Census 2006 Activities

Rationale

The aim of this series of topic-based lessons is to enable children to understand that:

- a census is an official count of the population of a country.
- almost every country takes an official population count about every five or ten years.
- each step of the data collection process is important.
- data can be represented in different ways – as a graph, as a diagram, using pictures or as a written report.
- the results of the data collection process in a census can be used to solve problems or make positive changes within a country.

Please note that Census night (April 23rd 2006) falls on the last day of the school Easter holidays so it is important that these lessons are completed well in advance of that date if they are to be of maximum educational value.

Data skills are learned through handling and using real content for a real purpose.

How to get the most from these materials

The problems presented in these lessons are real ones and include designing and implementing a class census and exploring how data is collected, represented and interpreted. This is all done within the context of the Census 2006, which will be in the media around the time you are beginning to use these lessons. It provides an excellent opportunity to place your curriculum work within a real situation and one in which parents and guardians will also be actively and meaningfully involved. To this purpose we have provided a Home/School links section with a few ideas that you can use with your class and parents.

Each lesson has been developed specifically to incorporate the principles of the 1999 Primary School Curriculum:

- The child's **environment** is used as the context for learning.
- The child's **existing knowledge and experience** form the base for learning new concepts and ideas.
- The use of **talk and discussion** is central to the learning process and each lesson begins with a brainstorming session where new vocabulary is introduced and the children's own ideas are explored.
- **Integration** with other subjects and linkage within subjects are a key feature of these lessons.
- The tasks and activities are designed to lead towards the development of the **higher order thinking** and problem solving skills that are essential for modern living.
- Many of the activities provide opportunities for **collaborative learning**.
- The sample lessons can be used across a range of **individual difference** within the classroom and in a multiclass situation.

Practising primary teachers have developed these lessons and the tasks and resources have been piloted in classroom situations.

Cross Curricular links

The objectives below are taken from the 5th and 6th class curriculum in each subject to indicate how the Census activities can contribute towards what pupils at the end of their primary schooling should be able to accomplish. It is not a comprehensive list and other objectives are also covered within the activities. Those chosen are the most appropriate. Only a selection of the English and SPHE objectives is given as these subjects underpin the entire curriculum.

Although the focus of this material is primarily on Census 2006 it provides a base for developing general data handling skills in real-life situations. These skills can be used across the curriculum but particularly in SESE: Science. When sorting and classifying items such as plants or animals or when conducting fair tests in relation to energy and forces the data collected can be represented and analysed by the children using the results of their experiments or observations. The most important part of the exercise will be encouraging children to question BEFORE they gather the data, then investigate and evaluate their results. This should lead to even more questions and even more investigations, which will become increasingly sophisticated as they develop their skills.

Language: English	***Receptiveness to language*** – follow instructions, improve ability to recognise and understand words by using root words, prefixes etc, write for an increasingly varied audience. ***Competence and confidence in using language*** – converse freely and confidently on a range of topics, give and take turns in an environment where tolerance for the view of others is fostered, practise and use improvisational drama, learn about the structure and function of the parts of a newspaper, choose a register of language appropriate to subject and audience. ***Developing cognitive abilities through language*** **–** discuss issues of major concern, use a discussion of the familiar as the basis of a more formal or objective grasp of a topic or concept, listen to presentations on a topic and decide on appropriate questions, argue points of view, justify and defend opinions, respond to argument, **retrieve and interpret information presented in a variety of ways including flowchart, table, diagram, list, web, survey, question… Read and interpret different kinds of functional text including forms… Find information relevant to his/her purpose in non-fiction texts, graphs and pictorial and diagrammatic data and through the use of ICT.**

Mathematics	**Skills** *Applying and problem-solving* - reflect upon and evaluate solutions to problems *Communicating and expressing* - discuss and explain the processes used… listen to and discuss other children's mathematical descriptions and explanations… discuss and record the processes and results of work using a variety of methods, discuss problems and carry out analyses *Integrating and connecting* - recognise and apply mathematical ideas and processes in other areas of the curriculum *Reasoning* - make hypotheses and carry out experiments to test them, make informal deductions… search for and investigate mathematical patterns and relationships *Implementing* - execute standard procedures efficiently with a variety of tools **Strand Number:** Operations, fractions, language of magnitude **Strand Data:** Representing and interpreting data including collecting, organising and representing data; reading and interpreting graphs, compiling and using simple data sets and using data sets to solve problems.
SESE: Science	**Skills (the same skill set applies to both History and Geography and also reflects the skill set in mathematics)** *Questioning* – asking questions that will identify problems to be solved and that will help in drawing conclusions and interpreting information *Observing* – recognising and describing pattern and sequences in observation *Predicting* – make inferences based on suggestions and observations *Investigating and experimenting* – collect information and data from a variety of sources, appreciate the importance of repeating tests and experiments (i.e. asking the same questions in the Census at regular intervals and comparing the results) *Recording and communicating* – record and present findings and conclusions using a variety of methods *Evaluating* - review the methods used in investigations and assess their usefulness **Strand: Environmental awareness and care.** Become aware of the importance of the Earth's renewable and non-renewable resources and come to appreciate the need to conserve resources (Recycling activity), identify and discuss local, national or global environmental issues.
SESE: History	**Skills – see SESE: Science** But also the skills associated with **Change and continuity, cause and effect and using evidence** (for example, ask questions about evidence, recognise that evidence may be incomplete or biased, appreciate that evidence can be interpreted in a number of ways). Using previous census data as evidence. **Strand: Continuity and change over time.** Identify factors which may have caused or prevented change.
SESE: Geography	**Skills – see SESE: Science** **Strand: Human environments.** People at work – the role of county, national and rural service agencies… In this case the CSO and the people it employs, the effect of census data on decisions in relation to movement of people (Strand Unit - county, regional and national centres), on the local environment (housing etc) **Strand: Environmental Awareness and care. As SESE: Science** plus - come to appreciate individual, community and national responsibility for environmental care.

