Lesson One ~ Census 2006

Theme
Data collection – organising and using information.

Objectives
That the child will be enabled to:
- list reasons for collecting and analysing facts and figures (data and statistics)
- discuss how data can be used to help solve real life problems and plan for the future
- explain the data collection process to others
- collect data/information on a given topic
- represent the collected data using a tally, block chart, bar chart and/or bar line chart

Integration and Linkage
Maths Number – Sorting, Combining and Comparing sets, Counting
Data: Representation and Interpretation
English Oral Language Development
SESE: Science: Sorting and classifying

Tasks
- Class discussion on the data collection process
- Creating the steps in the data collection process
  - Activity 1 – sorting cards
  - Activity 2 – tally sheet
  - Activity 3 – creating graphs – block graph / bar graph / bar line graph

You will need
- A4 sheets – steps in data collection process on the topic of favourite types of books M 1.1
- Overview chart of data collection process M 1.2
- Tally sheet M 1.3
- Graph templates
  - Block M 1.4
  - Bar M 1.5
  - Bar line M 1.6

Key Messages
- There is a sequence to the data collection process
- Data can be used to show the opinions or characteristics of a group of people
- Collecting and interpreting data can help to solve everyday problems
- Data can be represented in different ways

Language
Collect, information, data, ask, pose, question, list, form, record, results, solve, prevent, problem, graph, block graph, bar chart, bar line graph, represent, category

The above language can provide a very rich source of material for discussion and also for written word work.

Assessment
The children will
- correctly sequence the steps in the data collection process by sorting illustrative cards
- use this sequence in creating a data set on the topic of books
- begin to use the language associated with this process to describe their own work
- collect, represent and interpret information presented in graphical format
- identify and describe orally three different types of graph.

Teacher Observation Tips
Take note of children who are not beginning to use the language in discussing the data collection process and revise the words with them.
Take note of children who are having particular difficulties with sequencing information and reinforce this in other areas of the curriculum. They could also be asked to work in pairs explaining what they are doing to a partner or group using the A4 sheets as a support.

Teacher's Notes – Lesson 1

Oral and mental starter
Target board work on multiples as an introduction to using scale in the construction of graphs at a later stage.

Brainstorm – collecting information on our class
NOTE: There is also a series of lessons for 1st and 2nd class that may provide useful background material if your class are not familiar with some of the concepts.

What information does the teacher collect in our class? ~ children's ages; dates of birth; phone numbers; attendance; test results; money brought for milk/lunches…
Why would this information be needed?
What if this information was never collected or recorded? Discuss what might happen for example, if we didn't know how old each person was; what their phone number was or how many children want milk…
Explore the children's thoughts and ideas on the topic.

Introduce the children to the word **DATA** and how it is used to describe information in numerical form such as a list of the children's ages, test scores…

Whole class activity
- List the suggestions from the brainstorm session under the headings. Discuss how each individual class' data contributes to the school data. You could also discuss where this information might go outside of the school – to the Department of Education and why this might be necessary.
    - o Class information
    - o School information
- Discuss how this data could be used to help class/school organisation. Encourage the children to think of ways in which the collection of data could help to solve everyday problems in the classroom e.g. collecting children's test results helps to show the progress children are making and can show where help is needed; listing children's addresses can be useful when sending home school letters …
- Present the children with a problem that needs to be addressed such as improving use of the class/school library. Encourage the children to suggest issues that they find unsatisfactory about the library, e.g. "we prefer books by other authors"; "some of the books are too difficult"; "we would like a variety of books"; "It is difficult to get time at the library during the school day"…
- Choose one of the issues that arises during this class discussion. The example we give here relates to types of book but you could also concentrate on authors. Ask the children what data might be helpful in improving the library.
- Initiate a discussion on types of book already included in the class library.
- Talk to the children about the ways in which this data can be collected such as making a list of children's names and listing their favourite types of book using a tally sheet to record the results. They will also need to develop categories such as Fiction, Fairy Tales etc. and agree on those before they begin to gather the information.
- Discuss the best ways of representing this data once it has been collected e.g. block graph, bar chart, bar-line graph… It might be useful to have some examples of each type of graph for discussion – you could use some they have constructed in other contexts or ones from magazines.

