WOMEN ENTREPRENEURS IN STEM

TRAINER'S GUIDE

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained therein.

Partners:

Omagh Enterprise Company, United Kingdom

Momentum Marketing Services, Ireland

Canice Consulting Ltd, United Kingdom

Leitrim County Council, Ireland

FH Münster Germany

European Centre of Women and Technology CWT Norway

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

TABLE OF CONTENTS

1. ABOUT THE TRAINER'S GUIDE 4

1.1. What is it? 4

1.2. Objective of the Course 5

1.3. Who was it created by? 5

1.4. Who can deliver the course? 6

2. GENERAL INSTRUCTIONS FOR TRAINERS 7

3. START UP IN STEM COURSE CURRICULUM MATERIALS 7

4. COURSE DELIVERY OPTIONS 7

4.1. Traditional classroom training 8

4.2. Online Learning 9

4.3. Flipped Classroom 9

4.4. Blended Learning 9

4.5. Collaborative/Peer to Peer Learning 9

5. COURSE CONTENT OVERVIEW 10

5.1. Course Structure 10

5.2. Course Content Overview 10

6. SAMPLE 5 DAY START UP IN STEM TRAINING TIMETABLE 13

7. MORE START UP IN STEM TRAINING ADVICE 15

1. ABOUT THE TRAINER'S GUIDE

1.1 What is it?

WISE is a specially designed training programme to provide the knowledge and skills for VET teachers and trainers to adopt course for classroom delivery and how to best make use of the resources, pedagogic strategies, sources of further information and support etc. The guide includes defined learning objectives, knowledge and skills. There are two ways that the end user group can engage with our course materials:

1. By attending a classroom delivered course or

2. By accessing the course online.

Some trainers favor a combination of the above. The training course is a flex-time course and is delivered through e-learning as a training delivery method. The course duration is approximately 30 hours and consists of 6 modules including an introduction module. All modules are structured similarly. They start with a short introduction of the topics of the module, followed by an overview of the learning objectives. The main part comprises the module content supported by practical examples. Every module includes exercises and self-assessment tests (quizzes) and links to further reading material.

The course will start with an overall introduction to WISE and moving on to what areas will be covered in the following 5 Modules:

Introduction Module: STEM's goal and vision is outlined in this module. There is information on how the five modules developed to train women wishing to become female entrepreneurs. The summary of all the modules is provided, including an outline of the advice from STEM female entrepreneurs as well as key learnings the entrepreneurship process.

Module 1: In leading the transformation of the gender disparity in the technology industry, module one aims to inspire and ignite the ambition for STEM entrepreneurship by highlighting motivational quotes from inspirational female leaders. The first section therefore speaks to the gender gap in tech. startups, along with the opportunity women have in this area. The subsequent section outlines aspects of a business plan, discusses the importance of experimentation, breaks down upheld myths about business planning, and lastly, teaches how resilience can be developed in order to ensure the sustainability of a business. The final section teaches skills of managing fear of failure into being a motivation, and being courageous starting a new business.

Module 2: Through a series of online assessments, participants are prompted to develop their goals and review the steps to acquire goals. In addition to this, the participants reflect on the personality traits and qualities which make a successful entrepreneur, as well learn about the formal approaches to validating STEM entrepreneurship ideas.

Module 3: The Proof of Concept Process and the Minimum Viable are discussed in testing the business idea against a small budget and getting products to the market fast. The different business models are highlighted for the participant to choose the suitable one for the start up business. Mentorship and support are key to expanding the business and its network.

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

Module 4: This module deep dives into the sources of funding available raising business capital. Additionally, there is guidance provided in preparing for a pitch to an investor. This assists the participant in creating a robust and compelling business plan.

Module 5: With the focus on collaboration, this module prepares the participant to know how to forge partnerships, work within teams, as well as disrupt industries and invigorate their brand. This exposes the participants to the importance of co-working and sharing working in a creative atmosphere.

1.2 Objective of the Course

The objective of the training course is to support the improved capacity of VET schools and other educators to deliver transformational entrepreneurship course content leaving a long-term legacy on women in STEM entrepreneurial skills and improved business potential, product markets, and positive brand awareness for each project location.

1.3 Who was it created by?

The course has been developed by experts who are passionate about entrepreneurship and increasing the number of female entrepreneurs in each region. It is designed to create a new and effective training model to improve the capacity of VET schools and other educators to deliver transformational entrepreneurship course content leaving a long-term legacy on women in STEM entrepreneurial skills and improved business potential, product markets, and positive brand awareness for each project location.

