



ERASMUS+

Strategic Partnerships for
School

Education

GE-STEAM

Gender Equality in Science,
Technology, Engineering,
Art and Mathematics

GE-STEAM

IO4 – Business Mentor Portfolio



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INTRODUCTION

Business mentoring can be a highly effective way to improve business performance. A business mentor is "someone whose hindsight can become your foresight".

- **What is business mentoring?** Business mentoring targets the personal development of people who need extra assistance in other skills areas, expertise or knowledge.

- **What are the benefits for the business mentor?**

The primary beneficiary of a business mentoring programme will be the mentee, but those who mentor can find themselves benefiting in unexpected ways. In the most successful business mentoring relationships there is always something in it for the mentor, not just for the mentee.

Benefits for the business mentor can include:

- Personal development – growing by growing others
- Increased job satisfaction
- Honing of skills such as coaching, listening, giving feedback and adapting your leadership style
- Development of self-knowledge and self-awareness.



CHAPTER 1: THE ROLE OF THE BUSINESS MENTOR

• What is the role of the business mentor?

Business mentors leverage their knowledge and experience by providing advice, counsel, network contacts and political and cultural know-how, together with ongoing personal support and encouragement. The business mentor's interest is to foster the career development, the skills or the awareness of the mentee.

The role of the mentor is to provide guidance and support, to encourage people in the target group to follow and to develop STEAM careers, promoting such principles of equal opportunities and gender.

Business mentoring helps them to produce high quality decisions that define them, their authority and their effectiveness. A business mentor provides a confidential sounding board, thinking room, and support for working through crucial and often complex decisions.

The business mentor is someone with whom the mentee can discuss and work through concerns or opportunities. Talking with someone such as a business mentor, who can bring a wider perspective, may help the mentee to recognize what is happening and identify the culture that is right for them.

• The practicalities of business mentoring

There are some things that you, as the business mentor, will need in order to optimize the return on your and the mentee's time.

Being a business mentor requires you to be highly skilled in listening, coaching, giving feedback and, where appropriate, pushing the mentee along faster than they think they can go. Furthermore, you will need to adjust your style as the mentoring



relationship develops and according to the issue you are addressing at any one time.

- **Own the business mentoring relationship**

Be proactive in the business mentoring relationship. This means taking the initiative and setting the pace and do not forget to set objectives for the business mentoring programme.

- **How to manage the business mentoring relationship?**

Be systematic in managing the business mentoring relationship, focusing on:

- **The first meeting**

The first meeting between business mentor and mentee serves for:

To get to know each other better

This can start with some introductions, followed by a brief run through what the business mentor and mentee have done in the past, ways of thinking, ideas. This is important, not only as an ice breaker, but as a way for both parties to gain trust.

To set objectives

The mentees should come to the meeting with some draft objectives covering what outcomes they would like to achieve through the mentoring.



CHAPTER 2: SKILLS OF THE BUSINESS MENTOR

As a good business mentor, you will have certain characteristics.

1. You will have a strong desire to help others to grow and develop.
2. You may feel that you have more to offer than you are currently contributing.
3. You will have strong listening skills.
4. You will be self-aware.
5. You will be able to understand and deal with cultural and gender differences and be sensitive to these differences.

Core skills:

- Listening actively
- Building trust
- Encouraging
- Identifying goals

Critical skills:

- Developing capabilities
- Inspiring
- Providing corrective feedback
- Managing risks
- Opening doors



CHAPTER 3: FOSTER LINKS BETWEEN SCHOOL AND LABOR MARKET

STEAM education is based on competency-based learning, which encourages problem solving, collaboration, innovation, creativity, multidisciplinary, decision-making, data management and analysis. As if that were not enough, by promoting results-based evaluation, the STEAM approach also has a strong gender equality component. Although it seems like a monstrous problem to solve, experts agree that a first step is to answer the question: *what are mathematics, chemistry and physics for?* It is time, then, to take advantage of the closeness that children of very early ages have with technological devices to make them understand in a practical way the use and application of these areas.

The heart of the business mentoring are the mentors, who voluntarily bring their daily life and their profession closer to the students during school hours. All of them are scientists and technologists who carry out their professional activity in different fields: academic, business, research, management, etc. During their meetings with the students, the mentors address issues such as the stereotypes that influence when choosing a profession and make visible the work of female scientists throughout history.