- Discuss how you might use this data once you have collected it, for example it might be possible to contact the local librarian and source some of the types of books they have identified through their data collection and analysis.

Activity 1: Understanding the Data Collection Process

Ask the children to outline the sequence of data collection and note them on sheets of paper. 'What would we need to do first? second? and then what? Then use the cards **M 1.1** and the overview chart **M 1.2** to illustrate the sequence of the activity.

Step 1: Pose a question i.e. What is your favourite type of book?
Step 2: Collect and record the data
Step 3: Represent the data using a graph
Step 4: Use the data to solve problems

After discussion, individual children can be given the cards and they can stand in sequence – ask the children why things have to be done in a particular order. The focus should be on sequencing the activities of the data collection process and on discussing its elements.

Activity 2: Collecting data

What is your favourite type of book?

1. Distribute the tally sheets **M 1.3** to the children and ask them if they have ever used a tally sheet before.
2. Show children how to tally by marking responses in groups of five (using four vertical strokes and one stroke across the group as a fifth)

3. Ask each child to call out his/her favourite type of book and in pairs the children can record each response on his/her sheet.
4. Each time that category is called draw a stroke in the correct tally column.
5. The fifth stroke is drawn through the set of four strokes. There may also be remainders.
6. When every child has given a response, the totals for each category may then be calculated.

Activity 3: Representing data

1. When the data has been collected, it will be possible to represent the data in graphical form e.g. block graph, horizontal or vertical bar chart…
2. Use graph templates to assist children in creating one of the above graphs. Different graph types can be produced by groups of children. These could then be displayed in the classroom and provide a focus of discussion.
3. Graphs can then be compared and the results can be examined and analysed for classroom use. This will provide a rich forum for discussion during the plenary.
4. Decide how the data might now be used to ensure greater use of the classroom library. Can we satisfy everyone's taste? What if only one person likes a certain category – do we get some books for them or do we not? If a lot of people like a particular category should we only have that type of book available? What are the advantages of having a broad selection of books in a class/school library? Would this information be true every year in 3rd class?

5. Would the same information be true in 6th class? First class? What will we do with the information now that we have it? (The children could be encouraged to come up with some solutions such as approaching the local library, having a sale of work to make money for new books, bringing in books from home which have already been read…)

Plenary

What did we do today? Elicit the key messages from the children through questioning:

o There is a sequence to the data collection process
Pretend you are explaining the data collection cycle to your partner – can you tell him/her the sequence in which the cycle happens?
As a whole class activity hide the cards from the census cycle and ask the children to give you the first step, second step etc. as each is identified give the relevant card to the child and ask them to stand in order at the top of the room.

o Data can be used to show the opinions or characteristics of a group of people – how did we do that in our class? How is data used at school level?
o Collecting and interpreting data can help to solve everyday problems – what was the problem we set and how did we use the data to solve it?
o There are different ways of representing data – what types of graph did we use? Which ones do you think work best? Why?

Extension work

• Are there any other problems we could solve using data collection? Three or four groups of children could identify a problem to solve and they could then follow the process through and present their finished graphs as a presentation to the class. Some topics could include hair and eye colours, numbers of calculators in the family home, etc.
• Collect data from another class or classes within the school and compare it with your own class data. This could be done by a pair or group of children. Are the results the same or are there any differences? Can you think why those differences might happen?

Home/school links

Photocopy the group graphs so that each child can bring one home and discuss it with his/her family.

