ABINGDON SCIENCE PARTNERSHIP

Slippery Slidey Shoes Session plan/ideas

https://primarylibrary.crestawards.org/all-star-challenges/61746949/48

In this activity, children will think about friction, and use Newton meters to test the grippiness of their own and others' shoes.

Plan

1. Introduce the activity by reading out the story on the activity card.
2. Ask the children what they think they'll be investigating based on the story.
3. Ask what they think makes a shoe slippery or grippy. Do they wear different shoes to do different things? How could they test how slippery a shoe is?
4. Explain that in today's activity they will be investigating friction by using a Newton meter to measure how much force it takes to push and move a shoe. Model how to read the Newton meter on the N side and how to push the shoe with the Newton meter until it starts moving (see photo below).
    a. A high number means more force is needed to push the shoe - does that mean the shoe is slippery or grippy?
5. Ask children to test their own shoes and then ask to test other people's shoes or the shoes in the kit box (on the same surface). Demonstrate how to fill in the worksheet.
6. If time allows, ask children to do the same but on a different surface.
7. As a class, ask children to identify the grippiest shoe they tested by seeing which required the highest amount of force. Compare this with one of the slipperiest shoes.
8. Demo the test with the sports shoe and another shoe from the kit box - a common prediction is that the sports shoe will be very grippy but it typically is shown to be slipperier than most school shoes. Ask children why that could be e.g. the type of material (rubber versus plastic) or the texture of the bottom.
9. Suggest/discuss occupations and situations that might require the skills/knowledge they've developed e.g. shoe designer, athlete, architect, lawyer.
10. Discuss related activities they could do (at home).
11. Give out stickers/stamps for their passport.

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Tips and safety

- This will work better on a carpet or rough surface, especially with small shoes, as the force will be small.
- Check that the meter reads zero before you start - turn the white screw to adjust it.
- Remind children to read from the N side of the Newton meter (not the kg) side.
- Always push the Newton meter rather than pull with the hook.
- Children sometimes need help pushing the shoe in a straight line and reading the Newton meter only when the shoe starts moving.

Additional ideas/extension/home activities

- What other ways could you test how slippery shoes are?
- Do some shoes or surfaces need to be slippery?
- How can you stop surfaces being slippery?
- Check out this Slippery Surfaces investigation:
    - Presentation: https://www.abingdonsciencepartnership.org/wp-content/uploads/2020/03/Presentation-SS.pdf
    - Lesson Plan: https://www.abingdonsciencepartnership.org/wp-content/uploads/2020/03/Lesson-Plan-SS.pdf
    - Pupil Worksheet: https://www.abingdonsciencepartnership.org/wp-content/uploads/2020/03/Pupil-Worksheet-SS.pdf
- Look for the slipperiest places around your home. Make a report for your family to help them make it safer.
- Find out who has the slipperiest shoes in your family. Design a way to test this and tell your family what you find out.

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Today we are thinking about **FRICTION**

Surface 1: _____

Whose shoes?	Force (Newtons)

Surface 2: _____

Whose shoes?	Force (Newtons)

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Whose shoes were slippery?

Whose shoes were grippy?

What surfaces are slippery at school or at home?

What jobs do you think these people do? Why do they need to know about slippery slidey shoes?