The partners have experience in several areas of the field of Women in STEM and entrepreneurship. Hereunder you can find the partners who have provided input in the development of this course.

Omagh Enterprise Supporting start-up growth & innovative businesses	**Omagh Enterprise** is the leading local enterprise agency in the west of Northern Ireland. With over 20 years of experience, OE has assisted more than 1,500 entrepreneurs and as part of the 31 strong Enterprise NI network has delivered numerous enterprise and social enterprise programs.
	Leitrim County Council is a local government authority with a strong commitment to entrepreneurship development for regional growth.
momentum [educate + innovate]	**Momentum (MMS)** is an Irish training organisation focused on developing progressive learning programmes and platforms for education and enterprise organisations, with special focus and competence on entrepreneurship and innovation
canice consulting	**Canice Consulting** is a small but well-resourced firm based in Northern Ireland with a proven ability to produce online and mobile accessible training courses.

ECWT EUROPEAN CENTRE FOR WOMEN AND TECHNOLOGY	**ECWT** serves as a European single point of contact for information, collection and analysis of data, research and the development of appropriate methodological tools to attract more girls to Science, Technology, Engineering and Mathematics (STEM), for nurturing and retaining women in the knowledge economy through industry and entrepreneurial careers.
FH MÜNSTER University of Applied Sciences	**MUAS** develops the leading position among German HEIs through a market oriented, effective and enduring design of education as well as the transfer of knowledge and research.

1.4 Who can deliver the course?

The course is designed to be delivered by VET teachers and trainers. Trainers can easily adapt our set of WISE training materials and resources to design and deliver training sessions using high-quality content which has been developed, tested and reviewed in the UK, Ireland, Germany and Norway.

We provide all the necessary resources and materials to successfully deliver the course in a number of settings and formats (see course delivery for more.) As such, previous experience of delivering training in the field of women entrepreneurs in STEM is not a requirement. Also some industry knowledge would be useful, to be able to sign posting to other local, regional and national supports which may be of interest to the entrepreneurial students.

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

2. GENERAL INSTRUCTIONS FOR TRAINERS

Please read the entire guide thoroughly before conducting the training.
For classroom, flipped or blended delivery please:

- Download, review and revise visual aids for the training as necessary
- Allow adequate training time for sessions
- Localise training content with case studies and information on local supports for entrepreneurial students
- Ensure that each participant completes exercises – these provide valuable practical learning
- Spend time for review during the training course

3. START UP IN STEM COURSE CURRICULUM MATERIALS

The Start Up in STEM course curriculum of WISE includes a comprehensive set of resources for delivery in a number of settings. These resources are:

- 6 Module PowerPoint Presentations (an Online version and a Classroom version)
- Learners Exercise Workbooks
- Several video resources and case studies
- Extra resources and reading materials

4. COURSE DELIVERY OPTIONS

The majority of education institutions still rely on courses taught entirely in the classroom where the teacher is the protagonist. Research, however tells us that adult learners prefer to take more responsibility for their learning and often have a problem-centred approach to learning.

With this in mind we have developed a suite of resources suitable for both individual online study and classroom-based use, making the most of the flipped classroom model, differentiated instruction and project-based learning in order to encourage a much greater level of learner empowerment. There are numerous ways that the Start Up in STEM training course can be delivered. The most favoured is a blended approach of the following:

4.1 Traditional Classroom Training

Classroom training remains one of the most popular training techniques for trainers. Typically, it is instructor-centered face-to-face training that takes place in a fixed time and place.

Classroom Tool	Suggested Use in the Classroom	Additional Resources Required
Powerpoint© presentation	Training materials are developed in PowerPoint. We suggest that these will be displayed on a large screen for classroom delivery.	Laptop/Computer Projector Large Screen
Videos	Videos are used to explain certain sections of the training content and to present case studies for discussion.	Audio/sound system
Learner Workbooks	Start Up in STEM Modules 1-6 contain 15 exercises intended to help learners put their new skills and knowledge into practice.	Printed Learner Workbooks, one for each participant
Blackboard, whiteboard	Invite learners to write on the board or ask for feedback that you write on the board	Pens and so on

Suggested delivery mechanisms:

• **Small group discussions**. Break the participants down into small groups and give them case studies or work situations to discuss or solve. This is allows for knowledge transfer between learners.

• **Q & A sessions**. Informal question-and-answer sessions are most effective with small groups and for updating skills rather than teaching new skills. These should be used frequently across course delivery.