Pose the question
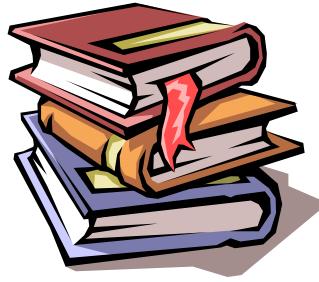
What is your favourite type of book?
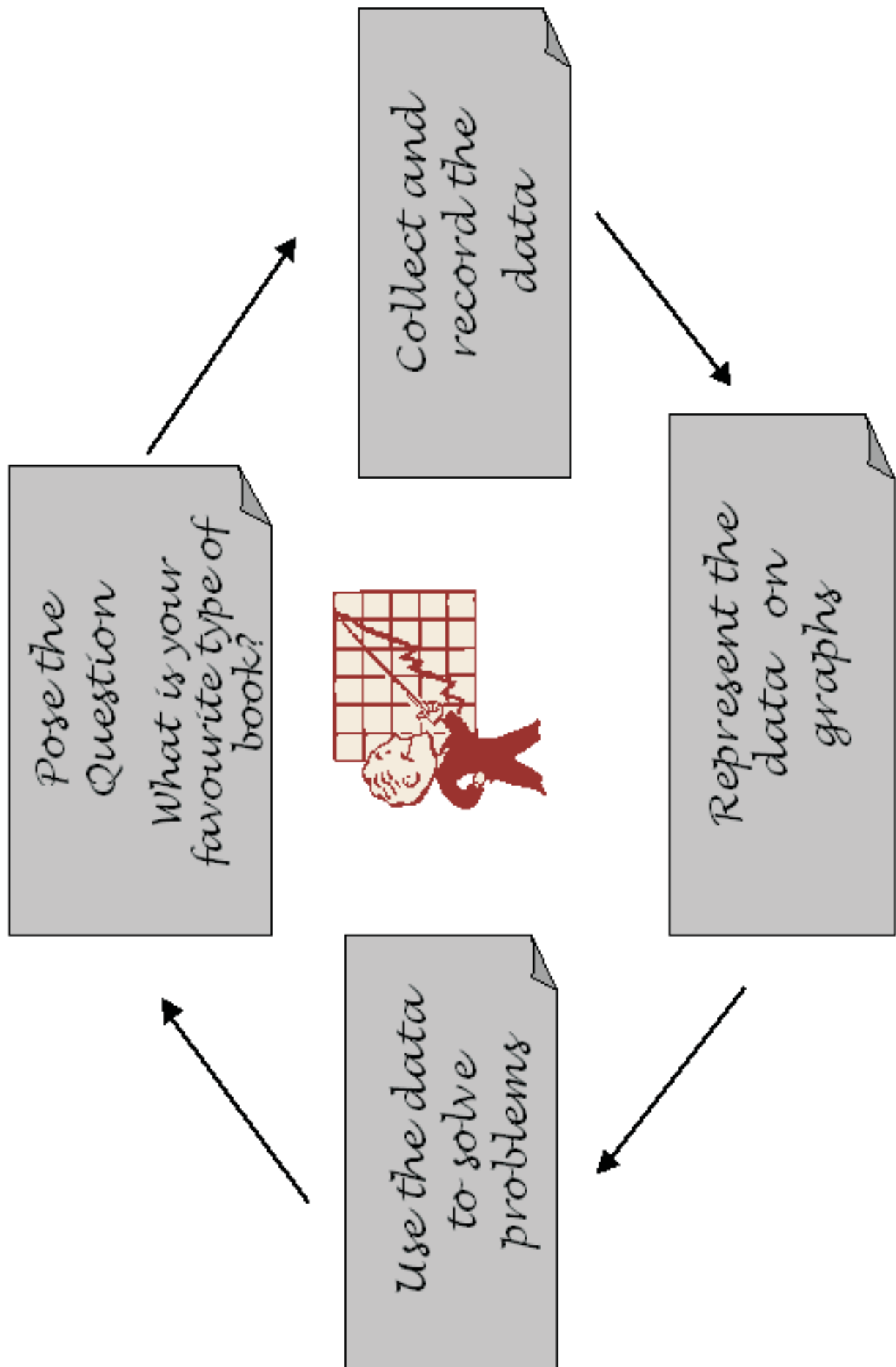
Collect and record the data

Represent the data on graphs

Use the data to solve problems

3rd/4th Class - Lesson 1 Census 2006

Collect and record the data

Pose the Question

What is your favourite type of book?

Represent the data on graphs

Use the data to solve problems

Let's Tally

What is your favourite type of book?

Let's investigate:

Category	╲ Tally IIII	Total
Fiction		
Fairy Tales		

- How many types were listed?
- Which type was the most popular?
- Which type was the least popular?
- List the types in order of most popular to least popular

_____

_____

- List some of the books in the category you like best

_____

_____

- How might the above information be used in the classroom?

Block Graph

Our Favourite Types of Book

Bar Chart

	10	9	8	7	6	5	4	3	2	1	

Our Favourite Types of Book

Bar Line Graph

10	9	8	7	6	5	4	3	2	1	

Our Favourite Types of Book