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Take it back to the classroom

'Which' Questioning Strategy?

Excellent * good ** weak * poor !!**

Questioning Strategy (Students anticipate these strategies in advance)	**Participation Rate**	**Teacher's feedback**	**Student's feedback**	**Thinking time**	**Student comfort**
Q&A: volunteers answer Students volunteer to answer questions					
Q&A: nominees answer Students nominated by the teacher answer questions					
Buzz groups: volunteers answer Students work in small groups to answer a thought provoking question. Teacher asks each group in turn to contribute part of the answer. A volunteer answers for their group.					
Buzz groups: nominees answer As above, but after the discussion the teacher nominates the student in each group who will contribute that group's answer(s).					
Assertive Questioning Groups work on a thought provoking question. Teacher asks individuals to give their group's answer, and then asks the rest of the class to discuss and agree a 'class answer'. Only then does the teacher 'give away' the right answer.					
Pair checking Teacher asks a question, then students work alone to answer it. Pairs then compare their answers, giving their partner one good point and one way their answer could be improved while the teacher observes. The teacher then gives the correct answer. Pairs now suggest another improvement to their partner's answer.					

Participation Rate: The proportion of students who are engaged in trying to answer the question is high. There are few 'passengers'.
Teacher's feedback: The teacher gets representative feedback on the quality of students' reasoning and understanding in the class.
Student's feedback: The students get feedback on the quality of their understanding, e.g. by discussing their understandings with others: 'dialogue'
Thinking time: A given student is likely to spend a good deal of time thinking productively about the question, and the quality of their answer
Student comfort: Students are not 'put on the spot' and they are unlikely to feel humiliated by the teacher or by others in the class.

'*Which'* Questioning Strategy?

The precise questioning strategy you adopt can make a big difference to the proportion of students who participate, both mentally and verbally, in your lessons. Here are some alternative strategies. They are evaluated overleaf against important characteristics. You can combine these strategies, or develop your own.

Question and answer: volunteers answer

Students volunteer to answer questions posed verbally by the teacher

This is usually done with 'hands up'but sometimes students call out their answer. If more than one student volunteers the teacher chooses who will answer. The 'thinking time' between asking a question and the answer being delivered is usually less than a second here. There is often low 'participation' rate because students learn that if they do not answer, they will not be asked to contribute. If some students call out the answer they reduce the thinking time of the others.

Question and Answer: nominees answer

Students nominated by the teacher answer questions asked by the teacher. "Pose, pause, pounce" That is the teacher poses the question, pauses for thought, and then 'pounces' on an individual to answer. (Optionally, the teacher can choose student who appear not to be attending to answer questions.)

Buzz groups: volunteers answer

Students work in small groups, or pairs, to answer a thought-provoking question, or do a calculation or similar task. The teacher asks each group in turn to contribute part of the answer. E.g. "Can you give me <u>one</u> advantage of using a laser printer?….Can this group give me another?" A volunteer answers for their group. They are called 'buzz groups' because of the buzz of conversation created while they work.

Buzz groups: nominees answer

As immediately above, but the teacher nominates the student in each group who will contribute that group's answer(s). The teacher only chooses which student will give the group's answer <u>after</u> the group discussion. All members of the group are then likely to attend, and to try to understand the group's answer, as any of them may be asked to explain it. (Optionally, the teacher can choose students who do not appear to be attending to explain their group's answer.)

Assertive Questioning Buzz groups work on a thought provoking question. The teacher asks individuals to give their group's answer. These individuals are usually nominated by the teacher, but they could be volunteers from the group. The teacher gets a number of answers without giving the correct answer away. The teacher then encourages the class to discuss their various answers, and to agree, and justify a 'class answer'. Minority views are allowed, but the aim is consensus. Only when the class has agreed its answer does the teacher 'give away' the right answer. (See Geoff's separate handout or 'Teaching Today'.)
Pair checking Teacher asks a question, and students work alone to answer it. Pairs then compare their answers and each individual says something positive about their partner's answer and one thing that would improve it. The teacher now gives the correct answer. Pairs suggest another improvement to their partner's answer. This can be done with pairs combining into fours to compare their answers. The teacher listens to some student conversations throughout.

