fab CONNECT her

Future Female Innovators In STEAM

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STEAM Skills diagnostic tools

This activity helps assess foundational STEAM skills, interests, and confidence levels among girls (8-15) and young women (16-25). By using a structured form and guided discussion, mentors can personalize the STEAM learning experience.

Process:

1. Preparation (Before the Session)

- Familiarize yourself with the questions and what information you'll gather (e.g., interests, skills, learning styles).
- Clarify what you want to achieve (e.g., understanding their STEAM exposure, identifying strengths and areas for growth).
- Have STEAM activity examples or demo projects ready to make the discussion more engaging.

2. Welcome and Introduction (5 min)

- Start with a friendly chat to make the mentee feel comfortable.
- Let them know why they're completing the form and how it will help personalize their learning.
- Outline what will happen in the session so they feel prepared.

3. Initial Discussion (10 min)

- Ask about their hobbies, favorite subjects, and extracurricular activities.
- Example: "What's your favorite thing to do at school or outside of school?"
- Ask open-ended questions about their comfort with STEAM topics.
- Example: "Do you enjoy working with numbers or building things?"

4. Complete the Form (10-15 min)

- Walk them through the form and clarify questions if needed.
- Pay attention to body language and enthusiasm during specific topics.
- Remind them there are no wrong answers—this is just about learning what they like.

5. Reflect on Findings (5 min)

- Share what stood out from their answers.
- Example: "It looks like you really enjoy creating things, so engineering or design might be a great fit for you!"
- Encourage Questions: Let them ask about any area of STEAM they're curious about.

6. Plan Next Steps

- Use their responses to guide your mentoring plan.
- If appropriate, involve parents/guardians in supporting the mentee's STEAM journey.

Reflection:

- What STEAM topics sparked the most interest?
- How can mentoring sessions be adapted to their learning style?
- What next steps will help build their confidence in STEAM?

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STEAM Skills Questionnaire (8-15 years)

1. Name:

.....

2. Age:

.....

3. Grade:

.....

4. Favourite Activities/Subjects:

.....

Rate the following Cross-disciplinary Skills statements from 1 to 5, being:
1 - never tried it;
2 - tried it but need a lot of help;
3 - Can do it with some help;
4 - Confident, can do it independently;
5 - Expert, can teach others or apply creatively

5. Working with others to solve problems

1 - 2 - 3 - 4 - 5

6. Explain my ideas to others clearly

1 - 2 - 3 - 4 - 5

7. Thinking about how to solve real-world problems

1 - 2 - 3 - 4 - 5

8. Evaluate options based on data and priorities

1 - 2 - 3 - 4 - 5

9. Make connections between different subjects

1 - 2 - 3 - 4 - 5

10. Make projects

1 - 2 - 3 - 4 - 5

11. Making mistakes and starting again

1 - 2 - 3 - 4 - 5

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STEAM Skills Questionnaire (8-15 years)

Choose, from each subject, from the lists below all the activities you already tried:

12. Science Skills

- observe and document natural phenomena.
- Conducting simple experiments (e.g., baking soda and vinegar reaction).
- analyze results and ask questions
- Making educated guesses about scientific questions.
- Recording observations in simple tables or charts.
- categorize plants, animals, rocks, etc
- Explain how science is used in real life

13. Technology Skills

- Building something from scratch
- Using a Laser cutting Machine
- Using block-based coding platforms like Scratch.
- Building basic circuits (e.g., with kits like Snap Circuits).
- troubleshoot simple tech issues.
- Use a 3D printer
- Using digital tools to create something new

14. Engineering Skills

- Create movement without electricity
- solve problems through brainstorming and creativity
- Using blocks, Legos, or kits to build basic models
- Understanding simple machines (levers, pulleys)
- Work with a group to complete simple engineering challenges.
- Engaging in hands-on learning (e.g., building a bridge with craft materials)
- Learning to build and control simple robots (e.g., LEGO Mindstorms)
- Taking things apart to see how they work

15. Arts Skills

- Using 2D drawing software
- Using design software for creating simple 3D objects (e.g. Tinkercad)
- Learning about color, shape, and texture in design.
- craft simple stories (written or visual)
- discuss and critique art (e.g., "What do you see?")
- Working with others to create art projects
- Using different media to express ideas (e.g., collage, video, digital art)
- Express ideas through drawings or models

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STEAM Skills Questionnaire (8-15 years)

16. Mathematics Skills

- Using different measuring tools
- Mastering addition, subtraction, multiplication, and division
- Identifying patterns in numbers and shapes
- work with more complex numbers (decimals and fractions)
- Understanding geometry basics (e.g., shapes, angles)
- read and create simple charts and graphs
- solve puzzles and problems using logic

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STEAM Skills Questionnaire (16+ years)

1. Name:

.....

2. Age:

.....

3. Grade/ habilitations

.....

4. Favorite Activities/Subjects:
What you like to do in your free time or at school

.....

Rate the following statements from 1 to 5, being:
1 - No experience;
2 - Limited experience,need a lot of guidance;
3 - Basic skills, need some guidance;
4 - Confident, can work independently;
5 - Proficient, can lead or teach others;

5. Collaborate effectively in diverse, multidisciplinary teams
1 - 2 - 3 - 4 - 5

6. Present complex ideas clearly
1 - 2 - 3 - 4 - 5

7. Think critically about social impacts of STEAM applications
1 - 2 - 3 - 4 - 5

8. Evaluate options based on data and priorities.
1 - 2 - 3 - 4 - 5

9. Make connections between different subjects
1 - 2 - 3 - 4 - 5

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STEAM Skills Questionnaire (16+ years)

10. Develop projects

1 - 2 - 3 - 4 - 5

11. Making mistakes and starting again

1 - 2 - 3 - 4 - 5

In this section please choose from this list which activities you already did at least one time:

12. Science Skills

- Designing and conducting complex experiments.
- Evaluating scientific data and forming detailed conclusions.
- Creating and testing hypotheses using controlled methods
- Using statistical methods to analyze large data sets
- Conducting independent research or projects.
- Exploring specific fields such as biology, chemistry, or physics.

13. Technology Skills

- Mastering various software tools for productivity and creation.
- Writing code in languages such as Python, Java, or HTML.
- Understanding how complex technological systems interact.
- Developing new apps, software, or technological solutions.
- Gaining deeper knowledge of online security practices.
- Designing and producing models for engineering or creative projects.

14. Engineering Skills

- Solving real-world engineering problems through innovation.
- Building, testing, and refining advanced projects.
- Applying concepts to build functioning systems.
- Leading engineering projects, managing timelines and resources.
- Working in or leading multidisciplinary teams.
- Creating sophisticated robots and automated systems

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STEAM Skills Questionnaire (16+ years)

15. Arts Skills

- Expressing complex ideas through various art forms.
- Mastering the principles of visual art, graphic design, or photography.
- Writing and producing multimedia content (short movies, films, animations, etc.).
- Evaluating and discussing art at a deeper level.
- Working in teams to create complex artistic works.
- Combining digital tools and traditional art forms (e.g., digital painting, video editing).

16. Mathematics Skills

- Applying complex mathematical principles.
- Using statistics to analyze data in scientific and social contexts.
- Creating models to predict outcomes in real-world situations.
- Exploring higher-level mathematics and proofs.
- Tackling complex math problems and real-world challenges.
- Using mathematics in research, engineering, and science projects.

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