance and resilience
- Sustainable innovation through science
- Diversity and collaboration in research
- Career development and life-long learning
- Global responsibility and climate action

4 – STEP-BY-STEP TEACHING PROCEDURE

Lesson 1 (40 min): Discovering Eleni's Journey

Warm-Up (5 min)

- Teacher writes the words "Science – Women – Future – Sustainability" on the board.
- Students brainstorm associations and share quick thoughts.

Introduction (5 min)

- Teacher introduces Eleni's story, highlighting her PhD journey at Brock University and her focus on sustainability.
- Optional video/reading excerpt shown.

Storytelling & Milestones (25 min)

Students analyze four "Milestones" in Eleni's life:

1. **Early Life & Education** – Why chemistry? (Discuss motivation, curiosity, and inspiration).
2. **PhD Challenges** – Long study years, cultural adaptation abroad, research difficulties. (Group brainstorm: “What challenges might a researcher face? How would you overcome them?”).
3. **Global Collaboration** – Benefits of working with international teams (short task: write one global challenge that needs teamwork).
4. **Advice & Inspiration** – Her words about resilience and sustainability. (Group reflection: Which advice speaks to you most?).

Exit Ticket (5 min)

Each student writes: “*The most important thing I learned from Eleni’s story is...*”

Lesson 2 (40 min): Turning Inspiration into Action

Warm-Up (5 min)

- Teacher writes the quote: “Science is not just knowledge, it is action for a better future.”
- Students recall yesterday’s highlights.

Theme Reinforcement (5 min)

- Quick re-read of a strong quote from Eleni.
- Teacher asks: “*What qualities helped Eleni succeed?*”

Group Task – “My Sustainable STEM Roadmap” (15 min)

Groups design a roadmap that includes:

- Their own current skills.
- A new STEM skill they’d like to learn.
- A sustainability challenge they want to solve.
- An inspirational quote or phrase inspired by Eleni.

Group Presentations & Peer Feedback (10 min)

- Each group presents their roadmap.
- Students give peer feedback using symbols: (+) for strong ideas, (💡) for suggestions.

Reflection & Closing (5 min)

- Students write a short **letter to Eleni**: “Thank you for inspiring me to...”
- Teacher closes with encouragement: “*Like Eleni, you can use knowledge and resilience to change the world.*”

5 – CROSS-CURRICULAR INTEGRATION

- **Science/Chemistry**: Connect to topics of clean water, renewable energy, sustainable chemistry.
 - **Engineering/Technology**: Design solutions for local sustainability challenges.
 - **Social Studies**: Explore women’s rights, global citizenship, and gender equality.
 - **Career Guidance**: Explore STEM careers, higher education, and role models.
 - **Language Arts**: Creative writing (letters, reflections) and oral communication.
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6 – EVALUATION CRITERIA

Formative Assessment Tools:

- **Exit tickets** → quick emotional and knowledge check.
- **Roadmaps** → evidence of creative thinking and teamwork.
- **Group presentations** → clarity, creativity, connection to Eleni's themes.
- **Letters to Eleni** → empathy, reflection, personal engagement.

Extended Evaluation:

- Teachers may use a rubric (1–5 scale) on:
 - Engagement & Participation
 - Creativity of solutions
 - Reflection & Critical Thinking
 - Teamwork & Collaboration
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7 – RESOURCES & ENRICHMENT ACTIVITIES

1. **Women in STEM Poster Gallery** – students research and present role models.
 2. **STEM Dreams Digital Wall** – online Padlet/Jamboard with aspirations.
 3. **STEM Diaries** – one-week observation of science in daily life.
 4. **Sustainability Mini-Projects** – small group actions (e.g., recycling campaign).
 5. **Letters to Eleni** – collected in a class booklet, optionally sent to her.
 6. **School Visit or Online Talk** – invite a female scientist to class.
 7. **Creative Writing** – “If I were a researcher like Eleni, I would...”
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8 – SUPPORTING MATERIALS

- **Digital:** Eleni's bio & story, STEM roadmap templates, worksheets.
 - **Stationery:** Paper, markers, post-its, pens.
 - **Accessibility:** Large-print text, audio versions, oral-sharing alternatives.
 - **Technology:** Optional use of simulation tools or online apps for STEM experiments.
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