'Which' Questioning Strategy?

version 4

Excellent * good ** weak * poor !!**

Teaching Strategy Students usually anticipate these in advance	**Participation Rate**	**Teacher's feedback**	**Student's feedback**	**Thinking time**	**Student comfort**
Mini whiteboards Students have A4 whiteboards (laminated card) and dry-wipe pens. 1. The teacher asks a question, and students write their answers. 2. The teacher waits until all or most of students have an answer. Optionally, students check their neighbours' answers. 3. The teacher then asks students to hold their answers up, all at the same time. Students then look round to see what their classmates have written. 4. The teacher surveys all the boards to see what answers were given. 5. The teacher clarifies any misunderstandings.					

Q&A nominees 'basket ball' version Teacher nominates a student, gets an answer, asks another student what they think of that answer, then another etc to get a number of answers. Sometimes asks 'who agrees with that answer' then nominates a student to say why they agree. Sometimes asks 'who disagrees?', and chooses a student to explain why. Similar to 'Assertive questioning' but no groups involved.					
Participation Rate: The proportion of students who are engaged in trying to answer the question is high. There are few 'passengers'. **Teacher's feedback:** The teacher gets representative feedback on the quality of students' reasoning and understanding in the class. **Student's feedback:** The students get feedback on the quality of their understanding. Ideally the student improves their understanding as a result. **Thinking time:** A given student is likely to spend a good deal of time thinking productively about the question, and the quality of their answer **Student comfort:** Students are not 'put on the spot' and they are unlikely to feel humiliated by the teacher or by others in the class.					

Blooms Taxonomy of questions

Knowledge – to find out how well learners can recall information

- How many . . .?
- Can you name the . . .?
- Described what happened at . . .?
- What is . . .?
- Which is true or false . . .?

Comprehension – to understand how well learners understand things

- Can you write a brief outline . . .?
- Who do you think . . .?
- What was the main idea . . .?
- What differences exist between . . .?
- Can you provide an example of what you mean . . .?

Application – how well can learners use their knowledge in different contexts?

- Do you know another instance where . . .?
- What factors would you change if . . .?
- Can you apply the method used to some experience of your own . . .?
- What questions would you ask of . . .?
- From the information given, can you develop a set of instructions about . .?

Analysis – to see underlying principles or relationships between other topics

- What was the underlying theme of . . .?
- Can you compare your . . . with that presented in . . .?
- How is . . . similar to . . .?
- What are some of the problems of . . .?

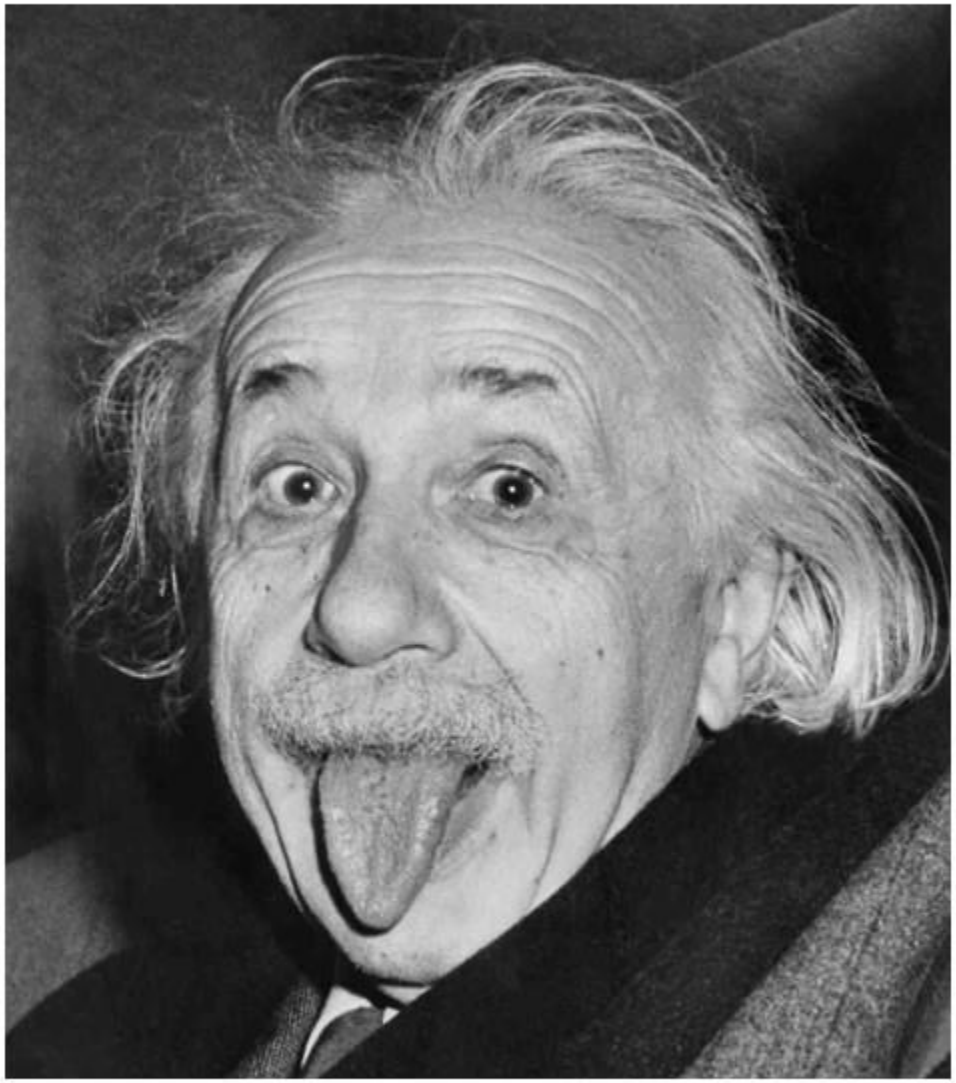
- Can you distinguish between . . .?
- What were some of the motives behind . . .?
- What was the turning point in the game . . . ?

