Conductive Dough Activity Teacher Evaluation

fab CONNECT her

Future Female Innovators In STEAM

Co-funded by the European Union

2024 – 2026
Testing LP1

Created By
FCH Partners

www.website.eu

01 | Lesson 1: Quiz Board

The Quiz Board lesson was tested with a group of 21 students, who engaged in a hands-on activity to build a quiz board using simple electronics. The goal was to introduce basic circuitry in a creative and playful way. Students were encouraged to reflect on their experience through a short evaluation.

The feedback was very positive. 81% of students indicated that the activity inspired them to come up with different ideas for how to use the materials. Many mentioned that the lesson helped them see how learning can be interactive, collaborative, and fun. Students shared ideas such as using the board to study with friends, creating other materials with Q&A formats, and using it to better understand school subjects. A few students also expressed curiosity about the technical aspects, such as how LEDs work, showing the lesson sparked further interest in STEAM topics.

Takeaways from the evaluation:

- 21 students participated in the testing.
- 81% of students came up with new ideas for using the materials.
- Students appreciated the interactive, hands-on approach.
- The activity was considered both educational and fun.
- The lesson encouraged creativity, collaboration, and deeper interest in electronics.
- Some students were left with technical curiosity—indicating potential for follow-up learning.

02| Lesson 2: Taking care of myself

The lesson *"Taking Care of Myself"* was piloted with two classroom groups composed exclusively of girls, each session lasting two hours. The sessions were coordinated in partnership with the ICT coordinator at NS Castletown Girls' School in Dundalk, Co. Louth, Ireland. A total of 27 fourth-class students (typically aged 9–10 years) participated in the pilot, with their classroom teachers present throughout the activities.

This lesson aligns with the school's STEAM Digital Framework, which supports the integration of more STEAM-based learning opportunities within the classroom.

The core of the lesson focused on connecting human health and anatomy concepts with basic electrical circuitry. As a hands-on component, two different methods for completing an electric circuit were tested:

- **Conductive Ink Method:** More tactile and engaging, but messier and required greater attention to detail.
- **Conductive Copper Tape Method:** Cleaner and smoother to work with, though it required additional materials and preparation.

This dual approach allowed us to explore how students responded to different materials and techniques while engaging in the same learning objective. Having teachers present during the session was valuable in terms of collecting direct feedback and suggestions to improve the activity and materials. One key takeaway was the suggestion to reduce the size of the working board from A4 to A5, and to adapt the materials to be more reusable for future classroom use.

Takeaways from the evaluation:

- The lesson received positive feedback from both students and teachers.
- For many students, this was their first formal introduction to the STEAM concept.
- Students were enthusiastic about the link between the human body and electrical circuits, which sparked curiosity and excitement.
- Participants' emotional reactions after the session:
  - Excited: 37%
  - Happy: 52%

- Confused: 19%
- Sleepy: 11%

Topics students wanted to learn more about after the lesson:

- Animal organs and body systems
- How many batteries it takes to cause a shock
- More STEAM-related lessons
- How conductive ink and copper tape work

Ideas from students for remixing the activity:

- Using the classroom floor for building larger circuits
- Lighting up bigger LEDs using larger batteries
- Incorporating LEDs into classroom boards, personal spaces, or costumes
- Creating life-sized body drawings with conductive materials

03| Lesson 3: Conductive dough

The *Conductive Dough* activity was tested with a group of six girls aged between 9 and 15. The lesson aimed to explore basic concepts of electrical conductivity using conductive dough as a hands-on and sensory tool to build simple circuits with LEDs.
The session allowed participants to build, experiment, and understand the principles of an electric circuit through shaping and connecting dough with different conductive properties. This hands-on approach proved effective in sparking interest in STEAM, even among those who initially did not identify with subjects like physics and chemistry.

Takeaways from the evaluation

- The activity generated a **high level of enthusiasm** among the participants (83% reported feeling "fantastic").
- There was **recognition of the educational value**, especially as a support tool for teaching physics and science.
- The sensory and interactive methodology promoted **curiosity and motivation**, even among girls who initially had no interest in STEAM.
- All participants shared **ideas for reusing the material**, indicating a high potential for adaptation and continuity.
- The feedback reinforces the **importance of integrating practical and creative approaches** when introducing technical concepts to young female audiences.

04| Lesson 4: Laser theatre

The Laser Theatre lesson was tested with a group of young students, the majority of whom were around 9 years old, with one student aged 15. The activity took place mostly in a school setting, with a small number conducted at a FabLab. Students were asked to reflect on their experience through a short evaluation. The responses reveal that the lesson was well-received and enjoyable for most participants.

When asked how they felt after the activity, the majority selected "very happy" or "happy," with only a small percentage indicating they felt bored. The open-ended question about what was still on their mind showed a wide range of reflections—from technical curiosity (such as the laser's capabilities) to logistical questions (such as wanting more time or materials). This diversity in responses indicates active engagement and a desire to go further with the topic.

