

How to ask better questions

1 Reflect on why you ask questions

It has been said that a classroom is the most complicated social system in the universe and this is a claim that resonates with teachers. It follows that much of what teachers do on a daily basis is intuitive and instinctive. It has to be for us to cope, let alone do a good job. So questioning, as one of the basic tools of our trade is intuitive – we are not often aware of how many questions we are asking let alone what kinds of questions we are asking.

This therefore is an area of our work it is worth standing back and reflecting on. Quite a bit of research has been done into teachers' questioning and much of it suggests that a very small percentage of questions teachers ask are 'higher order' questions that encourage pupils to talk and think. Ted Wragg's (1993) analysis of a thousand teacher questions gave the following breakdown:

- Managerial questions (e.g. who has finished all the questions?) 57%
- Checking for knowledge and understanding (e.g. how many legs has an insect?) 35%
- Encouraging pupils to talk and think (e.g. why is a bird not an insect?) 8%

What do you think would be the average breakdown in your classroom on an average day? Have you ever thought of recording yourself and doing an analysis? Do you think it would vary depending on the age group you are teaching, the topic you are teaching or whether you were interacting with the class as a whole a group of pupils or an individual?

2 Play fewer guessing games with pupils

There is no strong research evidence to show that one form of questions is invariably better than another irrespective of context. Indeed what makes a good question depends on the learning intention and the circumstances. It can be quite legitimate for teachers to ask questions to check for pupils' knowledge and understanding, or to diagnose pupils' difficulties at the start of a lesson or at crucial stages in a lesson.

But if you want to challenge pupils to extend what they know and understand then your questions must provoke thinking and discussion. Far too many questions involve pupils in a game of guessing what answer the teacher is looking for. These kind of questions simply require recall - they test what pupils already know understand or can do. They have been called **reproductive questions** –they may keep pupils awake but they do not cause new learning. Examples of such questions are

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- *What is photosynthesis?*
- *Can anyone remember the word for how plants make food?*

What many teachers need to do is to ask more **productive questions** that require pupils to use what they know and extend their knowledge and understanding. Examples

of such questions are.....

- *Why are the plants further away from the window not doing so well?*
- *If plants need light to grow, why aren't plants in the desert so small?*

Productive questions require and more complex, they may require justifying or explaining a conclusion or a point of view and they may have several right answers.

3 Ask more 'hot' or 'fat' or 'rich' questions

It has been estimated that in an average career a teacher will ask over a million questions, the vast majority of which they know the answer to!

Far too many of these are lower order questions which simply require factual recall. They are designed to get pupils to reproduce what they already know and to engage them in the lesson, but they do not require or produce thinking. These kind of questions may keep pupils awake but they do not help them to learn anything new.

Teachers need to ask fewer but better questions. These have been called 'hot' 'fat' or 'higher order thinking' questions. These kind of questions:

- focus attention: What does this tell us about...?
- force comparisons: What is the same and what is different about...?
- seek clarification: How can we explain...?
- stimulate enquiry: What would happen if....? What do we need to know?
- look for reasons How can we be sure that...? Why do you think that?

4 Ask hot questions in response to incorrect answers

If you want to experiment with your questioning in a small way and ask fewer and better questions then keep the following list of questions in your desk drawer or even put it on your classroom wall and get into the habit of asking these questions when someone gives an incorrect answer:

- What do you think?
- Why do you think that?
- How do you know?
- Do you have a reason?
- Can you be sure?
- Is there another way?

5 Ask more 'open' questions

Closed questions are questions which have a single right answer. Open questions have a number of possible answers.

Whether a question is open or closed may not lie in the question itself but in the teacher's reason for asking the question. 'What colour is the sky?' might be closed question in a science lesson and an open question in an art lesson for instance.

Traditionally it has been thought that closed questions are bad and open questions are good. It's true that often open questions work better than closed ones. For example, "Is 7 a prime number?" might elicit responses like "Err...yes I think so" or "No, it's not." This won't let you assess the pupil's understanding of the properties of prime numbers. Changing the question to "Why is 7 an example of a prime number?" forces pupils to think, and invites them to demonstrate that thinking.

