DIY Interactive Floor Project

#### Introduction to the Project

**Purpose:**

I aimed to create a fun, interactive floor that lights up or makes sounds when you step on it. It's like bringing a bit of magic into the room! Using some basic materials and a little bit of programming, I wanted to make it work and contribute to the bigger idea for the Glow Festival.

**Context:**

The idea emerged while contemplating a proposal for stakeholders at the Glow event that emphasized visitor-powered interaction. This sparked the idea to craft a Switchplate that operates not just as a mere switch but as an engaging platform for participant involvement.

#### What is the problem or question to solve?

The problem was to create an interactive floor installation that responds to human movement using there pressure. The goal was to create a visually appealing and engaging experience for users.

#### Why is this a relevant problem or question?

Because of the need of creating a prototype suitable for the stakeholders needs for the GLOW festival.

**How are you going to solve this?**

Materials and Construction:

Cardboard or transparent material

Kitchen foil

Wire, tape, and tools like scissors and wire strippers

Arduino, jump wires, transistors, and LEDs

Construction Steps:

Stick foil on cardboard to make two special sheets.

Hook them up with wires and add another piece of cardboard in between so they don’t touch unless someone steps on it.

For enhanced visual appeal, replace the top cardboard layer with a transparent material to allow LEDs to be visible upon activation.

Adding a buzzer for sound effect and fake grass for implementing in the park theme.

Adding an RGB LED strip around the prototype's edge for a stunning visual effect.

Prototypes:

First Prototype: Learning new skills with Arduino and electronics. Basic construction with cardboard and foil.

Second Prototype: Enhanced visual appeal with transparent material, buzzer for sound effects, and fake grass for theme integration.

Futuristic Design: Adding RGB LED strip, durable materials, weatherproof enclosures, and sustainable power sources like solar panels for outdoor use.

**What are the results?**

The project successfully created a prototype of an interactive floor that lights up and makes sounds in response to human movement. It demonstrated the potential for creating engaging and responsive environments using simple materials and basic electronics.

What is the quality of the result?

The quality of the result is demonstrated by the successful functionality of the prototype. The interactive floor responds accurately to pressure and movement, creating a visually appealing and engaging experience. The use of transparent materials and RGB LEDs enhanced the aesthetic value and interactivity.

**How did you validate the quality?**

Multiple rounds of testing were conducted to assess the sensitivity of the pressure sensors, the brightness and visibility of the LED lights, and the clarity of the sound output. The tests ensured the quality and responsiveness of the interactive floor.

What are your next steps?

Future steps include:

Weatherproofing: Sourcing IP-rated enclosures for circuit protection and experimenting with durable materials like acrylic or tempered glass for the surface.

Enhancing Visual Appeal: Adding more advanced lighting effects and integrating more sensors for increased interactivity.

Expanding Applications: Exploring the potential for using this technology in other interactive installations and events.

Conclusion

The DIY interactive floor project showcases the fusion of technology with natural and narrative elements, offering a new way to experience the park during the GLOW Festival. By using simple materials and basic electronics, this project demonstrates the power of DIY innovation in creating immersive environments. Feedback and ideas for further enrichment are welcome.

Additional Context and Journey

The journey to this successful implementation was quite a ride. Initially, I had to implement my own codes and even buy some parts independently. I was pretty happy with the results until a team member suggested major changes. I ended up working tirelessly for a couple of days to meet these new requirements. Despite feeling like half my code went unused, I’m satisfied with the learning experience and the final product.

Sources and References:

Arduino Official Documentation

Various YouTube Tutorials and Maker Blogs

Code:

<https://app.arduino.cc/sketches/0f3f5363-61f6-4f18-a01b-51f2502faa56?view-mode=preview>

Mind Map (possible faced problems)

<https://www.canva.com/design/DAGDsE-jFAM/XNI562HyUNMiInZGZDFjWw/view?utm_content=DAGDsE-jFAM&utm_campaign=designshare&utm_medium=link&utm_source=editor>

KPI’s  
Analysis-U1.2 and Analysis-U1.3:

"The idea emerged while contemplating a proposal for stakeholders at the Glow event that emphasized visitor-powered interaction. This sparked the idea to craft a Switchplate that operates not just as a mere switch but as an engaging platform for participant involvement."

Design-U1.2 and Design-U1.3:

"Prototypes:

First Prototype: Learning new skills with Arduino and electronics. Basic construction with cardboard and foil.

Second Prototype: Enhanced visual appeal with transparent material, buzzer for sound effects, and fake grass for theme integration."

Realisation-U1.1:

"What are the results?

The project successfully created a prototype of an interactive floor that lights up and makes sounds in response to human movement. It demonstrated the potential for creating engaging and responsive environments using simple materials and basic electronics."

Advise-U1.2:

"Future steps include:

Enhancing Visual Appeal: Adding more advanced lighting effects and integrating more sensors for increased interactivity."