When asked if they had come up with different ideas for using the material, 61% answered yes. Their ideas included

building robots, making amusement parks, houses, theatres, and even creating educational tools for English presentations. The responses show that the Laser Theatre lesson not only stimulated creativity and technical thinking but also opened up cross-curricular ideas and playful approaches to learning.

Takeaways from the evaluation:

- Tested with predominantly 9-year-old students (93.9%), and one student aged 15.
- 90.9% of activities took place in school; 9.1% at the FabLab.
- Most students reported feeling "very happy" or "happy" after the activity.
- 61% came up with new ideas for using the materials.
- Suggestions ranged from making robots and castles to applying the materials in language learning.
- Students asked curious and practical follow-up questions, showing genuine interest.
- The lesson successfully blended technical exploration with creativity and imagination.

05| Lesson 5: Fun Geometry

The Fun Geometry lesson was tested with a group of primary school children at FabLab León. Student responses were collected using playful visual feedback forms tailored to their age group. Nearly all students selected the “very happy” emoji to describe how they felt about the activity, indicating high enjoyment and engagement. When asked what they would like to invent next, their ideas reflected creativity and imagination—from 3D printed footballs, houses, and lamps to dinosaurs, catapults, and Among Us figures. Many students were also able to identify a concrete project they wanted to pursue with the skills they had just learned.

Teacher feedback further confirmed the lesson’s educational value. Three teachers reported applying the lesson in class and identified key skills developed during the activity, including fine motor skills, spatial reasoning, mathematical understanding, and project execution. The activity was praised for its ability to support structured thinking, prototyping, and hands-on geometry. One teacher noted that it was especially beneficial for younger students to move from structured designs to symbolic representations, while another highlighted the lesson’s potential for encouraging gender inclusion in STEAM. Suggestions included adding more room for free creation and encouraging students to iterate and build upon previous designs.

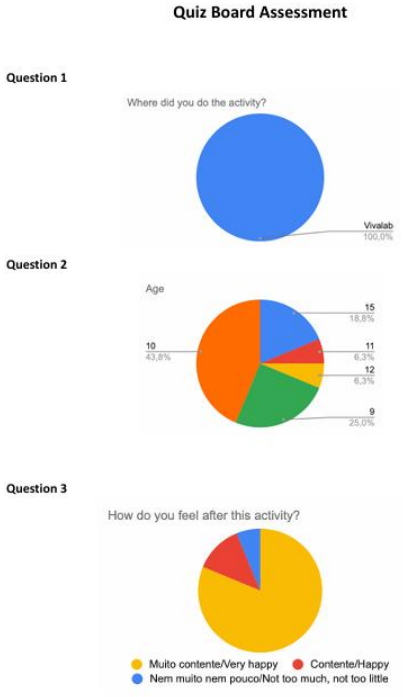
Together, the feedback shows that Fun Geometry successfully combines creative exploration with foundational STEAM learning. It empowers students to link hands-on design with geometric concepts and encourages both self-expression and structured problem-solving.

Takeaways from the evaluation:

- All students reported enjoying the activity; most selected the “very happy” emoji.
- Children proposed follow-up projects inspired by what they learned, ranging from lamps and buildings to 3D printed objects and playful characters.
- Teachers noted skill development in fine motor control, spatial reasoning, mathematics, and project planning.
- The lesson was considered both fun and educational, with strong classroom applicability.
- Suggestions included integrating more free creation opportunities and promoting iteration.
- The activity shows strong potential to support inclusive, creative STEAM education.

06 | Annexes

Lesson 1: Quiz Board



Question 4: What question is still on your mind?
Answers:

- how was it so much fun
- how to make the red light
- how to switch on the led
- I understood everything
- have you ever made a robot

Question 5: Have you come up with different ideas for using this material?

Answers: 81% Yes
19% No

Question 6: If so, which one?

Answers:

- I really enjoyed the activity, I thought it was a fun way to learn new things
- I got the idea that I can learn and study in an interactive and interesting way
- how to study different materials with questions and answers
- studying with friends
- useful way of studying to learn, improve and consolidate learning

Lesson 2: Taking care of myself

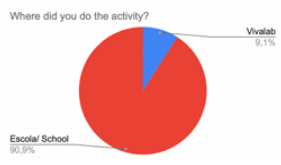
Scanned Feedback
https://www.dropbox.com/scl/fo/5140wcfxe3wtke4sg3971/APBWU2vG_18S3h3r2bbWaYI?rlkey=j2gtvrpz1u2lhqxdqy5o1wbea&dl=0

Lesson 3: Conductive dough

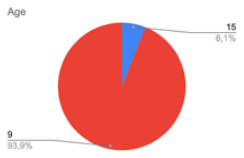
Lesson 4: Laser theatre

Theatre Test Assessment

Question 1:



Question 2:



Question 3:

Question 4: What question is still on your mind?
Answers:

- I wasn't left with any questions in my head
- What is the maximum degree that the laser machine can reach?
- You can come here more often
- How do they make these things?
- What's the theatre for?
- But is that for English theatre?
- Can you come here more often?
- Could it be smaller?
- Could we have more time to prepare the theatre?
- When are you coming back?
- How can I do this?
- Why does it have to be cardboard?

