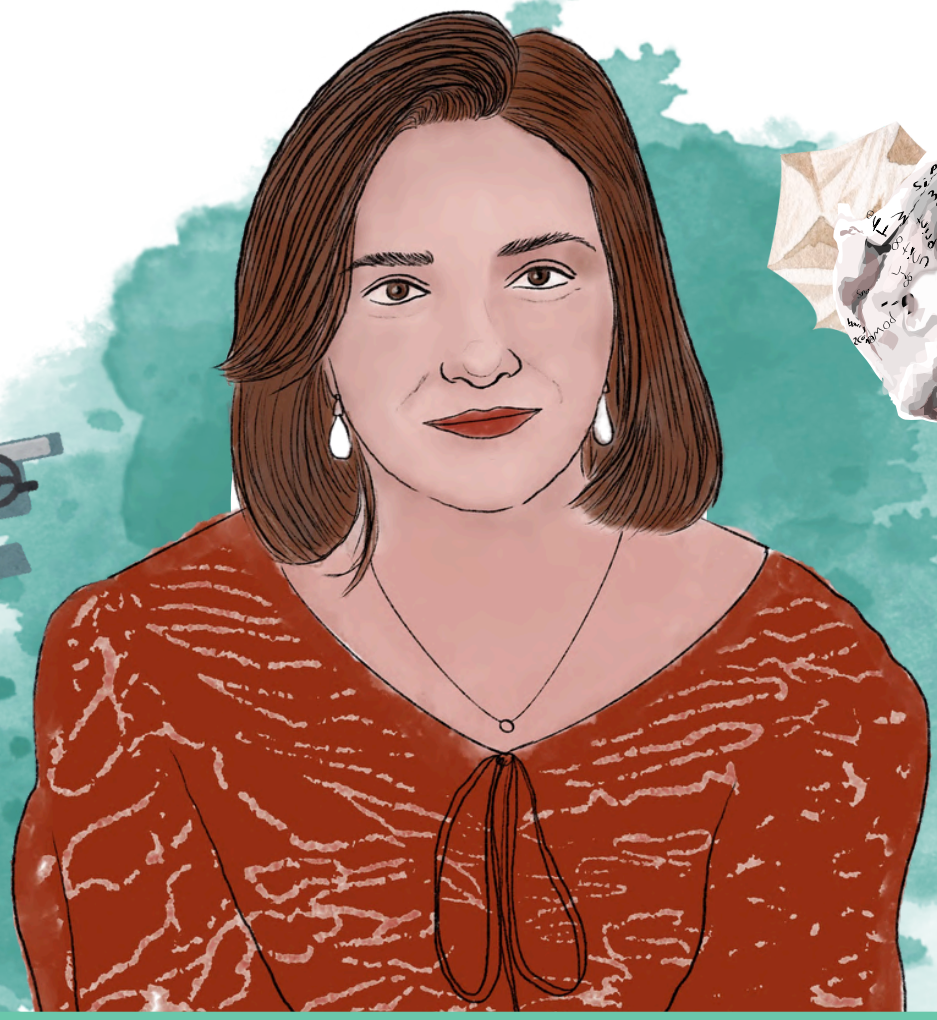
STEAM Tales

Co-funded by the European Union



Stories of inspiring women in STEAM:

Elvira Fortunato

Prepared by LogoPsyCom

LogoPsyCom

Project Title

STEAM Tales – Enhancing STEAM education through storytelling and hands-on learning (KA220-HE-23 -24-161399)

Work Package

WP3 - STEAM Tales resources and stories of women in STEAM
A1: Women in STEAM role models and stories development

Date of delivery

April 2024

Partners

MIND (Germany)

