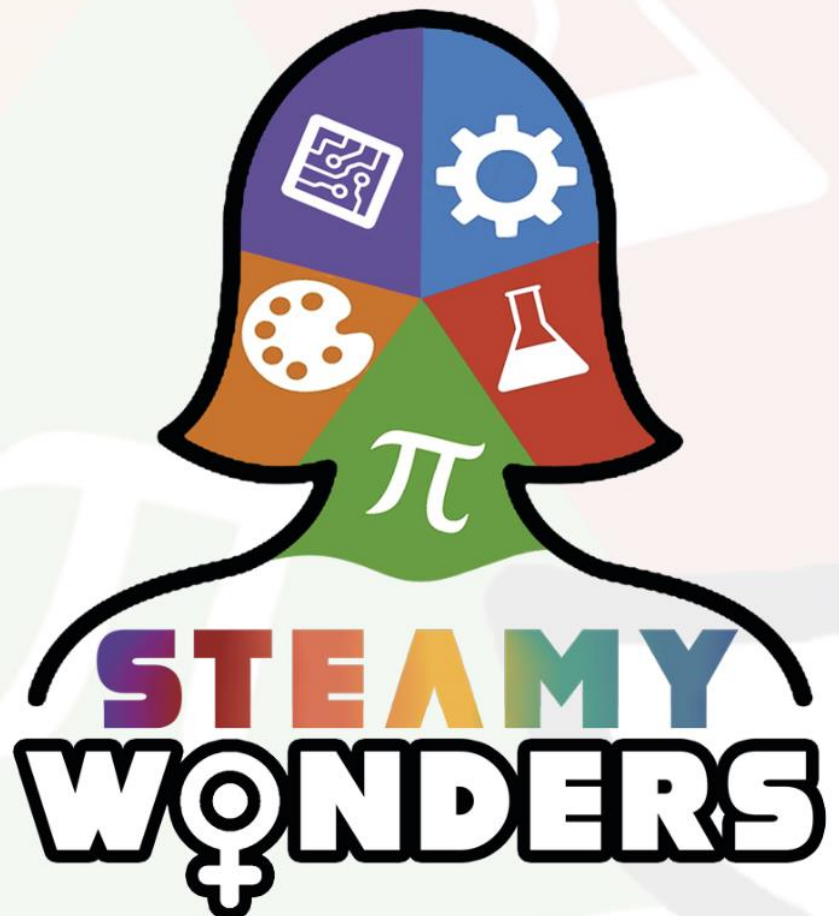# Tutor's Handbook

Technology and Personal Resilience infographic

STEAMY WONDERS

Contents

STEAMY WONDERS Tutor Handbook – Technology and Personal Resilience Infographic

The aim of this short handbook is to support you, as an experienced trainer or career advisor to use the STEAMY WONDERS Interactive Infographics with learners in your workplace. If you are currently working as a Learning and Development professional within a larger organisation or company, this handbook will help you to introduce the STEAMY WONDERS Interactive Infographics in your work establishment. When developing these Interactive Infographics, the focus has been to support female learners considering a career in STEAM, to build their confidence and skills so that they can plan successful careers in the STEAM sectors.

7 European partners have developed five Interactive Infographics for each STEAM subject:

✗   Science

✗   Technology

✗   Engineering

✗   Arts

✗   Mathematics

Each of the Interactive Infographics also addresses the following themes:

✗   Motivation

✗   Confidence

✗   Career planning

✗   Personal resilience

✗   Career management

Through the STEAMY WONDERS project, we have developed a suite of 35 Interactive Infographics – to support women to develop their careers in STEAM.

This handbook will help you to use one of these Interactive Infographics in your work with women. In this short handbook, you will be introduced to what an interactive infographic is, a little about the topic that is being addressed in this Interactive Infographic and you will then

gain an insight into the activities that are embedded in this Infographic and some guidance on how they can be used best in a group of learners.

This short handbook addresses an Interactive Infographic developed to support female learners to develop their skills and competences in relation to **Technology and Personal Resilience.**

What is an Interactive Infographic?

