

## Speaking and listening activities for maths

The following suggestions are taken from the posters in the Speaking, Listening, Learning: working with children in Key Stages 1 and 2 box. Ref: DfES 0623-2003 G. The posters on Listening, Speaking, Group Interaction and Discussion and Drama give examples of classroom techniques and the ideas below give a mathematical application for each technique.

### From Listening poster

#### Babble gabble

*The teacher tells the children a story, explaining that afterwards they are going to work in pairs to retell it. After the initial telling, one child begins to retell the story to a partner as fast as he/she can, but with as much attention to detail as possible. After a minute the teacher calls, "change" and the listener now has to continue the tale. This pattern continues for a number of turns.*

#### Mathematical applications

- Having modelled a particular calculation strategy the children use this technique to describe to their partner how to do a particular calculation that is written on the board. Change every 10 seconds. This could be used for methods of expanded or contracted calculation, and also applied to situations where the children need a particular process in order to do something e.g. measuring angles using a protractor.

#### Barrier games

*Barrier games focus on giving and receiving instructions. The speaker has to give clear information and explicit instructions to the listener. The listener has to ask and answer questions to clarify understanding and gain information*

#### Mathematical application

- In pairs one child has a pattern of shapes drawn on a piece of paper. They must describe this to their partner who can't see it so that their partner can draw the same pattern. Not allowing children to name the shapes, or use certain words may add extra challenge.
- Partner A has a map with things labelled on it. The other child's map has no labels. Partner A must give directions to enable their partner to label their map too.
- One child to use coordinates to enable the other child to reproduce the same picture as they have.

### Word Tennis

*This is a way of making a story with a partner or group. Each person says one word or phrase in turn so the story is continually passed around*

### Mathematical application

- Use calculations, for example one child starts by saying "3" the next continues with "+4" the next with "=7" then  $-4/ =3/ +5/=8$ . Could add challenge by saying that numbers have to be 2 digits, or include decimals.
- To give properties of shapes e.g. a square/ has four / equal sides/ and four right angles/ and 4 lines of symmetry/ the window is square/
- Use a line graph so the story the children tell has to be represented by the line graph.

### Telephone conversations

*To emphasise the need to use language rather than gesture, children sit back to back with "telephones" for conversation*

### Mathematical application

- Discuss how many paving slabs of 1m square are needed to go round a 3m square pond.
- Explaining to the other person what the information from a graph is saying.
- Describing how to make up a bottle of babies milk (involving measuring)
- Using geoboards one partner to make a shape on the geobaord and describe to the other how to make the same. (like a barrier game)
- Make a 3D shape using linking cubes and describe to the partner how to do this so they can make the same shape.

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### From speaking poster

#### Just a minute

*Give the children a topic and ask them to speak without hesitation, deviation or repetition for up to a minute.*

#### Mathematical Application

Topics could involve

- Shapes e.g. quadrilateral, circle, cuboid
- Measurements e.g. using scales
- Number e.g. what can you tell me about 36?  $\frac{3}{4}$ ?
- Operations e.g. subtraction

The other children in the class could be invited to challenge if they hear repetition or hesitation and they must carry on till the time limit.

#### Radio Broadcast or presentation

*Ask pupils in groups to make a presentation. The topic should involve explaining and reasoning, or trying to persuade the listeners.*

#### Mathematical application

For maths it may be better in most cases to allow the audience to see the presenter as illustrations will probably be needed. Topics could include

- The finding of data surveys e.g. pupil attitude towards homework, uniform, healthy eating. Data needs to be presented and interpreted with the "so what" question answered.
- Showing the results of an investigation, and describing the process.

#### Photos and Paintings

*Use photos and paintings to encourage groups to construct a story or report.*

#### Mathematical application

- Show the children a photo of something being done incorrectly and ask them to explain what the person is doing wrong and prepare advice to help them get it right. E.g. video someone using a ruler incorrectly, photograph a calculation where the person has made a mistake.
- Show the children pictures of two correct but different calculations of the same question and ask them to explain what each child has done and how they would do it and why.

### Talk Partners.

Put children in pairs and allocate a time for each to talk to the other at specific points in the teaching sequence e.g. to generate ideas, reflect on their answers, and consider their learning.

Topics might include:-

- Odd one Out - Of these three numbers/ shapes which is the odd one out and why? 7, 12, 21. There is no right answer to these questions, they are good for developing reasoning e.g. I think 12 is the odd one out because the other numbers are even, or I think 7 is the odd one out because the others are multiples of 3.
- Tell your partner what you have learned today.
- Think of an answer then discuss it with your partner, explaining how you worked it out. Did you and your partner work it out in the same way?