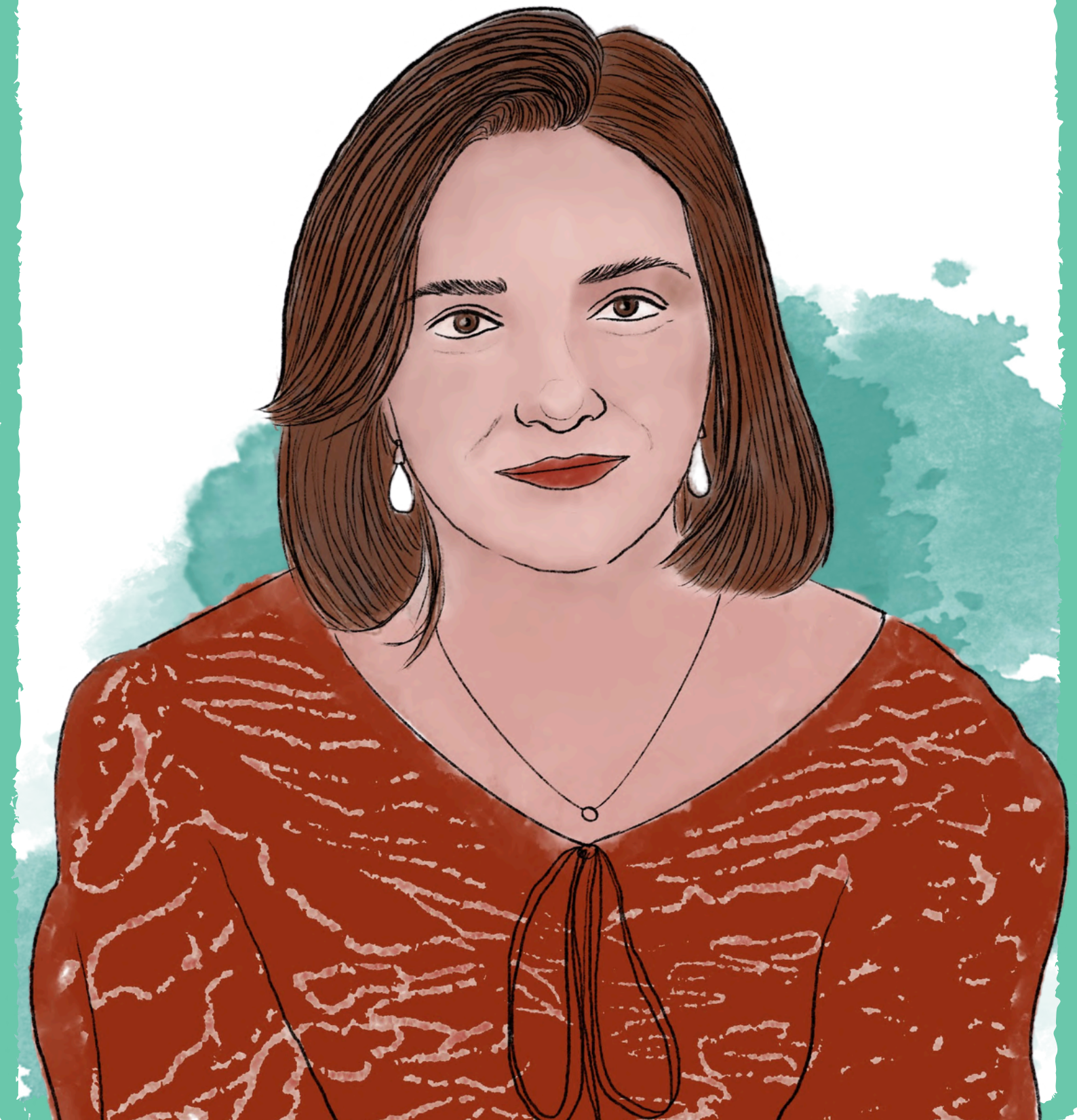
GoINNO (Slovenia)

CESIE (Italy)

Universidade do Porto (Portugal)

LogoPsyCom (Belgium)

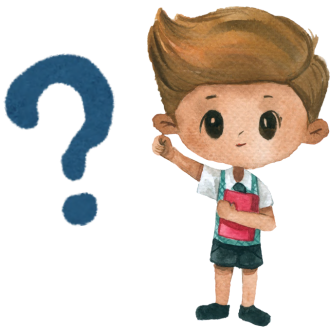
Elvira Fortunato, the paper engineer



The first steps

In 1964, in the lively city of Almada, near Lisbon, an ambitious and clever girl named Elvira Fortunato was born. At the time, Portugal was still under a strict government controlled by a mean dictator, so she grew up and studied in a very authoritarian regime.

But from a young age, Elvira always had bright ideas and an even brighter dream: becoming an engineer!



Question for children:

Do you know what a dictatorship or an authoritarian regime is? It's when one person made all the rules and decisions, and nobody was allowed to disagree or choose something different. How would that kind of government affect an ambitious and smart girl's dream to study?