6 Be aware closed questions can be 'fat'

There are some common misconceptions about open and closed questions. For instance we all think that closed questions are questions that have only one right answer and open questions are ones that have several right answers.

But Dylan Wiliam has pointed out that whether a question is open or closed does not simply rest in the question itself but in the teacher's purpose in asking the question – what the teacher is looking for. He gives the example of the question what 'colour is the sky?' In one classroom this might be a closed question because the teacher may simply be looking for one answer namely 'blue'. In another classroom the teacher may be looking for lots of different answers to the same question from grey to bright red.

Wiliam also points out that most of us think that closed questions are bad because they simply require reproductive thinking and that open questions are good because they stimulate higher order thinking. He points out that closed questions can be good when pupils have misconceptions because they can reveal these misconceptions and lead to discussion which can dispel them. Some examples are:

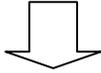
- Is grass alive or dead?
- Is it always true that metals are magnets?
- Does light travel from you eye to an object or from an object to your eye?
- Is it always true that mammals give birth to live young?
- Is it always true that water is a liquid?
- Are all squares rectangles?
- is it true that 1/10 is double

7 Use a range of strategies to 'fatten up' your questions

If you want to be do more than simply keeping some general hot questions around and being prepared to ask them when the time seems right (see idea 3) then there are a range of strategies you can use to 'enrich' 'fatten' or 'heat' up your questions no matter what topic or subject area you are focusing on.

They all involve asking pupils to think about possible answers rather than simply than simply recalling the right answer even where there is a right answer. They help pupils to apply what they know and understand in a context thereby consolidating what they know and understand. This is because they require pupils to consider if they know the answer to a range of smaller questions. The example below illustrates this.

What forms of renewable energy are more suited to some areas of the country than others?



What is meant by renewable energy?
Which types of renewable energy do I know?
What conditions are needed for the different forms of renewable energy?
How might different parts of the UK differ in relation to these conditions?

8 Leave more 'think time' for pupils

Research has shown that teachers leave very little time after asking the class a question before choosing a pupil to answer (often less than a second!) Yet to give considered responses to 'fat' questions, pupils need more thinking time.

You should leave three to ten seconds 'think' or 'wait' time when asking 'fat' questions. This acknowledges that thinking takes time. It also implies that the pupil, not the teacher, should be thinking.

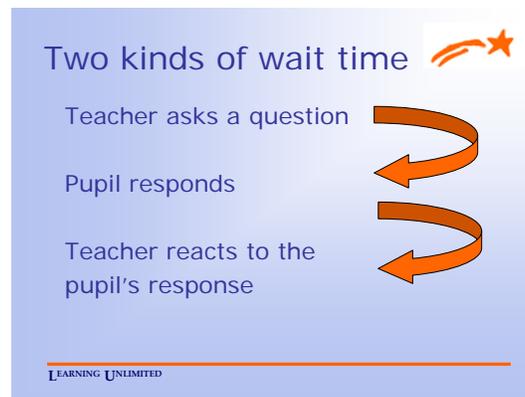
Other advantages of think time are:

- it helps pupils to rephrase ideas in their heads
- more pupils are likely to be able to offer an answer
- responses are usually more thoughtful and creative

Slowing the pace of classroom discussion is hard if you feel under pressure to cover content or you have a class with challenging behavior. It's also hard for both teachers and pupils to get used to. Some teachers combine it with 'no hands up' (see idea x)

9 Be aware that teachers need wait time too

There are actually two kinds of think or wait time.



As teachers we also tend to react to the pupil's response very quickly without giving ourselves time to interpret that response and consider how to respond.

We are particularly prone not to leave wait time **after** the pupil has responded when we are asking 'guess what I am thinking questions' We tend to come in with quick evaluative responses such 'yes', 'no', 'right', 'wrong' or 'nearly', 'almost', 'not quite'.....

Leaving more time after the pupil has responded allows us to use minimal encouragers (see idea 10) or to reflect on how to respond to the pupils answer.

10 Minimal encouragers

Minimal encouragers help children to keep talking. They are brief responses used to indicate that you are still there, listening. They involve saying very little and offer minimal direction. They can be sprinkled throughout the conversation but they may be particularly useful at the beginning where they can help to add momentum.

