

Books vs Bean Bags? Part i

Purpose:

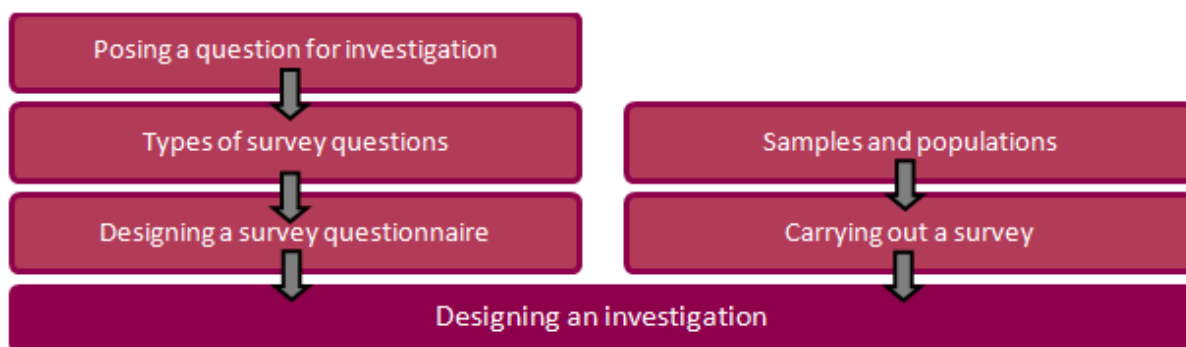
The purpose of this activity is to engage students in posing a question for investigation and designing an investigation that could be used by the class.

Achievement Objectives:

S3-1: Conduct investigations using the statistical enquiry cycle: gathering, sorting, and displaying multivariate category and whole-number data and simple time-series data to answer questions; identifying patterns and trends in context, within and between data sets; communicating findings, using data displays.

Description of mathematics:

The background knowledge and skills that should be established before and/or during this activity are outlined in the diagram below:



Posing a question for investigation

A student wants to find out how many people in her class drink at least one glass of milk per day. Write this as a question for investigation.

Samples and populations

For the following pairs of groups, one is a sample and one is a population. Suggest which is which.

- The girls in a class, the students in a class
- Year 6 students in NZ, Children in NZ
- Year 6 students in NZ, a year 6 class

Carrying out a survey

A student wants to find out what people in her school drink in a typical day. Suggest a suitable sample she could survey for her investigation.

Types of survey questions

Change the following survey question so that it is closed ended. (eg multi-choice or yes/no answers).
What do you drink at breakfast time?

Designing a survey questionnaire

A student wants to find out what people in her school drink in a typical day. Design a suitable survey questionnaire for this investigation.

Designing an investigation

A student wants to find out what people in her school drink in a typical day. Plan a suitable investigation for the student, including the sample to be surveyed, the questions to pose and how this will be carried out.

This activity may be carried out with step by step guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students' skills and depth of understanding.

Activity:

A year 5 & 6 class has just been told that the school is going to upgrade the school library.

Their teacher has said that this would be a great opportunity for the class to find out how that money should be spent...the teacher suggested lots of shiny new books. Immediately, hands shot up around the class and the students suggested that bean bags, comfy seating, e-readers and fast internet were much more important for the school library to get. The teacher thought about this and said..."Let's find out how people use a library. Then we can use our data to make suggestions for the school library."



Pose a question for the class to investigate and construct a survey to carry out amongst the school community. This will include students, teachers and parents as they all have an interest in how the library is used.

The procedural approach

The student is able to design an investigation, using the enquiry cycle.

Prompts from the teacher could be:

1. Pose a question for investigation.
2. Consider the whole school community as the population and choose a suitable sample to survey.
3. Design a questionnaire to survey the sample.

1. What do we want to add to our library?

2. Student Sample - our class (seniors)
- a middle school class
- a junior class
- all the teachers

3. The questionnaire:

① How much of the money ^{do you think} should go on new books?

② What else do you think we should have in the library?

① ipads
② more computers
③ comics and mags
④ any other stuff

③ ^{you think} Do we need to spend more on furniture and how the library looks?

T: You've chosen samples of the students, but all of the teachers. Why is this?

S: All the teachers are still a sample of the school population. But really because if I don't ask all of them, some might get mad.

T: You've added "do you think" bits to your questions.

S: I realised when I read them through the first time, that people might think they had to spend the money, but I just want their opinion to poll, so I added that in to make it clear.

The conceptual approach

The student is able to design an investigation that would lead to reliable results, using the enquiry cycle.

Prompts from the teacher could be:

1. Pose a question for investigation.
2. Suggest a suitable sample to survey.
3. Design a questionnaire to survey the sample.

How will we upgrade our library?

I will ask all the students born in August
(the office can give me these names)
I will ask the lunch duty teachers
(that's about half of all of them)

This is what I will ask/say :-

“ Hello. I am surveying how we might spend money to upgrade the school library. Could you please answer the following questions?

- * Should we change the furniture in the library?
Yes/No/Don't Care
(If yes... suggest what with.)
- * How much of our budget should go into new books?
All / Most / Some / None
- * Should we get things like ipads for the library
Yes/No/Don't Care

Thank you for your time ”

This sample might not be practical to survey, but is without bias

The questions are closed – they would yield manageable data