Due to the above, the initiative seeks to awaken the scientific-technological vocation among girls, based on awareness and orientation actions given by professional women from the world of research, science and technology. Another important goal is to make visible new models and female references in these areas. since so few female scientists appear in the history of science.

Female role models can help girls get interested in STEM disciplines. But when that role model becomes a real person who can speak to them from their experience and the importance of their work for humanity, the message comes through in a deeper and more direct way. That is why, in order to promote the union between



the school and the labor market, a network of contacts must be created between both fields where students can verify in situ the importance of STEAM careers and break with stereotypes just by listening to the experience of the business mentor.

In conclusion, the business mentoring programme consists of scheduled talks from women who are dedicated to steam professions. The number of sessions could be four in total. Guidelines for the sessions will be displayed in the next pages.

FIRST SESSION

LEARNING OBJECTIVES:

- To give girls more interest in STEAM orientations
- To foster STEAM vocation through mentoring

SKILLS:

To identify skills which will engage more girls in STEAM

ATTITUDES:

To demonstrate a change in approaching STEAM

DURATION: aprox. 50'

DESCRIPTION OF THE ACTIVITIES



Activity 1: Guess what I do

Duration: 15'

Teachers will prepare students for the meeting with the business mentors meanwhile business mentors are waiting outside the classrooms. Teacher will give students some hints about the profession of the business mentors and students try to guess the gender of the person and the profession and write their answers down a post-it they will place on a board.

Possible hints:

The person helps to improve peoples' lives because...

The person has to wear...

The persons needed to study Mathematics, Science, etc.

Activity 2: Breaking stereotypes

Duration: 15'

Business mentors enter the classroom. They introduce themselves and encourage students to expound the reasons why they thought of a man or a woman. Business mentors could use counter arguments for stereotypes (Annex II).

Activity 3: Discovering

Duration: 30'

Business mentors ask students to name scientists. How many women are named? Talk about the reasons why men are mostly known in this and other STEAM professions. Reasons: literature, cartoons, media, movies, etc. Discussion about the topic. Role model or teacher (who becomes a facilitator) encourages all participants to speak freely and ask any questions they might have at any point in the discussion.



SECOND SESSION

LEARNING OBJECTIVES:

- To give girls more interest in STEAM orientations
- To foster STEAM vocation through mentoring

SKILLS:

To identify skills which will engage more girls in STEAM

ATTITUDES:

To demonstrate a change in approaching STEAM

DURATION: aprox. 50'

DESCRIPTION OF THE ACTIVITIES

Activity 1: What does my job involve?

Duration:15'

A short video (no more than 3-4min) can be shown to describe, for example, the speaker(s)'s field of science, work environment, relevant personal stories, or an interview concerning their career/job.



This part of the activity is interesting to help students identify with the speakers (“What was he/she doing at my age?”) and what they are experiencing right now.

Activity 2: Steam careers

Duration: 45’

Business mentors ask students about some steam careers (Annex II). Students discuss the possible applications, percentage of women working in STEAM professions, why those careers are so important in our society, etc. Business mentors talk about the necessity of working in those fields.

THIRD SESSION

LEARNING OBJECTIVES:

- To give girls more interest in STEAM orientations
- To foster STEAM vocation through mentoring

SKILLS:

To identify skills which will engage more girls in STEAM

ATTITUDES:

To demonstrate a change in approaching STEAM

DURATION: aprox. 50’

DESCRIPTION OF THE ACTIVITIES:



Activity 1: Role Model talks

Duration: 40'

The business mentors will preferably begin with their studies:

- o What did I like to study?
- o How did I get to the job I have now?
- o Why did I choose this course of study?
- o What did I like about it?
- o What aspects do I use today?

This part of the activity is interesting to help students identify with the speakers. If I failed at something, how did I choose another path? Students will be interested in the wide range of individual experiences. It will reassure them there is more than “one way”.

- It would be useful to show the students the different paths after high school to emphasize the multitude of bridges to get somewhere (e.g. bridges between engineering schools and PhD degrees; short university degrees and long university degrees)

The second part can be focused on the job (what it implies for society, role of women, etc.)

Activity 2: What comes after school?

Role models will show the students the different paths after high school to emphasize the different paths and options in STEAM jobs.



