

Using ‘Odd One Out’ in Developing Thinking with ICT

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We undertook the work described in this case study during a Spring term. We work in a First School teaching a Year 2 and Year 4 classes. The key focus for the work was to evaluate the use of ICT to further develop children’s thinking. We looked at the comparisons between Key Stages to see how the children developed their thinking skills and whether ICT was an effective tool to support this.

Aims

Our aim was to create a range of ‘odd one out’ activities on the computer to develop children’s thinking in Science, Literacy and Numeracy. The thinking skills strategy is based on ideas in *Thinking Through Primary Teaching*, though we were keen to see how the ideas could be adapted for use with computers. We decided to use Microsoft’s *Publisher* as the children were reasonably familiar with the program. We created a series of templates together so that we could incorporate some differentiation and progression from KS1 to KS2.

Science activities

The templates consisted of some pictures of a range of animals for the children to choose and discuss the similarities and differences between them. There was space provided on the template for the children to write their reasoning behind their particular choices. The children needed to choose the odd one out in a series of pictures then type in their reasons for this choice. As a secondary focus the children

were asked to develop this idea further and type their reasons why the other pictures were similar. To develop the children’s thinking between KS1 and KS2, the Year 4 template included more animals and opportunities for the children to really extend their understanding of the variety of animals and the differences and similarities between characteristics, behaviour, habitat, prey and young.

Literacy activities

Again the templates were created by us collaboratively to ensure there was some progression and continuity in the thinking skills required. The activities were based around the National Literacy Strategy’s *Framework for Teaching*, particularly some aspects of word level work and included a range of different spellings for the children to discuss which could be the odd one out. For the children in Year 2 the spellings required the children to look at blends, letter patterns, rhyme, initial and final sounds and vowel diagraphs. In Year 4, the templates used had the potential for the children to discriminate between word types including verbs and adjectives and included a focus on alliterative vocabulary. The children used similar techniques to find initially the odd one out and justify their choice and then discuss how the others in the set might be similar.

Numeracy activities

The templates were created to fit with the units to be covered in the National Numeracy Strategy’s *Framework for Teaching Mathematics* and the focus year groups. The ‘Odd One Out’ template asked the children to choose and justify their reasons for selecting the odd one out and the similarities between the other numbers in the set.

Impact

We found that children in both KS1 and KS2 easily responded to this approach undertaking odd one out activities at the computer and using the templates to record their ideas. They could extend their particular knowledge in each of the subjects that we used and were able to justify their thinking.

All of the children regardless of their current level of attainment were able to participate successfully in these activities. After a couple of sessions the children became extremely motivated and enthusiastic and enjoyed the fact that there was no specific set answer with a right or wrong solution. They were able to discuss their answers in groups. This certainly helped develop their speaking and listening skills, as they needed to justify clearly to the rest of the group their choices and their reasoning. All children were able to offer some ideas varying from basic visual differences to more extensive and challenging comparisons and differences. Debating, challenging of ideas, reaching a compromise, listening to others, justifying choices were all observed in the working groups. All children were aware that any one choice was as good as another as long as their justifications clearly explained their choices.

The children worked in small groups, on the computer, and individually. The children needed to be supported in the early stages as we discussed with them the requirements of the task and techniques they could use to decide upon their choices and justifications. For some children their discussion and justifications proved fairly challenging but with support and praise the children soon became more familiar with this way of working. They enjoyed working in collaborative groups. This pupil-led debate proved an excellent extension of their understanding in the area of the scientific vocabulary and knowledge of the variety of life: a subject covered in Year 2 and in greater depth in Year 4. The children were also able to use appropriate vocabulary and could discuss properties of numbers, spelling patterns and other aspects of science.

In the number 'Odd One Out' activities the children's level of understanding could be assessed from the responses that they gave. The children's choices were very varied. Some chose basic differences such as number of digits to more complex properties or reasons involving calculation differences (one example for a reason was that one of the numbers was the only one whose digits didn't add up to 8). The older children were then asked to devise their own 'Odd One Out' activities. This task proved very successful in giving the children the opportunity to extend their own thinking about the properties of numbers. They needed careful planning and justification that the numbers could be similar in some way but so that there could be several choices for an odd one out too.

Their justifications were not only an excellent method of achieving collaborative work and extending their thinking, but it promoted assessment strategies to let us evaluate each individual's knowledge and understanding of the specific curriculum areas. The activities developed the

children's interpersonal skills; promoting an enquiring mind and capacity to think rationally and to analyse their own solutions. The pupils were developing criteria and were valuing each other's ideas while developing confidence in their own judgements. From our standpoint as teachers these collaborative (and in some cases individual) thinking skills activities were a fantastic way of providing a stimulus for discussion which generated debate through extending and assessing the pupil's knowledge of the subject. Incorporating thinking skills into the curriculum as a means of infusion rather than stand-alone thinking activities can offer all children access to the curriculum and the opportunity to achieve success. We think that these activities have allowed the children in both key stages to have access to and to develop their own strategies for thinking, promoting awareness and control of their own thinking (metacognition).

Was ICT the best medium to support these thinking skills activities?

The main aspect of ICT which we used initially in creating the templates was the ability to make changes quickly and easily to develop a series of tasks. These templates were attractive to the pupils, bright, colourful, and easily amended and changed when we needed to differentiate for specific groups. A further benefit was that the same activities could be used with the children in our classes with special educational needs by selecting examples which suited their abilities in terms of the choices we provided. This aspect highlighted for us the benefits of 'Provisionality' in using ICT as a medium (one of the functions of using ICT from the NOF outcomes). Also the templates could easily be created using clip art and sound (where required for children with reading difficulties) and images could be imported from photographs from the Internet (exemplifying 'Capacity and Range'). The templates were created in advance which meant that the children could not alter the originals but could only make changes and add their ideas by typing in the areas specified. The use of ICT supported creating a document that can be arranged, changed, saved and printed to create a paper based resource easily and efficiently. The activities would have worked extremely well with a digital projector and software like Microsoft's *PowerPoint* to use as a starter or plenary to a lesson in any subject.

Further information

Higgins, S. (2001) *Thinking Through Primary Teaching* Cambridge: Chris Kington Publishing ISBN 1 899857 39 7