SPHE	SPHE is a generic approach, which aims to develop in the child a generic set of skills, attitude, values and understanding relevant to a range of social, personal and health issues. It requires the children to be engaged in activity-based learning and encourages them to ▪ experience and discover the learning for themselves ▪ construct new meanings and acquire new understanding ▪ take responsibility for their own learning ▪ internalise what has been learned ▪ become more critical and discerning ▪ become able to transfer learning to different situations. Apart from the active learning strategies recommended in the SPHE Teacher Guidelines, the Strand "**Myself and the Wider World**" relates particularly to the Census activities. Page 73 of the SPHE Curriculum also provides an excellent checklist for teacher observation in all areas of group work and is particularly helpful in working with the Census materials.
Other curricular areas	It is also recommended that the techniques and skills used in the Visual Arts Curriculum are explored when designing Census posters, bookmarks, advertisements etc. within the activities. Functional design of a poster, bookmark or advertisement should not just mean use of drawing or paint and colour but could include fabric and fibre, print or even construction.

Content of the Census 2006

What's in the material?

There are three separate sets of lessons

- First and Second Classes
- Third and Fourth Classes
- Fifth and Sixth Classes

Are the lessons easy to follow?

Each lesson addresses an aspect of the Census process and follows the same structure

- Theme and key messages
- Objectives and Assessment
- Teacher Observation tips (Page 73 of the SPHE Curriculum also provides an excellent checklist for teacher observation in all areas of group work and is particularly helpful in working with the Census materials)
- Basic lesson structure
    - Mental/oral starter or brainstorm
    - Lesson focus and variety of activities
    - Plenary or discussion session
- Extension work
- Home/school links
- What resources you need for each activity.

What if I have a multiclass situation, have a number of international children in the class or have children with SEN integrated in my class?

Class Lesson Overviews are provided for each level (First/Second, Third/Fourth and Fifth/Sixth) so that you can identify in advance the themes, the language being covered and the key messages for each level. An **Overview of resources** is also provided so that you can mix and match the resources according to the needs of your children rather than just their class level.

Some of the language used in the activities may be challenging for particular children, but it is not intended that they learn to spell or write the words rather that they understand, for example, that the 'enumerator' is the name of the person who comes to the house with the census form.

Some of the resources are available in WORD format and can be easily saved to your own computer and adapted for use with your particular class or group of children.

- In supporting children with SEN for example, you could simplify the existing text or replace it with symbols.
- Activities listed for younger children can be used to support weaker readers in a senior class or as flashcards on a chart as a support for written exercises.
- Children with language difficulties or for whom English is a second language can be paired with other children during the oral sessions and they can use them as their **'Word Buddy'** to help them understand any new or difficult terms.
- Alternatively you can just print the sheets and photocopy them for immediate use.
- The block, bar and line graph templates which are available in WORD format can be used in many different ways to support your mathematics or science

- curriculum work. All you have to do is change the number ranges and/or the topic headings.

The importance of data in the Primary School Curriculum

Getting the information together

Collecting, classifying, organising and representing data

Collecting data
Classifying data
Organising and representing data

Displaying the information so that others can understand it

Using concrete materials, diagrammatic, graphical, and pictorial representation appropriate to the child's age and stage of learning.

Why do children need to know how to interpret data?

Children and parents are being bombarded in the media with information from nutrition to the relative qualities of cat food (9 out of 10 cat owners said…). It is vital in this increasingly visual world that children learn how to read images and graphs just as they learn to read words. This skill is also highlighted in both the primary curriculum and the Junior Cycle English syllabus where there is an emphasis on reading and writing in different genres and on reading images and graphical representations.

An Overview of the Primary Curriculum Mathematical Skills as they relate to the Strand Data

Data: Broad objectives

- *Collect, classify, organise and represent data using concrete materials and diagrammatic, graphical and pictorial representation*
- *Read, interpret and analyse tables, diagrams, bar charts, pictograms, line graphs and pie charts*
- *Appreciate, recognise and express the outcomes of simple random processes*
- *Estimate and calculate using examples of chance*
- *Use acquired concepts, skills and processes in problem-solving*

Specific mathematical skills being addressed while engaging in data activities.