An Interactive Infographic is an engaging educational experience for learners. The Infographics consist of learning materials that engage the user to "interact" with information. The STEAMY WONDERS Interactive Infographics are comprised of digital resources that are embedded into the Infographic poster through the use of QR codes. If you click on the QR codes in this Infographic, you will find a range of digital learning materials including educational videos, online magazine articles, online educational escape rooms, digital breakouts, games, quizzes, WebQuests. In this way, a simple poster can be brought to life and turned into an educational resource that you can use with young employees or with VET learners.

Through using an Interactive Infographic, you can ensure that female learners considering a career in the STEAM sectors can engage with education materials at a time that suits them – perhaps on a coffee break, or when waiting for a meeting or class to start – wherever the learner can view they Infographic, they can access the learning materials embedded in it. It is for this reason that it is important that the Infographics are displayed in locations that are accessible for female learners. To effectively use the Infographic, we would suggest that you print it out and display it in the hallways and canteen of your workplace, where employees and learners will have the opportunity to engage with the learning materials. In addition, we would suggest that you display these Infographics on community noticeboards, in community centres, libraries and other information hubs in your community, where learners can access the digital learning content embedded in the poster.

The Infographics can also be used in a facilitated session through classroom-based learning. We will discuss this use for the Infographics in this handbook.

Introduction to the topic

Technology is a body of knowledge devoted to creating tools, processing actions and the extracting of materials. The term 'Technology" is wide, and everyone has their way of understanding its meaning. We use technology to accomplish various tasks in our daily lives, in brief; we can describe technology as products and processes used to simplify our daily lives. We use technology to extend our abilities, making people the most crucial part of any technological system. Technology is also an application of science used to solve problems. But it is vital to know that technology and science are different subjects which work hand-in-hand to accomplish specific tasks or solve problems.

In the past 50 years the field of technology has experienced a great expansion, including now innovations in the fields of Information and Communication Technology. The same however cannot be said for the levels of gender equity. Whereas the digital (r)evolution of our contemporary societies created the need for highly skilled professionals, the field of technology is currently male-dominated. In fact, according to Eurostat, in 2019 out of 19,235.5 million scientists in the EU, over 11 million were men, in comparison to 7.824 million women.

Contemptuous gender stereotypes about women's abilities, social, as well as cultural factors are among the reasons women refrain from pursuing a career in technology. At the same time, the objective of the STEAMY WONDERS project is, among others, to change the narrative about the place of women in STEM, by demonstrating women role-models, who succeeded against all odds in following their dreams and inspiring others. One of their common traits is personal resilience, which we are aspiring for female learners to develop at the end of this infographic.

Getting to know the Resources

In this section, we will provide you with a brief introduction to the digital resources and activities that we have embedded in this Interactive Infographic, and we will also give you

some tips and hints for how these can be used to develop the key skills, attributes and attitudes required for women to succeed in STEAM careers.

What is covered in the Explainer Video?

To use this Explainer Video with female learners in a group in a facilitated training session, you can decide to use it as an introduction to the activity before you deliver the Digital Breakout, Quiz and/or WebQuest activity with your group of learners. Using the video in this way will give learners a short but detailed overview of the topic, and they will begin to learn some of the key vocabulary and concepts that they will need, in order to complete the challenge-based learning resources that are embedded further in the Interactive Infographic.

What is covered in the Quiz?

The aim of this quiz is to determine the female learners' aptitude and suitability for a career in the Technology sector. As a trainer working to support the career progression of these learners, it is important that you ensure that this quiz is completed by learners before they commence the challenge-based learning resources contained in this Interactive Infographic This will allow you to assess if the learner has a higher level of competence in one subject area, and you can use the results of this test to re-direct a female learner to one of the STEAM sectors where they have the highest aptitude.

This personality test is based on an analysis of the skills and competences necessary for pursuing a career in Technology and particularly in one of the following professions: Multimedia programmer, Mobile Application Developer, Data Analyst and Cyber Security specialist. This quiz gathers personality traits and key competences required for the mentioned careers, in order for female learners to find out which is more fitting for them.

