

Asking about shoes

Purpose:

The purpose of this activity is to engage students in setting up for a statistical investigation by posing a question within the context given.

Achievement Objectives:

S1-1: Conduct investigations using the statistical enquiry cycle: posing and answering questions; gathering, sorting and counting, and displaying category data; discussing the results.

Description of mathematics:

In readiness for this problem, the students should have familiarity with each of the following components of mathematics. The problem may be solved with different combinations of these components.

- Carrying out an investigation
- Investigating to answer a (statistical) question
- Posing a (statistical) question
- Considering possible responses to a (statistical) question

This activity may be carried out with guidance, or by allowing the student to follow their own chain of reasoning. The approach should be chosen in sympathy with students' skills and depth of understanding. The most likely form of feedback/evidence from the student in this activity is via discussion.

Activity:

Some teachers like students to take their shoes off at the door, to keep the splashes from muddy puddles out of the classroom.

Find out about what you could expect to see piled up at the classroom door if your teacher asked you all to take your shoes off there.



Pose a question to investigate

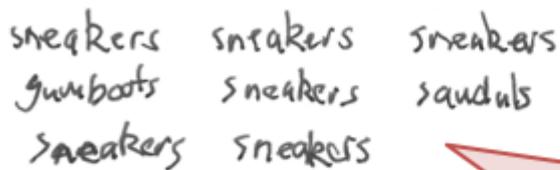
What sort of answer(s) do you expect to get?

The procedural approach

The student is able, with guidance, to pose a suitable question for investigation and to suggest possible responses.

Prompts from the teacher could be:

1. What are you investigating?
2. Pose a question to investigate.
3. What answer would you give this question today?
4. What sort of answers might other students in your class give?



sneakers sneakers sneakers
gumboots sneakers sandals
sneakers sneakers

T: Tell me about what you have written here.

S: This is a list of what I expect to see at the door when we all take our shoes off. Alice always wears sandals and Joe always has gumboots but most people are in sneakers I think.

T: Can you be certain of that?

S: No it might be different because I don't look at everyone's feet and learn what they are wearing.

T: So to find out, to start an investigation, we might ask a question.

S: Like what kind of shoes are you wearing?

T: Yes, that is what you could ask everyone in the class. What do you think the answers would be?

S: What I've got here. Sandals, gumboots and lots of sneakers.

The conceptual approach

The student is able to pose a question for investigation and to suggest possible responses.

Prompts from the teacher could be:

1. Pose a question to investigate this situation.
2. What answers would you expect from your class?
3. Would you expect the same answers on a different day? Why/why not?

What kind of ~~shoe~~
footwear do we
have on?
today at school
laces
buckles
velcro
Slip on

T: That is a great question. I can see what you are investigating. Tell me about why you have crossed out shoe and written footwear.

S: Some people in the class don't wear shoes, they wear sandals or boots or things. So if I just said shoes they might not think I was including them.

T: Good thinking. I see you have written today at school. What do you mean by that?

S: I was just thinking that the answers would be different if it was raining or sunny or if it was in summer instead of winter. So that might be important. When it is raining and winter we are more likely to have muddy puddles and so then we will have to take our shoes off.

T: I can see that you have listed some types of footwear.

S: Yes. I would be interested to see how many of us have lace up shoes because that takes a long time to take your shoes off then. Then I thought about it and not that many of us have laces. So we could find out what kind of ways our shoes stay on.