See, ever since Elvira was a little girl, she was taught to obey men in her life, like her father, brother, and later, her husband, because women's rights were almost non-existent. Back then, in Portugal, women couldn't vote, work in commerce, leave the country, have a bank account, especially without their husband's permission.

They were supposed to become loving mothers and wives, like real home fairies, and were not meant to have dreams of their own or any independence. They also earned only half of a man's salary for the same kind of job…

But Elvira was brave and determined, with a big goal to study a quite new and still developing field: materials engineering!

Question for children:

Do you know what materials engineering could be? What does that make you think of? For what could it be used?
Materials engineering is a field that studies... that's right... materials! What they're made of, whether they're strong or weak and how they can be used in engineering and technology to make new things!

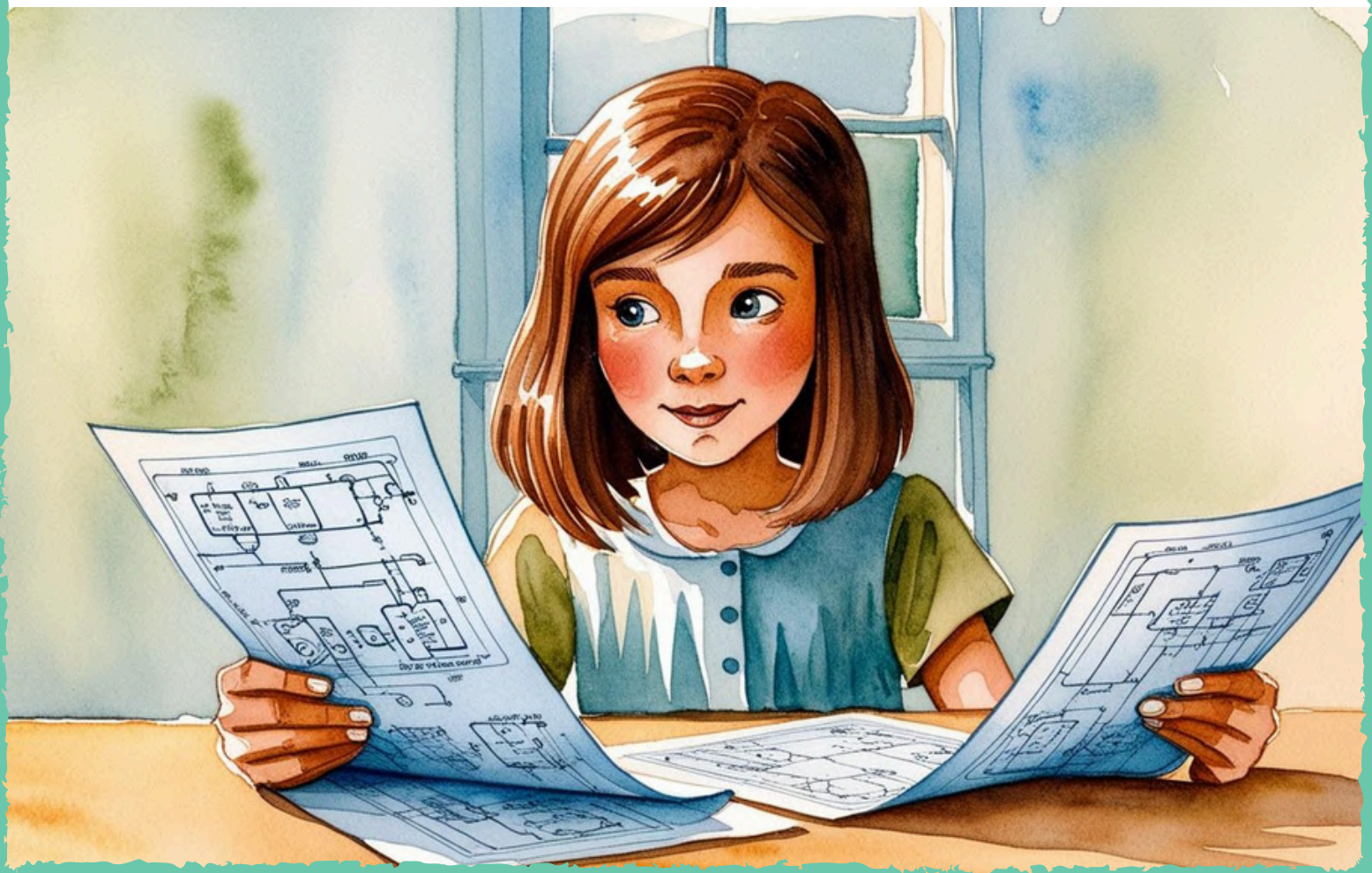
An ambitious decision

Elvira realised quite quickly that materials engineering was a very new and growing field at the time, especially in her country and at the nearby University. She felt both excited and a little scared to study something so new and mysterious, as it was quite a risk.