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### From Group Discussion and interaction poster

#### Snowballing

*Children are organised into pairs and given a task. The pairs then join another pair to make a four and the fours join together to make an eight. The eights could join to make a 16 then the whole class could come together at the end.*

#### Mathematical applications

Tasks could include

- What can you tell me about e.g. 24? Find 3 facts as a pair then choose 5 facts as a group of 4, 8 facts as a group of 8. Points could be awarded if the children use correct vocabulary or different words. E.g. 8 is a factor of 24, 24 is a multiple of 3, 24 is an even number.
- Fractions decimals and percentages could be used for this. E.g. what can you tell me about 25%
- What do you know about a cube? ( or any other shape)

#### Think - Pair - share

*Children are asked to consider an issue or problem individually. They then explain their ideas to a partner. After the pairs have discussed the issue they may join another pair and emerge with a group idea.*

#### Mathematical applications

Tasks could include

- Deciding the best way to investigate a question like how many people would be able to sit in the school hall? Or how could we find out how much orange squash we would need to give everyone a drink. The children could use think-pair-share to generate the questions they would need answering before they could begin work.

#### Jigsaw

*Children are organised into home groups and each child given a number. The children then go into expert groups according to the number they have been given. These children become experts at what they are given to do. They then reform into the home groups and use all the expertise for a task.*

### Mathematical application

- Expert groups could learn about angles and their different names, the names of different shapes, properties of lines e.g. parallel/perpendicular. When the children return to their home groups they could be given a picture incorporating lots of shapes and asked to list as many things as they can about what they see.
- Expert groups could learn about different ways of representing data, e.g. line graphs, pictograms, bar graphs and then home groups could be given some data and asked to choose the best way to represent it.
- Expert groups could look into the uses of different measuring implements e.g. callipers, calibrated callipers, tape measure. In their home groups they have a variety of things to measure and they need to work together to choose the best piece of equipment to use.

### Envoys

*This is a method of disseminating ideas and information. Once each group has completed its initial discussion, it sends out a member as an envoy to the next group. Envoys move around all the other groups in turn explaining/sharing ideas gathered from the groups they have visited.*

### Mathematical application

- Give different groups different materials e.g. peg boards, multilink cubes, pens and paper, and ask them to represent e.g.  $\frac{3}{4}$  using them. Share ideas.
- Give the groups some data to represent and then envoys see how the different groups have done it.
- Ask the children to solve a problem in groups and then share ideas about how they did this.

### Statement Game

*A group is given a set of cards on which statements are written. The group is asked to agree, through discussion, how to categorise the statements.*

### Mathematical application

- Given a set of statements children sort them into true, false, sometimes true. (statements can be found in the supplement of examples section of the NNS framework)

## Speaking and listening activities for maths

### From Drama poster

#### Freeze Frames

*Freeze frames are still images or silent tableaux used to illustrate specific situations. Freeze frames can be improvised or planned briefly. Positioning and body shape have to be considered carefully in order to represent ideas.*

#### Mathematical application

- Ordering numbers. - Groups of children take on the role of different numbers 1 to 10, line up in order. Other children could guess what number they are. Could be to do with how tall they are standing, or how happy they look.
- Doubling and halving. - In pairs children choose 2 (between 0 and 50) numbers one of which is half of the other - create a frieze frame to show this, showing the relationship between themselves but also between the 0 to 50 limits. Others guess which pair of numbers they are showing.
- Size/importance of numbers - In pairs children choose 2 numbers between 0 and 10 (could use different limits) and make a frieze frame showing how these numbers may behave towards each other.
- Size/importance of numbers - Teacher to lead - If this is 100% (may be running really quickly on the spot, or grinning madly) show me what 50% would be or 10%.
- Odd/even numbers - How might an odd number look? What about an even number? E.g. Odd number might hop around the room while even numbers jump with 2 feet; odd numbers might wave with one hand while even numbers wave with two.

#### Hot Seating

*Hot- seating involves the class asking questions of someone in role as a number.*

#### Mathematical application

- Play what's my number where the person being questioned knows the number, shape, mathematical word and the rest of the class ask questions to discover it.
- One person is given a number which he/she doesn't know - perhaps placed on a hat on his head - the questioner must ask the class questions to find what the number is.

### Conscience/decision alley

*Class divides into 2 rows of children and one of the class walks up through the two rows. At the end of this walk he/she needs to make a decision based on what he/she has heard as they walked. Each row of children takes a different point of view.*

### Mathematical application

- A child walks through the alley with a number which he can not see. One side of the alley tells him true things about the number and the other side tells him false information. The walker must say at the end of the alley what he thinks the number is.
- A problem is presented to the class and 2 ways of solving it suggested. Two rows are formed each one presenting arguments for their method of solving the problem. As the person walks through the alley the children give advantages for their method. The walker must say which method he is going to use and why.

### Forum Theatre

*A small group act out a scene while the rest of the class watch. The class or teacher then changes something in the scene and the actors continue.*

### Mathematical application

- Pair of children act out a shopping scene - one child buying something and the other giving change. Teacher steps in and declares there's a sale and everything is half price, or changes the amount of money the purchaser gives.