Synthesis – questions to promote something new

- Can you design a . . . to . . .?
- Why not compose a song about . . .?
- Can you see a possible solution to . . .?
- If you had access to all resources how would you deal with . . .?
- Why don't you devise your own way to deal with . . .?
- What would happen if . . .?
- How many ways can you . . .?
- Can you create new and unusual uses for . . .?
- Can you write a new recipe for a tasty dish?
- Can you develop a proposal which would . . .?

Evaluation – questions that promote learners to reflect on learning

- Is there a better solution to . . .?
- Judge the value of . . .?
- Can you defend your position about . . .?
- Do you think . . . is a good or a bad thing?
- How would you have handled . . .?
- What changes to . . . would you recommend?
- Are you a . . . person?
- How would you feel if . . .?
- How effective are . . .?
- What do you think about . . .?



"In the middle of difficulty lies opportunity. The important thing is not to stop questioning."

Albert Einstein

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Advanced questioning – Asking more probing questions

- To reflect on why we ask questions
- To explore what kinds of questions we can ask
- To evaluate different questioning styles

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Why do we bother asking any questions at all?

Take a few minutes to write down ways questions can help learners to learn

Discuss with the colleague next to you.

Some suggestions:

- Prompting them to recall what they have learned and experienced previously
- Engaging interest
- Challenge them to think independently
- Encouraging them to think independently
- Encouraging them to explore consequences
- Stimulating their ability to think creatively
- Deepening and broadening their thinking, moving from factual to more analytical and evaluative
- Helping them to make their own assessments and evaluation of what they have done
- Raising their awareness of learning as a process
- Helping them to make connections between different aspects of their knowledge and experience
- Generating hypotheses
- Bringing attention back to the task
- Encouraging them to take responsibility for their own learning

Which two or three would most work in your area?

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Using Blooms Taxonomy of Questions

Using your list of Blooms Questions, stick your question to the type you think it is.

