

Section 1: ICT, Talk and Thinking

Overview

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Talking and thinking

Research based at the Open University has explored the potential for teaching thinking through teaching talking. Working closely with primary teachers, we have produced a series of 'Talk Lessons' in which classes establish ground-rules for collaboration such as listening with respect, responding to challenges with reasons, encouraging partners to give their views and trying to reach agreement. While these activities are concerned with improving the quality of children's working relationships the main focus is on developing their use of language as a tool for reasoning and constructing knowledge. The Talk Lessons encourage teachers to create a 'community of enquiry' in their classrooms in which children are guided in their use of language as a tool for both individual reasoning and collaborative problem-solving. The theory behind this, from the Russian psychologist Vygotsky, is that children learn to think individually through first reasoning with others in dialogues. The idea is that individual reasoning begins as a kind of conversation with oneself that is an 'internalised' version of conversations children first have with others around them.

Evaluations of this approach to teaching thinking skills have shown that:

- a) teachers can help children understand how to communicate together effectively and increase their use of talk for reasoning;
- b) the increased use of explicit, reasoned discussion improves children's ability to solve problems together working in small groups
- c) the increased use of explicit, reasoned discussion also improves children's individual scores on a standard test of reasoning (Raven's Progressive Matrices test).

Teaching talk

To teach the children how to talk together more effectively we came up with a list of ground rules to support collaborative learning and devised a set of lessons to teach these. Some of these lessons have now been published (see the further information section at the end). The ground rules we sought to promote were:

- All relevant information is shared openly.
- Each group member should be actively encouraged to contribute to the discussion.
- Everyone should listen to others attentively.
- Each suggestion should be carefully considered.
- Group members are asked to provide reasons for ideas and opinions.
- Constructive challenges to ideas are accepted and a response is expected.
- Alternatives are discussed before a decision is taken.
- The group works together with the purpose of reaching agreement.
- The group, not the individual, takes responsibility for decisions made, for success achieved or for problems that may occur.

In a key early lesson in this series, after the children have had some experience of group work, the teacher leads the class to agree upon one set of rules for talking together. These emergent ground rules are written down by one of the children on the board as they are produced. The teacher goes through each rule to ensure all the children understand it. Some of the rules the children propose may be inappropriate for the group work setting they are being asked to consider (like '*don't talk unless you have your hand up*'). The teacher explains why these are not suitable for inclusion; and of course he or she has to lead them towards agreeing a set of rules which are suitable for generating effective talk. Surprisingly often, however, children do offer many rules that match the ground rules that we are looking for. The

¹Writing on behalf of an Open University based research team including Lyn Dawes, Neil Mercer and Claire Sams.

teacher concludes this discussion with the production of a final set of 'class ground rules for talk'. This list of ground-rules is then displayed prominently on the wall of the classroom. The succeeding talk lessons are designed to enable the children to practice and evaluate these rules, in activities related to a range of curriculum topics.

The role of computers

Teaching children how to talk together and reason together is all very well in itself but how does this relate to teaching the curriculum? We have found that computer-based activities are an effective way of infusing thinking skills into subject area teaching and learning. This is because, with the right teacher input and software design group work around computers can turn reasoning skills into learning outcomes. The computer has a special role to play here. Computers can initiate, resource and frame a discussion as a teacher can, but unlike teachers they are never judgmental and have infinite patience. Once children had gone through our 'Talk Lessons' we found that when the computer prompted them with a challenge or a question they were able to sit back from the screen and discuss the issue together before reaching a shared decision about what response to make. In this way they construct their own understandings together but in a way that is directed towards curriculum goals by the computer software.

Software for collaborative learning

Our research analysing at video-tapes of pairs and small groups of children working around computers has given us some clues as to what software features help to establish and sustain effective talk:

- Challenges and problems which have meaning for the children, and which provide a range of alternative choices that are worth discussing. Such challenges should engage the children with

the content of the software rather than its interface.

- A clear purpose or task which is made evident to the group and which is kept in focus throughout.
- On-screen talk prompts which ask the group to talk together, remind them to reach agreement and ask for opinions and reasons.
- Resources for discussion, including information on which decisions can be based, and opportunities to review decisions in the light of new information.
- No features which encourage individuals to take turns, beat the clock or establish competitive ways of working.
- Multi-choice answers to minimise typing (unless the children have been taught keyboarding skills which is really a very good idea!)

We have used these guidelines to design software. We have also used them as a basis for selecting software that can be used to support collaborative learning.

Working with ICT

The software alone does not define an educational activity. The way that teachers set up the activity and integrate it with the rest of their teaching is crucial. Our research found that the 'Talk Lessons' described earlier made a big difference to the quality of collaborative learning around computers. They gave the children guidelines for working together.

We suggest a three-part structure to lessons, with the teacher setting up issues and aims at the beginning and then returning to these in a whole group plenary session at the end after group work by the children. We find that this is a good way of integrating work with computers into the curriculum. The aim of group discussion needs to be made explicit in the aims for each lesson, and the plenary session is crucial for ensuring that children feel that they have achieved the lesson aims. Through this process they become aware that their talk together at the computer can make an important contribution to their learning.