But she decided to take the leap and pursue this challenging path.

Question for children:

Have you ever tried something new that seemed a little scary at first? How did it feel?

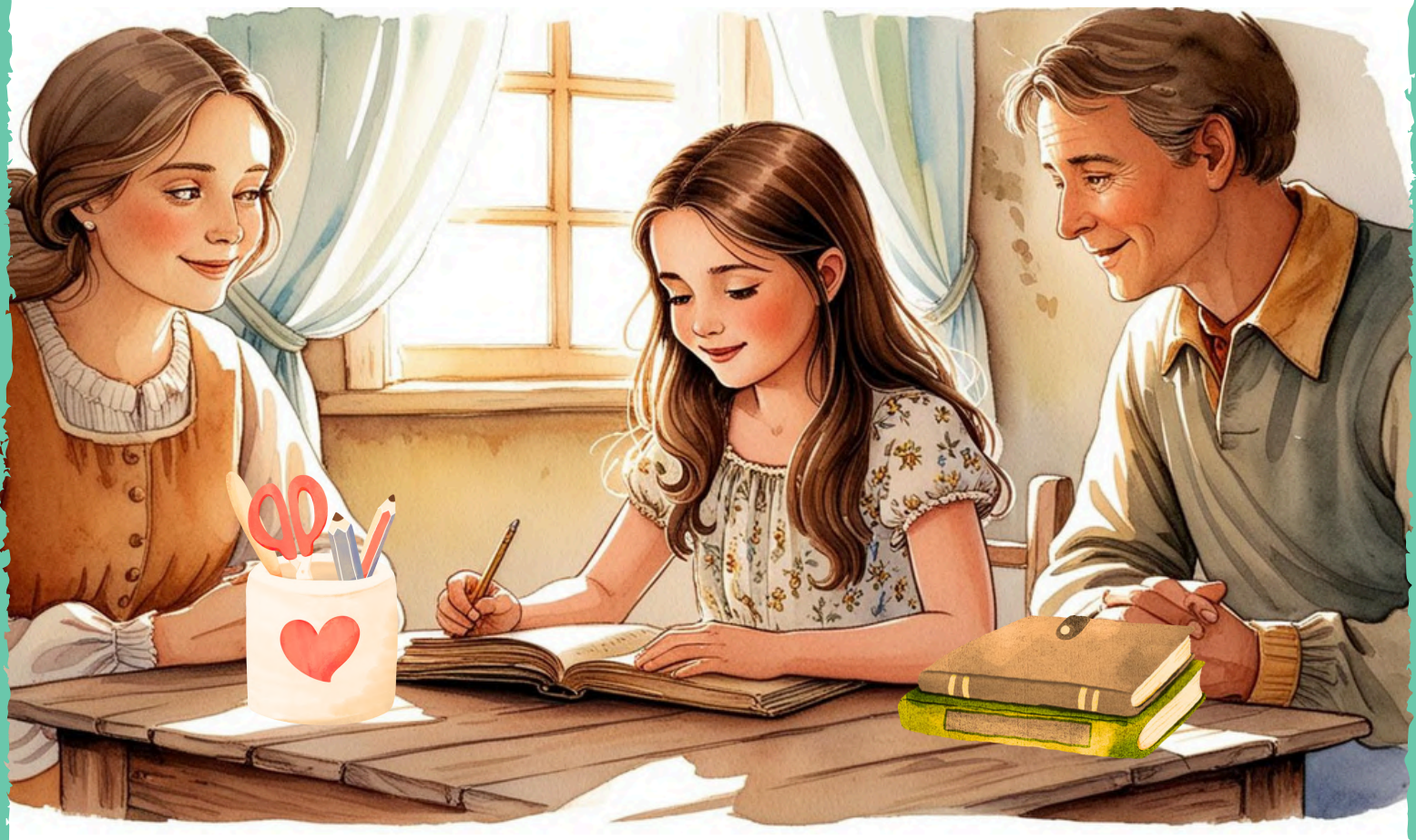


Close to the heart

Elvira loved her family and wasn't sure about leaving the world she'd always known. But her dream was strong, so she found a way to stay close to home and still learn the big topics she dreamed of, bringing her family along with her through her progress. She went to a University in Lisbon, not far from her hometown, and pursued her dream without giving up on her roots, mixing every aspect of her life that she deeply cared about.