	Infants	First/Second	Third/Fourth	Fifth/Sixth
Applying and problem solving	• *Select and apply appropriate strategies, materials and processes for completing a task or solving a problem*	• *Select and apply ...* ***in a variety of contexts***	• *Select appropriate* ***concepts*** *...*	***Select and apply appropriate strategies, materials, processes and concepts both in mathematics and in broader cross-curricular contexts***
	• ***Recognise*** *solutions to problems*	• ***Recognise*** *solutions to problems*	• ***Analyse*** *problems and plan an approach to solving them* • *Evaluate* ***solutions to problems***	• ***Reflect upon*** *and evaluate solutions to problems*
Communicating and expressing	• *Discuss and explain* ***own*** *mathematical activities and problems presented concretely, pictorially or orally.* • ***Record*** *the results of mathematical activities concretely and using diagram and pictures*	• *Listen to and discuss both own and* ***other children's*** *mathematical descriptions and explanations* • *Discuss and explain mathematical activities and record results using diagrams, pictures and* ***numbers***	• *Discuss and record using* ***a variety of methods*** • *Discuss and* ***carry out analyses***	• *Discuss, record and explain* ***in an organised way*** *and using a variety of methods*
Integrating and connecting	• *Connect informally acquired mathematical ideas with formal mathematical ideas* →			
	• ***Recognise*** *mathematics in the environment* →			

	• ***Recognise*** *the relationship between verbal, concrete, pictorial and symbolic modes of representing numbers*	• ***Understand*** *the mathematical ideas behind the procedures he/she uses*	• ***Represent*** *mathematical ideas and processes in different modes: verbal, pictorial, diagrammatic and symbolic*	
	• *Carry out mathematical activities that involve other areas of the curriculum*		• ***Recognise and apply*** *mathematical ideas and processes in other areas of the curriculum*	
Reasoning	• *Classify objects into logical categories*	• *Make guesses and carry out experiments to test them* • *Recognise and create mathematical patterns and relationships*	• *Explore and investigate mathematical patterns and relationships*	• *Search for and investigate mathematical patterns and relationships*
	• *Justify the results of activities*	• *Justify the processes and results of activities*	• *Justify processes and results of activities, problems and projects*	
Implementing	• *Use appropriate manipulatives to carry out mathematical tasks and procedures*	• *Execute procedures efficiently*	• *Execute procedures efficiently with a variety of tools*	
Understanding and recalling	*In order to apply the above skills it will be necessary to understand and recall facts, definitions and formulae*			

Including the children in their own assessment

We have linked the assessment to the objectives so that you can evaluate how well the children have understood the activities. In most cases we have provided a 'performance task' so that it will be very obvious whether or not the child can complete the task. As oral language is an important facet of all of the activities, it is important that the children are encouraged to use the correct terminology in context while completing the activities. The use of pair and group work is important in any activity that requires extended use of language – see the Word Buddy idea above.

Working in pairs and small groups enables children to use vocabulary meaningfully, to clarify their own thinking and to listen to other people's points of view. For the teacher it provides a rich source of information on the children's general problem-solving abilities and level of development right across the curriculum.

It is also important that they understand the reason for embarking on this topic. We have included the key messages at each stage so that the work has a very clear focus and this can be clearly communicated to the child.

Share your key messages and objectives with the children through questioning – they'll never hit a target they can't see!

- What are we going to investigate?
- Why are we doing this?
- How are we going to go about it – what will we use to show our results?
- What will we do to show we have understood what we are learning?
- What will you do if you don't understand something? Are finished before the others?

Teacher Observation Tips

This section aims to point teachers towards other sources of information about the children in their class. If you notice that children are having problems sequencing information then you can re-present it again in another curricular area. (Page 73 of the SPHE Curriculum also provides an excellent checklist for teacher observation in all areas of group work and is particularly helpful in working with the Census materials).

Some questions

Which key messages did the children take on board easily?
Did they show that they were developing a variety of skills or only one?
Can you provide further practise in other curricular areas for those who were struggling?
Did you notice anything surprising when the children began to try out the extension activities? For instance did a quiet child take a more active role; did a very bright child show a lack of ability to work effectively in a group?
Does a particular child just not listen to the opinions of others?
Can I use these key skills in other areas of the curriculum?

Using ICT in data handling
The use of ICT in education is emphasised in the Primary School Curriculum. ICT in data handling:

- encourages children to develop classification skills
- facilitates use of real-life problems by allowing them to manipulate large or awkward data sets
- spreadsheets can allow for multiple representations of data sets and facilitates comparison of data
- ICT can stimulate children to pose further questions on the data collected as it is displayed clearly and professionally

It can also greatly enhance their experience of the data collection cycle.

Interesting websites
www.cso.ie
www.pcsp.ie

Acknowledgement

The Central Statistics Office wishes to acknowledge the invaluable work of Valerie O'Dowd and Carmel Burns in producing this resource.