



EE-OU-4-CS

## **Case Study**

# **The use of the Elicitation Engine in the 'Language, Thinking and ICT in the Primary Curriculum' research project (funded by the Nuffield Foundation)**

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## **Summary**

This case study describes the customisation and use of the Elicitation Engine within a project designed to develop children's use of language for reasoning. The children are taught to use 'ground rules' for talk that develop their use of language as a tool for reasoning and constructing knowledge. These ground rules are then applied to the teaching of science, maths and English, using a programme of lessons prepared by the researchers on the project. Many of these activities use specially designed ICT -based activities. The Sorting Activities created using Elicitation Engine are designed to allow children to talk effectively to explore the idea of categorisation in maths and science.

# Language, Thinking and ICT in the Primary Curriculum

## Context

### Where?

This case study is set in the context of a research project involving about 185 9-10 year olds from four primary schools in Milton Keynes. This is the latest in a series of projects in the area where researchers from the Open University have worked alongside teacher researchers to investigate the impact of the teaching and use of effective methods of shared reasoning to create a community of enquiry in the primary classroom. Children are guided in their use of language as a tool for both individual reasoning and collaborative problem - solving. Computers are used as a tool for stimulating effective talk, but importantly, also as a means of focusing children's joint activities on curriculum topics. The current research project has a particular focus on the impact that this use of language for reasoning has on children's understanding of concepts in science and maths.

### When?

The project lasts for two years. It began in March 2000 and will be completed in March 2002. There are three phases.

**Table 1 : Project phases**

Phase	Staff	Activity
Phase 1 March - August 2000	Neil Mercer, Rupert Wegerif, Claire Sams(OU), Lyn Dawes(BECTa), Steve Higgins (University of Newcastle, in consultation with an advisory panel. Guy Barrett (OU)	Development of a draft professional development pack, identification of activities and software development, identification of target and control schools, preparation of means of evaluation and assessment
Phase 2 September 2000 - July 2001	As above , working in collaboration with teacher researchers with assistance from research student Manuel Fernandez-Cardenas.	Implementation in schools.  Initial training day and pre intervention evaluations followed by set of lessons to establish ground rules for talk. Further set of lessons January - March 2001 including the Sorting Activities version of EE. A final set of lessons focussing on application of ground rules to computer mediated communication from April - June 2001, followed by post intervention evaluations
Phase 3 August 2001 - March 2002	As above	Analysis and dissemination to be carried out.

## **Why?**

EE was customised for use in this project for the following reasons:

- It provided a well - structured set of open - ended activities that encouraged and helped to scaffold effective discussion amongst groups of children working together. The instruction screens were adapted to do this. The initial sorts encouraged discussion of a wide range of possibilities for categorisation. The subsequent sorts gave opportunities for reflection
- A variety of data sets relevant to the science and maths curriculum could be used. This made it efficient both in terms of development and of use by the children. Once they had learnt how to use the software, this knowledge could be applied to other data sets.
- The perspectives tool allowed the introduction of an 'expert' so that sorts according to categories relevant to the curriculum area could be demonstrated, to form part of the follow - up teaching in the plenary part of the lesson.

## **Who Paid?**

Time for preparing and evaluating these activities was included in the project bid to the Nuffield Foundation.

## **Practice**

### **Who?**

Table I (above) gives a summary of the staff who are involved in the project. Rupert Wegerif initiated the adaptation of EE in consultation with other members of the team and with advice and support from Guy Barrett of AACCS. Steve Higgins, of Newcastle University, gave advice about the content of data sets of numbers and shapes. Rupert Wegerif and Claire Sams collaborated on the revision of the information screens so that they could be easily used and understood by primary school children. Claire Sams then wrote lesson plans for use by the teachers in conjunction with the software.

The teachers in the project schools taught the lessons. They were visited and supported by researchers from the Open University, who made video recordings and observations of the lessons.

### **What?**

The activities involve groups of children sorting a number of items according to categories that they talk together to identify as valid. Three different sorting activities were developed using EE. The first of these related to different types of food. Groups of children had to talk together to devise categories into which to sort pictures of several different types of foods. The other two activities related to maths. One of these required the children to discuss categories for sorting a group of numbers. The other required them to categorise a set of shapes.