Question for children:

Would you leave your home and your family to go far away and pursue your dream? Or would you try to stay close to your loved ones?



Work-life balance

During her studies, Elvira met a wise and helpful professor and mentor, Rodrigo Martins. As they worked together quite often, they grew closer and soon enough, they started dating! As a team, they explored the new science of materials, exploring the wonders of materials science and making exciting discoveries every single day!

Against the current

Elvira started to work in a field where almost everyone else was a man, and under the supervision of Rodrigo, who was a well-known engineer, so she had to work very hard to prove herself and show that she belonged in the field. Many women were involved in research, but very few received any leadership roles or recognition, and many people ignored or dismissed their work.

Some people didn't see Elvira as a scientist, just as "Rodrigo's girlfriend" and, later, "Rodrigo's wife", but she was determined to be known for her own accomplishments. She stayed strong, showing her talent and incredible abilities through her research.

Question for children:

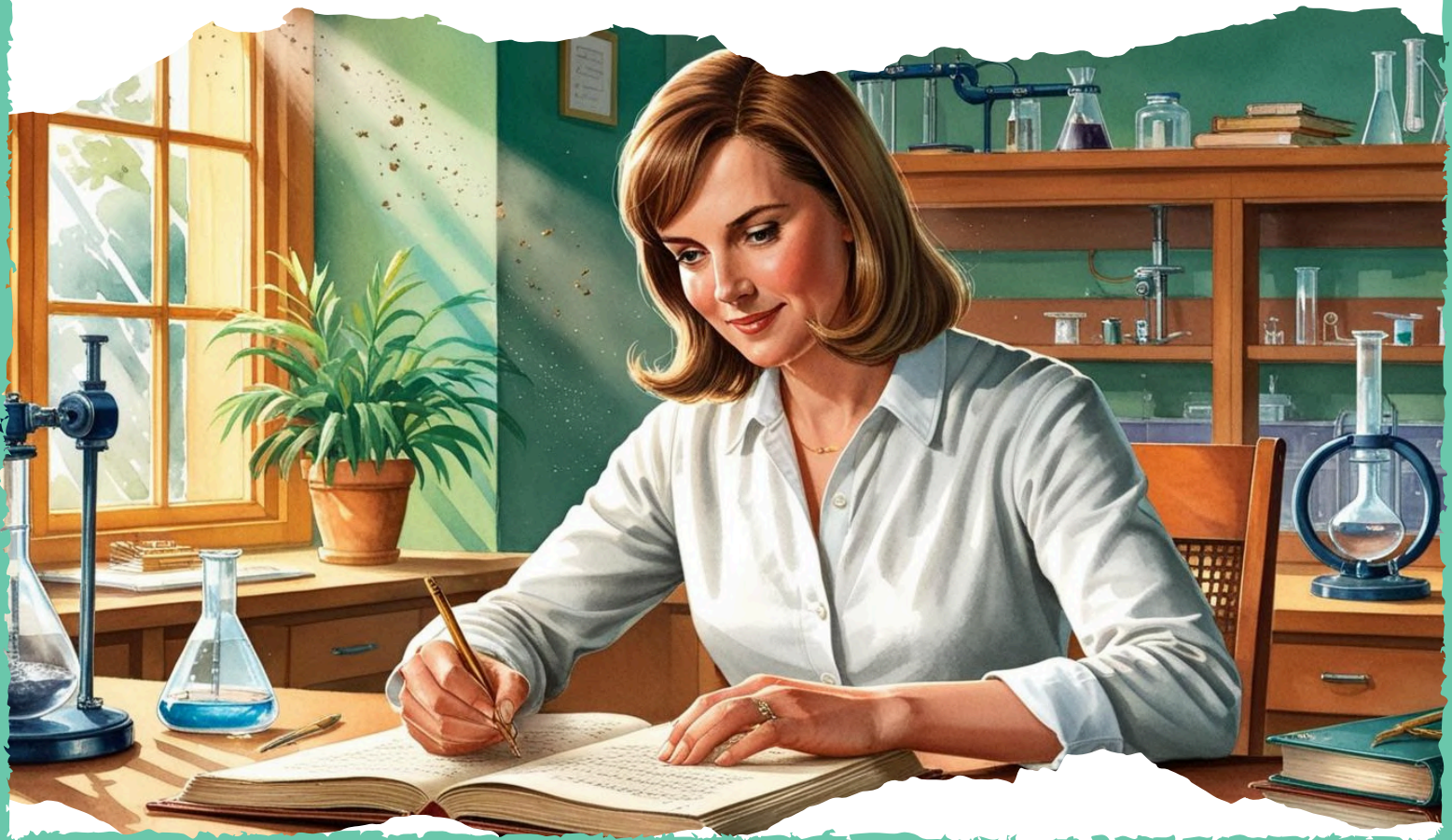
Do you think it's fair to be judged by others just because of who you know or work with?
How would you feel if people only considered you because of someone else's presence or influence on your actions or accomplishments?
How would you show people your own talents?