Question 5: Have you come up with different ideas for using this material?

Answers: 61% Yes
39% No

Question 6: If so, which one?
Answers:

- Experimenting a lot, having fun, building
- we can do different things with different materials
- Yes, lots of things. Make an amusement park
- A portable rubbish bin
- For English and presentations
- We could make a house
- A Robot
- Yes, I did, but this was my idea
- We can make a house
- I want to make robots
- A robot
- with plastic or aluminium foil for English
- We could play
- Make more theatres
- A castle
- Make goals and balls
- Play
- A cinema

Lesson 5: Fun geometry

Survey Summary

1. Pablo Nuñez

Email: peibol@mail.com

Submission Date: October 30, 2024, 11:48 PM

- Activity Participated: Fun Geometry
- Classroom Application: Yes, Fun Geometry.
- Skills Developed:
  - Fine motor skills
  - Spatial vision
  - Mathematics
  - Geometry
- Gender Differences in STEAM: Yes
  - Activity Impact: Believes activities can help address this issue.
- Additional Feedback:
  - The workshop was incredibly fun and educational.
- Suggested Topics/Resources: Robotics

2. Jorge Diez Miguélez

Email: cokelight555@gmail.com

Submission Date: November 3, 2024, 7:53 PM

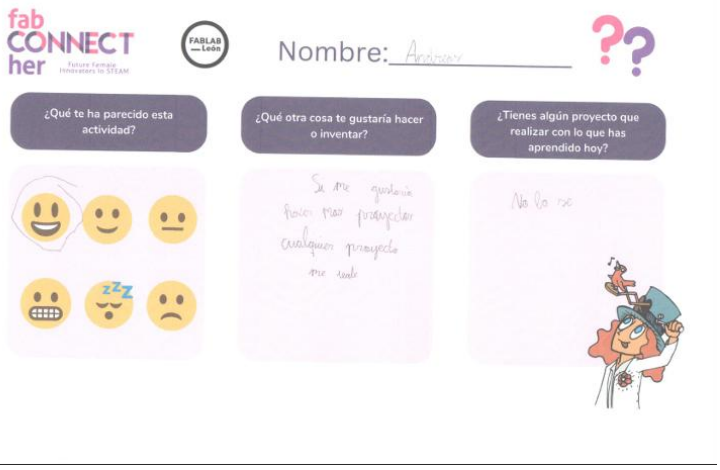
- Activity Participated: Fun Geometry
- Classroom Application:
  - Yes, building structures is valuable for geometry, prototype construction, and group dynamics.
- Skills Developed:
  - Spatial reasoning
  - Problem-solving
  - Step-by-step project execution
  - Empirical conclusion development
- Gender Differences in STEAM: No
  - Activity Impact: Not sure/No comment
- Additional Feedback:
  - Suggested adding a free creation segment for drawing conclusions from decisions made.
  - Recommended testing replication or invention of new structures after demonstrating one step-by-step.
  - For younger students, advised free creation of shapes with symbolic representation instead of structured designs.

3. Sandra Rueda Rodriguez

Email: sandrutien@gmail.com

Submission Date: November 10, 2024, 10:17 PM

- Activity Participated: Fun Geometry
- Classroom Application:
  - Yes, to work on geometric shapes and their application in structure construction.
- Skills Developed:
  - Fine motor skills
  - Spatial reasoning
- Gender Differences in STEAM: No



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FABLAB León

Nombre: Lolo

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Dinosaurios y unos Among us	Sí 

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FABLAB León

Nombre: Pilo

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Una estera.	

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FABLAB León

Nombre: Samuel

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Catapulta gigante	No lo se

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FABLAB León

Nombre: Edwin

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
		

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FABLAB León

Nombre: Erik Diez

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Una lampara	Una lampara

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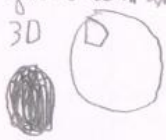
FABLAB León

Nombre: Marcio

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	un balon de futbol con impresora 3D 	Si

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FABLAB León

Nombre: Alejandra

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	mi nombre en una camiseta	No

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FABLAB León

Nombre: LAURA B

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
		¡Sí!!!!

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FABLAB León

Nombre: Estela

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Cosas del espacio en 3D	Llaveros en 3D 

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FABLAB León

Nombre: Julia

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	Una esfera o una maqueta de algo interesante	Investigar que otras formas puedo hacer con lo que hemos hecho hoy 

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FABLAB León

Nombre: Carla

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
	catapulta gigante	No lo se

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FABLAB León

Nombre: Cora

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
 Bien	Crear una calabaza en 3D.	Crear un robot igual a Woll-E.

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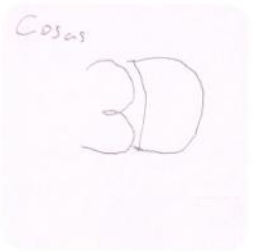
FABLAB León

Nombre: Carmen

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?
		

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FABLAB León

Nombre: Olivia

¿Qué te ha parecido esta actividad?	¿Qué otra cosa te gustaría hacer o inventar?	¿Tienes algún proyecto que realizar con lo que has aprendido hoy?