The aims of the sorting activities EE software are to:

- Apply children's knowledge of the ground rules for talk to ICT activities involving decision making drawn from the science and maths curriculum.
- Extend the children's reasoning skills in the context of categorisation.
- Scaffold the opportunities for effective talk in a shared ICT - based activity through the use of prompt screens to guide children through an open-ended sorting task.
- To enhance the development of mathematical and scientific understanding.

## **For whom?**

The Sorting Activities software was initially adapted from EE and embedded in lesson plans for the children participating in the research project of which it was a part. It is intended that the materials will be made much more widely available to teachers and pupils through the publication of a series of 'Thinking Together' lessons relating to this and other software, professional development opportunities for teachers and the establishment of online communities and banks of resources. These will be targeted at a wider range of age groups, covering most of the primary and part of the secondary phases of education.

## **How?**

In the project we combined pedagogy and the adapted version of the Elicitation Engine to stimulate and support learning through talking together around computers.

The software was installed and demonstrated to teachers. Lesson plans were written to guide teachers in its use. Both the software and the plans were in a draft form, to allow for adaptation in response to feedback from the teachers and children, as well as from the observations of researchers.

Each lesson lasted for one hour and lessons were held once a week. In this way the children had three hours working on the sorting activities. These lessons took place during the second phase of the implementation of the programme in schools. During the first phase the children had been trained in the 'ground rules' for talk, working together to establish a class set of rules and practising the application of these in a series of specially devised talk lessons.

The lesson plans to support the Sorting Activities are included in Appendix A (*add these*)

## **Outcomes**

### **What worked?**

Detailed analysis of the lessons using this software has yet to be undertaken, but feedback from the teachers has included the following comments and observations.

An excellent lesson in one school, using the food sort. The children were great at suggesting all sorts of ideas about how to categorise it, e.g. 'round food!' and were able to talk effectively about the similarities and differences sections. It is necessary to develop the perspectives tool using the 'food expert' part so that it is available for the plenary as this part of the lesson needed more input relating to the scientific ideas about how to sort food.

Comments from teachers have included frustration at not being easily able to save sorts already done so that they could carry on next lesson: one group never got beyond the first 3 sorts as the time for the lesson was too short to complete this and move on. One teacher said that his children hadn't enjoyed it much. Also some of the pictures are hard to see and tell apart.

### **What evidence?**

The following performance indicators will be used to evaluate the software:

- Did the software support effective discussion?
- Did the software help children to reflect on their existing understanding in aspects of maths and science, by talking together, in order to refine and extend it?
- Were the children able to use talk effectively in response to the screen prompts?

### **Any problems?**

*Obstacles and difficulties.*

The Elicitation Engine proved very difficult to adapt. The tutorials and help files are built into the macromedia director code and yet are specific to the 'Trunk' exercise. Switching them off did not work so these had to be 'patched'. Loading new data files proved difficult as the conventions required were very precise and easy to miss. The credits at the end refer specifically to the E211 course. For some reason it was impossible to create an installer for the Elicitation Engine and we had to move the whole thing over by hand from CD to machine ourselves for each machine.

In short the Elicitation Engine requires considerable re-programming if it is to be re-usable in different contexts.

### **What's new?**

Use of EE specifically to promote learning through talking and thinking together in groups.

### **So what?**

Could be used across the school curriculum in conjunction with a pedagogical approach to ICT stressing the importance of talk around the computer and preparing children for this before giving them the activities.

## Author Details

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## Related Publications

### **Author/Editor(s) (Date) Title of Publication, Publisher, Date of Publication, Location, Publication Type, ISBN**

Wegerif, R., Mercer, N. and L. Dawes (1998) Software Design to Support Discussion in the Primary Classroom. *Journal of Computer Assisted Learning*. 14 (3): 199-211. ISSN 0266-4909

For other case studies describing how the EE has been customised for use in other contexts visit the Re-usable Educational Software Library at [www.resl.ac.uk](http://www.resl.ac.uk) and search for Elicitation Engine - this will provide information on at least 6 uses of the Elicitation Engine across subject domains.