Into the unknown

Elvira has lived in Almada her whole life, near the Faculty of Science and Technology at NOVA University of Lisbon, which is why she chose to study there.

But despite it being close to her hometown and family, and even if she worked with someone she loved and ended up marrying, keeping familiar and supportive relatives around her, it was still a brand-new world for her and for many since not many people knew of this field and not many women were thought to belong in that side of science.

Yet, because the topic caught her attention and built a passion in her, and regardless of people's judgement because of her roots and relationships, she pushed through, dove in, and made it her own world!



Ups and downs

Elvira still faced many obstacles, from being underestimated for her gender and relationships to balancing her work and family life, being married to a researcher in the same male-dominated field. She worked very hard but was still judged and criticised due to her husband's research group receiving funding, meaning that people thought she was only succeeding because of other people's support. She was often judged for their relationship and his influence, but she wasn't going to work in his shadow or let people look down on her.

She kept working hard, facing all the obstacles on her path, one after the other, and she never gave up! And it all worked out when she started being recognised for her own actions and achievements. At 23, she received her degree in Materials Science and Physics and continued her studies to earn a master's degree in Semiconductor Materials and then her Ph.D. in Microelectronics, learning everything about small materials that can control electricity and make computers and phones work!

Big words and big goals for a big girl who had a big impact on the world!

Elvira's big idea

After years of ambitious research and dedication, she became known as the inventor of the "paper transistor", a groundbreaking technology that uses paper instead of metal! Her idea was amazing!

Question for children:
Imagine using paper instead of metal to make gadgets, like memories, batteries, antennas or transistors. How do you think that might improve technology and help our planet?

Explanation for children:
Because to make a transistor, you need insulating materials, conductive materials, and semiconducting materials so that the electricity can pass through. By using paper, which doesn't conduct electricity, as an insulator, Elvira created a way to make technology and circuits cheaper, easier to use and more eco-friendly. Her invention helped pave the way for accessible and sustainable technology!

Reaching Great Heights

Elvira's work has been celebrated around the world. She quickly became a leader in her field and one of Portugal's most important and recognised engineers, in her country and around the world!

She received many awards for innovation and human rights in materials and worldwide engineering, along with an advanced grant for the project INVISIBLE, considered by the European Commission to be a success story. Since 2010, she has been in the Chancellery of the Honorific Orders of Portugal.

Question for children:

What do you think it feels like to be celebrated by people all over the world for doing something you love, especially after struggling or being looked down on?

Like mother

Despite all that success, she still has a fulfilled family life too and, with Rodrigo, has a daughter who is studying in the scientific field! But while doing the same type of job as your family can be great, it also comes with challenges, like separating work from home life and not feeling pressured about doing the same thing or better than your family to make them proud.