You might simply respond by not saying anything but raising your eyebrows or murmuring “mmm...” It suggests: “Please continue. I’m listening and I understand.” There are many others worth using, for instance: “Tell me more” “Oh?” “For instance?” “I see” “Right” “Then?” “You betcha!” “Yes really?” “And?” “Go on” “So?” “I hear you” “Sure?”

Minimal encouragers do not imply agreement or disagreement. “Right” does not mean you agree but “Yes, I hear what you are saying. Go on.”

11 Take an answer round the class

Questioning in many classrooms is like table-tennis. The teacher pings an answer to the class, picks a pupil to pong an answer back, then pings a reply back to them. One way to avoid this is to play volleyball instead and keep the game on the pupils’ side of the net by taking the answer round the class.

If it is a closed question ask one pupil the question and ask another if the answer seems right. Then ask a third pupil for an explanation of why it seems so.

With open questions if a pupil gives an answer that needs improvement, don’t suggest a change yourself. Instead, say “Wait there till we see what others think” and gather some answers or suggestions from other pupils.

Make a point of bringing these answers back to the first pupil and ask: “Which answer do you like best?” or “what do you think now?” This involves the rest of the class while still keeping the first pupil listening and thinking.

12 No hands up

This involves the teacher departing from standard practice and not asking for hands up to answer. Unless specifically asked, pupils know not to put their hands up when the teacher asks a question. The teacher can call on anyone to answer and everyone is expected to be able to answer at any time, even if it is an ‘I don’t know’.

The no hands rule can completely change the dynamic in the classroom and makes it difficult for pupils to switch off from class discussions. It’s much more likely to work well when used with increasing wait time to help students think about their answers.

No hands up can be difficult for both teacher and pupils to get used to. If it proves too much of a change an alternative is to continue with the standard routine of asking for hands up but if only a few hands go up to start with telling the class you are waiting for a few more hands to go up before you ask someone.

13 Signals for understanding

According to pupils, one of the things they appreciate in good teachers is that they “explain things clearly”. But how do you check that you’ve been clear enough? Teachers are using a range of ways of gathering feedback from pupils on how well they had understood something. The most popular is ‘**traffic lights**’.

‘Thumbs’ can be used for the same purpose as traffic lights (thumbs up understood, thumbs down don’t understand, thumbs across or ‘wiggly thumbs’ not sure) ‘**Fist and palm**’ is more sophisticated. Pupils were asked to show an open palm if they fully understood, or a clenched fist if they hadn’t a clue. Anything in between - including two fingers! - indicated partial understanding of different degrees.

There are lots of issues with this of course peer pressure, pupils not being clear about whether they have understood or not and using this as an opportunity to wind up the teacher being the main ones. These problems can be overcome by sharing what you are doing it, taking it seriously, working at the routine and making the signals more private.

14 Think, pair and share

Think, pair and share is a well-used technique for encouraging classroom participation and interaction.

First of all, pupils write down as many answers, ideas or suggestions as they can think of on their own (think). Then they pool their ideas with a partner (pair) and finally the teacher opens the discussion up for contributions from the class as a whole (share).

This simple strategy helps all pupils to learn by encouraging a sustained interaction between thinking and talking, both individually and in groups.

You can make it as flexible and formal as you like. Some teachers enforce absolute silence during the ‘think’ stage and as soon as the class are asked to ‘think, pair and share’ they know they have one minute to write down their ideas without any talking.

15 Ask for five

In a class with a wide range of abilities, teaching to the middle of the class can often seem to be a safe compromise. Unfortunately, while it may not over-stretch the less able, it can also leave able students bored and dissatisfied.

One alternative is to ask pupils to write down five ideas, solutions, possibilities, suggestions etc about the topic under discussion. After allowing an appropriate amount of time, different pupils can then be asked for just one idea each.

Asking for five stretches able children without exposing those who aren’t able to think of five ideas. There is also the possibility that those pupils will be able to add to their own ideas as the lesson proceeds.

This idea can be combined with ‘think, pair and share’ (see idea 14)

Workshop on Assessment for Learning: Acting on self-evaluation to improve assessment for classroom learning