The Technology and Personal Resilience Quiz

This quiz consists of 6 questions, which can be used to assess how the educational background, competences, personal characteristics, ideal working environment and aspiring type of company of the female learners make them suitable to be a Multimedia programmer, Mobile Application Developer, Data Analyst or a `Cyber Security specialist.

Depending on how the learner performs in this quiz, you can then advise the learner to complete the challenge-based learning activities from one STEAM sector or another. In addition, you can also advise if the learners should complete the challenge-based learning resources autonomously, as part of a small group for peer-learning or directly with your support and instruction.

What is a Digital Breakout or an Online Educational Escape Room and how can you use it?

A Digital Breakout or an Online Educational Escape Room are similar types of resources. They are both challenge-based learning resources – in that they pose learners with a set of challenges that they need to solve, using their critical thinking skills, to be able to progress to the next level and to ultimately solve the overall challenge being posed to them. These are unique resources that force learners to reflect on their prior knowledge and experience, critically evaluate challenges that are presented to them, solve clues and puzzles, and ultimately overcome a series of mini challenges, in order to progress. These digital resources are learner-centered and engaging for learners of all ages and abilities. They are built using Google Forms, and can be timed, so that learners only have a set time to solve the puzzles and challenges posed to them. Learners, or teams of learners, follow a single storyline or scenario throughout the breakout, finding clues, cracking codes, solving puzzles, and answering questions. The purpose of a Digital Breakout is to teach learners about a specific topic or issue, in an engaging manner.

The Technology and Personal Resilience Digital Breakout

In the current Digital Breakout the goal is to enhance the personal resilience of women in the field of technology, by situating them in a storyline where they are working as a devOps engineer for a male-led start-up in Cyprus and the objective is twofold:

1) convince the boss to let you lead the meeting on a project that you have been working on and hold the demo for the investor, instead of your supervisor;

2) get the funding from the investor.

Digital Breakouts can work both as an individual or group activity. You can choose to deliver the digital breakout in a group-work setting by having individual or small groups of learners completing the challenges and developing their own competence in relation to personal resilience. If using these resources in a group-work setting, ensure that you set a time limit to complete the challenges – this will add an air of competition to the breakout sessions!

What will learners achieve?

By completing the challenges in this Digital Breakout, female learners will achieve the following learning outcomes:

Knowledge	Skills	Attitudes
• Factual knowledge of principles of resilience for women in tech. • Factual knowledge of the pillars of personal resilience. • Theoretical knowledge on how to build convincing arguments. • Theoretical knowledge on Product Differentiation.	• Discuss the principles of resilience for women in tech. • Self-evaluate the level of personal resilience. • Explore the methodology of building convincing arguments. • Research on product differentiation and adapt according to the product. • Solve challenges to build resilience when having a career in the technology sector. • Use reasoning and problem-solving to plan to cultivate resilience and overcome issues.	• Willingness to discuss the principles of resilience for women in technology. • Awareness of the level of personal resilience. • Openness to exploring the methodology of building convincing arguments. • Willingness to share what has been learned regarding product differentiation. • Openness to using reasoning and problem-solving to plan to cultivate resilience and overcome issues.

Debriefing questions:

Once learners in your facilitated workshop have completed the Digital Breakout, you can pose the following questions to them in an informal group discussion, so that you can gauge what they have learned though this experience:

• Which question did you find more easy and/or which more challenging? Why is that?
• Can you recall the six domains of personal resilience? Which one do you consider most important?
• Are you more inclined to pursue in career in technology after completing this Digital Breakout?

It is important that through these questions, learners are encouraged to reflect on what they have learned and can apply this new knowledge to their current employment or their career choices.

What is a WebQuest and how can you use it?