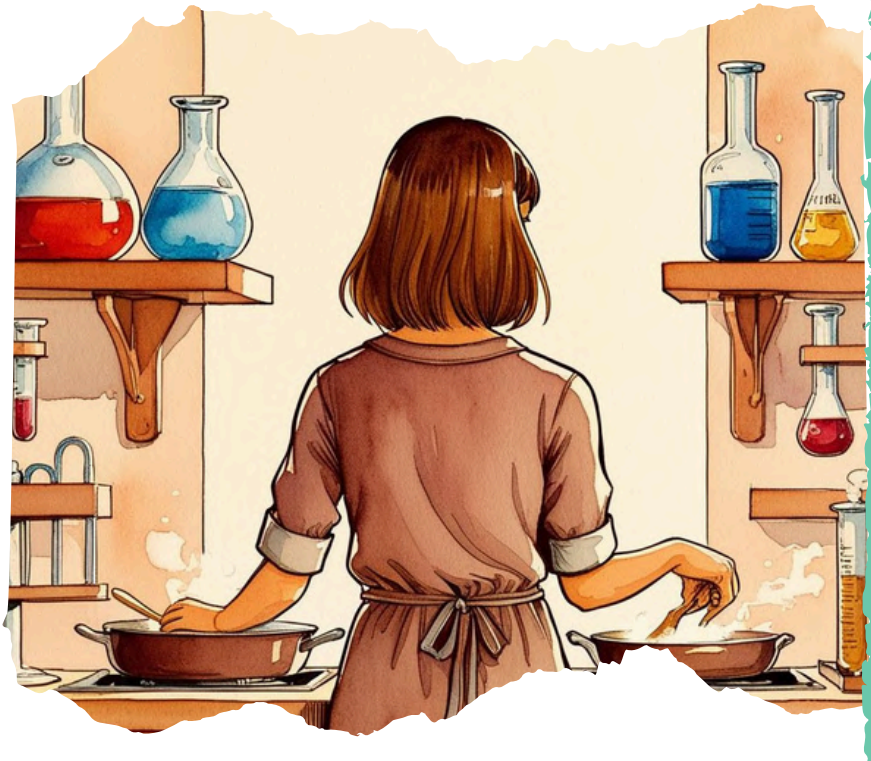
Home sweet home

Because of those relationships that are very close to her career choices, it is difficult to avoid discussing work-related topics or remembering past experiences without work and family melting together. She has agreed that her work and home life are blended and that there is no clear separation between them, which can be hard to deal with every day.

Question for children:

Do you think that's a healthy situation, not to be able to separate your career from your home life?

While Elvira has dreamed of being an engineer since she was very young, she's admitted that she also has a passion for... cooking! She's said that if she were not a scientist, she would pursue a career as a chef. Maybe she would also be able to innovate and improve that field with new ideas, just like she did for materials engineering!



Made of many successes

After all these passions, goals, struggles and obstacles, through her journey from a little girl with a big dream to a strong mother and respected scientist, Elvira has learned the power of courage and determination.

She still works on materials engineering as the world's best specialist in paper electronics, like batteries, antennas and solar cells, and other tools that are often used all over the world in many fields.

She has coordinated research for NOVA University since 2017 and, for more big words, is the Director of the Associated Laboratory of the Institute of Nanomaterials, Nanofabrication and Nanomodelling.

Question for children:

What do you think those words mean? And how could they relate to the topic of paper engineering or innovation in materials for technology?

Explanation for children:

Nano means super, super small things, about a millionth of a millimetre, invisible to the human eye. And she is the director of a laboratory specialising in the development of new materials and spectacular nano-innovations, which studies tiny building blocks, like Lego bricks, that are used to create and build electronics, like computers.

In 2022, she was chosen as part of a group of 27 inspiring women from all over Europe and was nominated as Portugal's Minister of Science, Technology and Higher Education. That's a very important job, where you help decide how scientists and students will work and learn in the future. Elvira also joined the SPEAR project, which helps girls and boys have the same chances to learn and work in science.

She has been inspiring young scientists everywhere to pursue their dreams, no matter how strange or big, no matter what people may think or say and no matter who they are or where they are from.

The little girl who used to live in a very strict country and didn't want to leave her family just to follow her dream is now a very important and powerful woman in Portugal. She helps make big decisions and is known in many countries for her smart ideas.

She is also a professor in the same department and university where she studied and helps lead other teachers and students in science and technology. She is now famously known, admired and praised all over the world and keeps working hard to make the world a better place, one small material at a time.

Her story shows that anyone, no matter where they come from, can achieve great things with hard work and creativity.

Elvira's journey continues to inspire children to follow their dreams and make a difference in the world, just as she did.

STEAM Tales

Co-funded by the European Union

STEAM Tales (KA220-HE-23-24-161399) is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Nationalen Agentur im Pädagogischen Austauschdienst. Neither the European Union nor the granting authority can be held responsible for this.