• **Multimedia**. Multimedia training materials tends to be more provocative and challenging and, therefore, more stimulating to the adult mind. Trainers should ensure that these are used to their full potential.

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

• **Interactive tools.** The engagement of students can be easily achieved by using interactive tools. An example of a free tool is Kahoot! which is a game-based learning and trivia platform used in classrooms, offices and social settings. You can compile a quiz, which can be answered by the students on their phones/tablets/computers. It's possible to get immediate feedback and results.

4.2 Online Learning

This delivery method uses Internet technologies to deliver a broad array of solutions to enable learning and improve performance. Start Up in STEM course is a specially designed online learning programme for or all stakeholders including businesses, VET providers, HE and policy makers, our project will improve awareness and understanding of improved access to and quality of support from the entrepreneurship education ecosystem for women in STEM.

4.3 Flipped Classroom

In a Flipped Classroom learners study module content prior to class with a focus on exercises and assignments in class. The classroom transfer of knowledge makes way for videos or other forms of online instruction at the student's home. This creates more room for practicing in class, for extra explanation when needed and offers the possibility to dive deeper into the materials during school hours.

4.4 Blended Learning

Blended Learning combines online digital media with traditional classroom methods. It requires the physical presence of both teacher and student, with some element of student control over time, place, path, or pace. Learners still attend a classroom setting with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. Blended learning is most used in professional development and training settings.

4.5 Collaborative/Peer to Peer Learning

Collaborative learning is an educational approach to teaching and learning that involves groups of learners working together. Examples for boosting collaborative and peer-to-peer learning are:

Peer review

Peers in the classroom are brought together to jointly evaluate the work by one or more people of similar competence to the producers of the work. Peers not only assess the performance of each other, but also share their experience and know-how.

Google Docs

This online collaboration tool facilitates the creation of meaningful documents. All group members can work at the same time (real-time) in the same document, from any location from various devices. Changes are automatically saved in documents as being typed upon. It's possible to monitor the revision history of a document where you also can see who made a specific change. They can also share documents, chat and comment.

5. COURSE CONTENT OVERVIEW

5.1 Course Structure

Being modular in format, teachers and trainers can dip in and out of the modules as they choose, however when delivering the course, we recommend that you start by delivering the course overview and then follow the modules in the suggested 1 – 6 order. Each module comprises main presentations on the topic (PowerPoint) and a set of extra resources and quizzes. What follows is an overview of each module.

5.2 Course Content Overview

Module 1	MODULE 1: Introduction to Big and Smart Data
Overview	With this module you will be exposed to STEM female entrepreneurs who are willing to share their stories about becoming entrepreneurs and how they overcame their challenges. Furthermore, different kinds of entrepreneurships are highlighted to outline the different kinds of career paths available. Overall, one of the biggest barriers to entrepreneurship, fear of failure, is addressed by the STEM entrepreneurs, who all highlight the importance of resilience and perseverance.
Learning Topics	• Learning the five stages of business development for STEM StartUp • Breaking down the myths and misconceptions about developing a business plan and a business model • Finding ways to overcome the fear of failure • Learning from 6 female entrepreneurs the ways to reduce the risk of Start Up failure
Exercises Included	No exercises

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

Module 2	MODULE 2: Improving current business model with own data
Overview	At the bedrock of entrepreneurship, lies their importance of defining personal and professional core competencies and how those may overlap with what's needed to take on running a business.. This module composes of professional and personal self-assessments. Here, you have the opportunity to formally look at validating and incubating your STEM business idea. We further delve into the seven step process into validating a business idea. The importance of testing target market validation is highlighted though a twenty questions checklist.
Learning Topics	• Assessing entrepreneurial potential through various self assessments • Understanding how to validate a STEM idea and the business within 30 days • Evaluate your business and innovation via the 7 Step Process • Understanding your target market better, how to research them, key questions, how to conduct an interview and validate and assess the results
Exercises Included	Exercise 1: Entrepreneurial Potential Test Exercise 2: Personality Assessment Exercise 3: Entrepreneur Personality Test Exercise 4: Self-Motivation Assessment Exercise 5: Strengths and Weaknesses Aptitude Test Exercise 6: Leadership Test Exercise 7: Resilience Test Exercise 8: The Micro Test

Module 3	MODULE 3: Improving current business with external data
Overview	In this module, the core functionality of the idea is tested, basic prototypes development and IP registration are discussed. Secondly, the concept of bootstrapping is discussed, in how the great discipline and creativity that can bring out the best in a company. Further, with a shoestring budget, the participant is taught to build a working prototype, or look to a resource that has the ability to leverage newer technologies. Additionally, the different types of business models are discussed in order to assist the process of choosing a suitable one. Thereafter, there is a guidance to the steps of creating a business plan, finding a mentor and hearing the stories of six successful women who have transformed a simple idea into massive success.