A WebQuest is an inquiry-oriented activity in which most or all of the information used by learners is drawn from the internet. WebQuests are designed to utilise learners' time well, to focus on using information rather than on looking for it, and to support learners' critical thinking at the levels of analysis, synthesis, and evaluation. Every WebQuest has six parts that are considered vital. These include the introduction, the task, the process, the resources, the evaluation, and the conclusion. To support learners in accessing the information in a coherent manner, in the STEAMY Wonders WebQuests, we have fused the Process and Resources together, so that each step in the Process is followed by a range of useful links (Resources) to support learners to complete that step in the Process. WebQuests present a scenario in which a group of learners enhance and develop their knowledge and research skills whilst completing the objectives presented. WebQuests set learners a challenge and then provide links to reliable sources online where they can find information to support them to complete the challenge. By providing learners with these links, the aim of a WebQuest is to develop a deeper understanding of the topic being addressed among learners, because they are being

asked to review information from different sources, analyse the content and then make up their own mind about the topic. WebQuests are also used to ask learners to develop their own projects or activities, so they take responsibility for their own learning.

WebQuests are particularly useful for encouraging female learners to assess their competence, aptitudes and career opportunities in the STEAM sectors, as they allow for authentic learning experiences. By this we mean that learners are presented with a real-world scenario or problem that they may face in their daily lives, and they are supported to find solutions to address it. This means that their learning experience is grounded in developing practical solutions to problems they face, and so their solutions have a real-world application.

WebQuests also allow learners to reflect on their own skills and competences, and to identify how what they have learned through the WebQuest can be assimilated into their own skill set and used to enhance their career progression.

The Technology and Personal Resilience WebQuest

The Technology and Personal Resilience WebQuest will outline a series of steps to guide your evaluation of a technological career in relation to your own personal and professional competences and goals. These competencies include competences of the self, competences of strength, horizons competences and network competences. The present WebQuest will provide the knowledge, skills and understanding of the art and culture sector and the opportunities available to them on a national and European level as well as the training necessary to build their careers within this sector on a national and European scale.

WebQuests work best as small group activities. When completing the WebQuest that is embedded in this Interactive Infographic, learners should ideally work in groups of 2-3. When developing the WebQuest, we did not prescribe a time limit for completing the challenge. Depending on the availability of the learners completing this challenge, you are free to set a suitable time limit that is realistic and suitable for the learners you are working with.

To complete the challenge, learners will need access to the internet, access to a laptop, PC or smart device and a printed copy of the WebQuest so that they can work through the challenges and the steps in the process on their own. Learners should work collaboratively on this task, but independent from your instruction; therefore, it is important that you are there to supervise what they are doing, but that you do not get involved in how they complete the challenge. Through the WebQuest, learners should develop their own understanding of the topics covered, so it is important that they have the space and freedom to make sense of the topic for themselves.

What will learners achieve?

By completing the challenges in this WebQuest, female learners will achieve the following learning outcomes:

Knowledge	Skills	Attitudes
- Theoretical and empirical knowledge of potential career pathways in the technology sector. - Theoretical knowledge of local, national and pan-European career options in the technology sector. - Theoretical knowledge of local, national and pan-EU programmes for women in the technology sector.	- Ability to recognise and discuss career options in the arts sector. - Analyse personal attributes in relation to careers in the technology sector. - Analyse personal skill limitations for a successful career in technology. - Develop an education and career plan for success in the technology sector.	- Willingness to critically evaluate one's own motivation to follow a career in the technology sector. - Understanding of the vital role women play in the technology sector. - Willingness to explore career options in the technology sector. - Readiness to discuss what has been learnt with other female

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● Theoretical knowledge of personal attributes and skills required for a successful career in the technology sector.	● Research available career options. ● Research successful female role models in the technology sector. ● Preparedness for challenges in order to develop resilience when planning a career in the technology sector.	professionals in the sector's network. ● Enthusiasm to engage in female networks in the technology sector. ● Flexibility to identify skills and characteristics necessary to find success in a technology career.

Debriefing questions:

Once women in your facilitated workshop have completed the challenges as part of the WebQuest, you can pose the following questions to them in an informal group discussion, so that you can gauge what they have learned though this experience:

- Share some inspiring women within the art sector and how they have built their career? What challenges personal and professional did they face and how were they able overcome them?

- What other tips can you suggest for building an efficient and effective 5-year plan?

- Which of the resources/videos/articles did you find most inspiring/interesting/useful and why? How will you apply the information gained from these resources to your life?

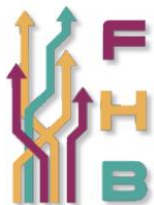- Now that you have completed the WebQuest, what have you learnt about yourself and your potential art career?