FOURTH SESSION

LEARNING OBJECTIVES:

- To give girls more interest in STEAM orientations
- To foster STEAM vocation through mentoring

SKILLS:

To identify skills which will engage more girls in STEAM

ATTITUDES:

To demonstrate a change in approaching STEAM

DURATION: aprox. 50'

DESCRIPTION OF THE ACTIVITIES:

Activity 1: Women in STEAM (present, past and future)

Activity 2: Students questions

General questions (Mentees portfolio)

Activity 3: Reflection

Students are asked to look at their own immediate surroundings and think about women in their family or their neighborhood who hold occupations related to STEAM.

Activity 4: Conclusions



Annex I

Here's a list of 25 STEAM careers that are exciting for students to explore:

- Mechanical & Civil Engineer
- Architect
- Website/App Designer
- Modern Urban Planner
- Orthopedic Technologist
- Biomedical Engineer
- Product Designer
- Animator
- Forensic Psychologist
- Sound Engineer
- Video Game Designer
- Medical Illustrator
- Astrophysicist
- Audio Developer
- Graphic Designer
- Broadcast Technicians
- Fashion Designer
- Interior Designer
- Photographer
- Sports Announcer



- Pilots
- Astronaut
- Conservators
- Archeologist

Motivating jobs that require Mathematics learning

1. Animator

When watching balloons whisk a house away in Pixar's movie Up, most of us weren't thinking about math. But in animation, math and art go together. Trigonometry helps rotate and move characters, while algebra creates the special effects to make images shine. Even artists have to pay attention in math class!

2. Game Designer

Designing board or video games is a cool job. Who wouldn't want to playtest Candyland, Monopoly, or Clue? Every game designer needs to have a good grasp of game theory - a branch of applied mathematics. Aspiring video game programmers should also study trigonometry, physics, and calculus. Chances are, board game designers will need to know probability, even if they won't be designing math games.

3. Robotics Engineer

Robotics engineers design, test, and maintain robots! It's a growing industry and the employment outlook is sunny. Before you quit your day job and run off to design a house-cleaning robot, hit the math books. Most Robotics Engineers have a master's or doctorate. According to the article, "Learn About Robots" robotics may be the most interdisciplinary of engineering endeavors.



4. Roller Coaster Designer

As you ride a roller coaster through loops, dives, and dips, you're busy wondering if you're going to lose your lunch, not calculating velocity. But there are many different curves in a coaster and roller coaster engineers need to understand the mathematical properties of these curves, as well as physics, kinematics, and material strength.

5. Jet Fighter Pilot

The thrilling life of a jet fighter pilot seems worlds away from the math classroom. Movies like "Top Gun," show pilots streaking through the sky in futuristic birds, not calculating how much fuel they have left or figuring out the direction and speed of the wind. But pilots have to complete major math problems on the fly, and when they're zipping through the air at 700 mph, math skills are lifesaving.

6. Sports Announcer

What is his batting average? How many bases has he stolen? When those sports personalities give the play-by-play, they have to pay attention to the numbers: percentages, player stats, the clock. And sports casting is done live, which means there's no room for errors.

7. Professional Photographer

We think of shutterbugs as artists, not mathematicians. But professional photographers need mad math skills. They have to calculate depth of field, determine the correct film speed, shutter speed, aperture, and exposure -- and more. And to capture the moment, they need to do it all in a matter of minutes. Who knew so much math went into one photograph?



Annex II

Stereotype I. Girls show an aptitude for art and humanities.

CA1. Girls have the potential to excel in STEAM subjects.

CA2. There are many successful role models for girls in STEAM.

Stereotype II. Boys show an aptitude for how things work – linked to engineering work.

CA 1. Boys are given more opportunities to construct, build and fix things. (This is in the nature of toys they are encouraged to play with).

CA2. Many women work in engineering too. (There are still opportunities for girls to work in this sector).

Stereotype III. Girls like pink, boys like blue. Girls like glitter, boys like mud.

CA1. Colors are neutral. Society attributes gender characteristics to colors.

CA2. Girls like mud too - girls can enjoy activities that are often associated with action.

Stereotype IV. STE(A)M is not for girls.

CA1: Since the introduction of ART in STEM many opportunities open for girls.

CA2: There is a new (somehow imposed) attitude towards girls and women in STEAM career paths.