Learning Topics	• Exposing participants to the support available through funding, training, mentoring, networks and programs • Providing advice and interviews from successful female STEM entrepreneurs for useful, practical and realistic information • Understanding the Proof of Concept Process • Learning the Minimum Viable Products • Understanding business models
Exercises Included	Exercise 1: Build your own MVP Exercise 2: Complete your business plan

Module 4	**MODULE 4: Data as a business model**
Overview	The focus is cantered on choosing your business structure, ensuring your business is legally registered and recognized by law. Therefore, module one to three takes you through the process of writing a business plan. We review the alternatives to borrowing money from banks, government funding, to rather take the initiative to find their own private investors. The key highlights also include how essential it is for entrepreneurs to make an impact that could lead to a major investment opportunity.
Learning Topics	• Creating a compelling and robust plan. • Reviewing all sources of funding for capital • Learning the important components for a pitch, which eventually create a perfect pitch
Exercises Included	Exercise 1: Create a new or rewrite an existing bio profile Exercise 2: Are you ready to apply for a grant? Exercise 3: Create a Perfect Pitch

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

Module 5	MODULE 5: Legislation
Overview	The module discusses how collaborating with others can provide you with the additional skills and resources to do things that you couldn't achieve on your own. Thus, the eight characteristics of a great collaborator are elaborated, as well as the five steps which lead to successful collaboration. Further, a report from the Harvard Business Review is assessed in proving how people thrive in co-working spaces and proves a reasonable option for a start-up. In addition to this, other formats of working spaces are discussed, alongside collaborative technology tools which improve networking and collaboration.
Learning Topics	• Reviewing the eight characteristics of what makes a great collaborator • Engaging with the five steps on how to collaborate successfully • Understanding the four ways on how to maximise the results of collaboration • Discussing the importance of co-working • Assessing case studies of different formats of working spaces in different countries • Understanding how social media can help develop your network and help you find collaborators
Exercises Included	Exercise 1: Removing barriers to creativity is a key ingredient Exercise 2: Think about working in a co working space

6. SAMPLE 5 DAY START UP IN STEM TRAINING TIMETABLE

Day	Start Up in STEM Training Content
Day 1	09.00 – 10.00 Introduction 10.00 – 13.00 Module 1 14.00 – 15.30 Module 2
Day 2	09.00 – 11.30 Module 2 11.30 – 13.00 Module 3 14.00 – 15.30 Module 3
Day 3	09.00 – 13.00 Module 4 14.00 – 15.30 Module 5
Day 4	09.00 – 11.30 Module 5 11.30 – 13.00 Module 6 14.00 – 15.30 Module 6
Day 5	09.00 – 13.00 General evaluation

It is recommended to keep the days maximum the length indicated in the table above. Since the learning materials are quite intense and new to the teachers and learners, it's recommended to spread the information across multiple days. For the best processing, you can choose to spread the days across weeks, so for example one day per week.

Erasmus+ This project has been funded with support from the European Commission

This programme has been funded with support from the European Commission. The author is solely responsible for this publication (communication) and the Commission accepts no responsibility for any use that may be made of the information contained

7. MORE START UP IN STEM TRAINING ADVICE

If you would like any further information on how to deliver this training or make the best use of our Start Up in STEM training curriculum and resources, please contact us on our website or connect with one of our project partners.

Omagh Enterprise Supporting start-up growth & innovative businesses	**Omagh Enterprise Company** *Mary Macrory* mary.macrory@omaghenterprise.co.uk
	Leitrim County Council *Carmel Coll* carmel.coll@leitrimcoco.ie
momentum [educate + innovate]	Momentum Marketing Services *Orla Casey* orlacaseymomentum@gmail.com
canice consulting	**Canice Consulting Ltd** *Catherine Neil* catherine@caniceconsulting.com
ECWT EUROPEAN CENTRE FOR WOMEN AND TECHNOLOGY	**European Centre of Women and Technology** *Eva Fabry* eva.fabry@womenandtechnology.eu
FH MÜNSTER University of Applied Sciences	FH Munster Claudia Umanzor cu210870@fh-muenster.de