It is important that through these questions, learners are encouraged to reflect on what they have learned and can apply this new knowledge to their current employment or their career choices.

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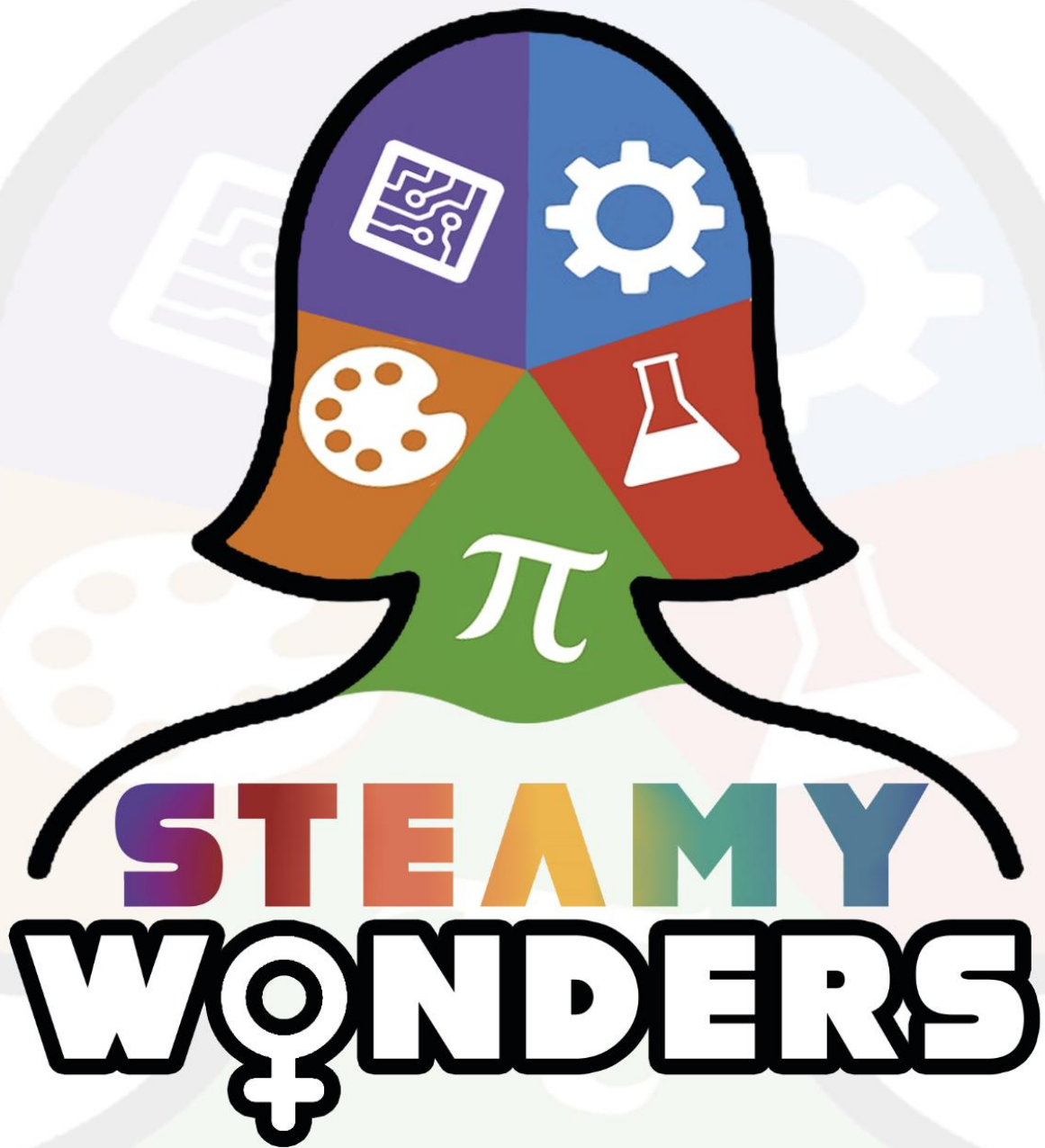
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