Now think of other questions, working your way up Blooms…

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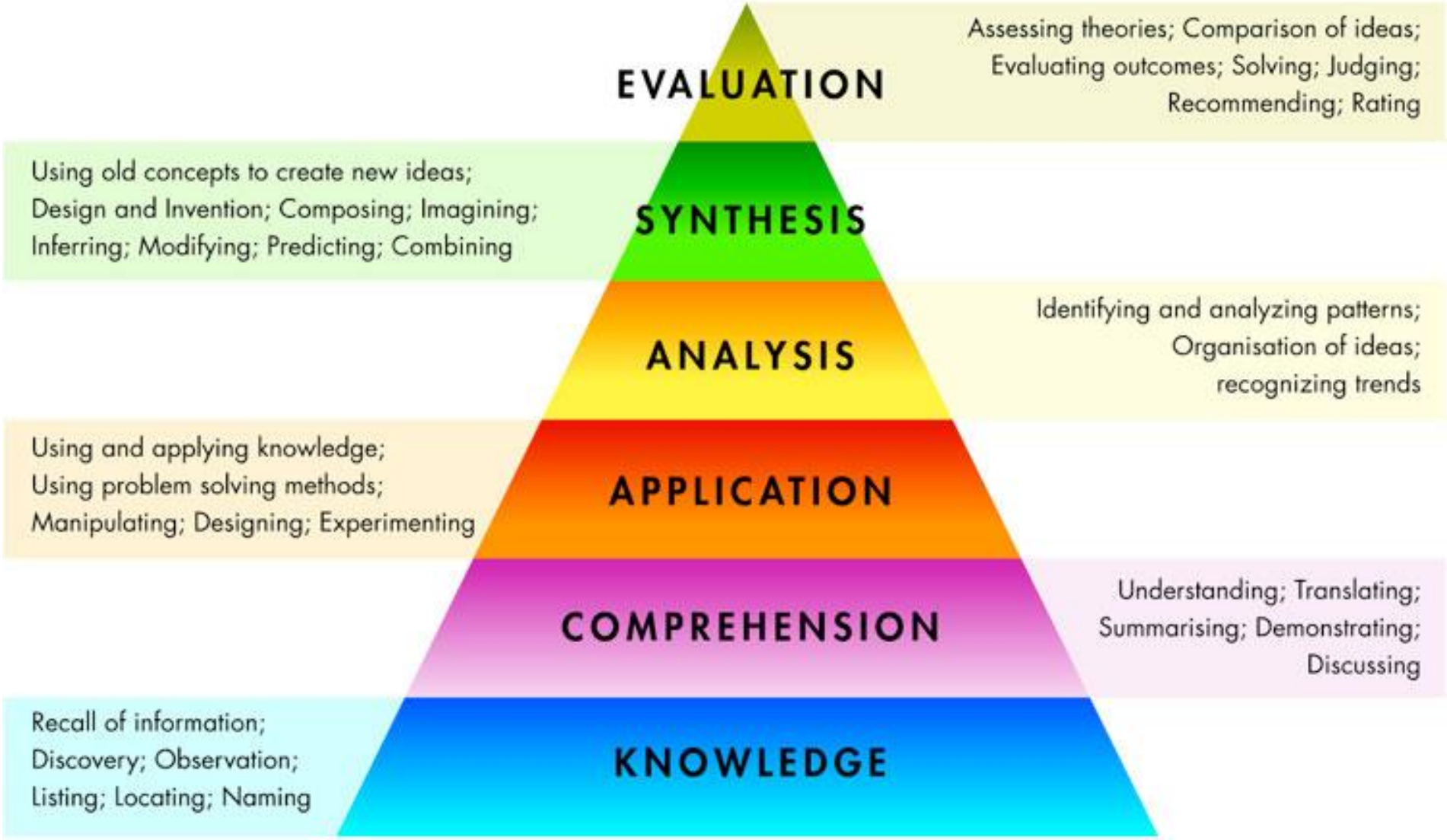
BLOOMS TAXONOMY



Knowledge (closed) What? Why? When? How?	Comprehension Can you explain? Can you compare/contrast? Can you summarise? What are the main…?	Application (applying) How would you use? What examples can you give? How can we solve? What approach would you use? What would you change? What other way would you…?
Analysis (breaking down, bringing together) What is the theme? What inference can you draw? What are the important…? How could you clarify/categorise? What is the motive? What is the relationship between...? What conclusion can you draw? What evidence can you find?	**Synthesis (making something new)** What could be done to maximise/minimise? What changes could you make? How would you adapt…. to…? How could you improve? What would happen if? Can you purpose an alternative? Can you predict an outcome if…? How can you change the plot from…to…? Can you construct a model that would change...?	**Evaluation (developing judgements)** Do you agree with the actions/outcomes? How would you prove? What would you cite to defend the actions? What judgements would you make about? What changes would you make? What info would you use to support the view? What would you recommend? How could you evaluate/determine/ prioritise/ justify?

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How to ask questions?

Closed and Open questions

Closed ⟷ Open

Inviting yes or no answer	Inviting a particular answer	Highly focussed but with some choice	Maximum choice about how to respond?

Can you think of one example question for each type?


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Observations

No hands

- Ask the question
- Invite one learner to respond
- Reply with non-evaluative ‘thank you’
- Repeat amongst group

Pose, Pause, Pounce and Bounce

- Pose a question (often a big question)
- Pause
- Pounce on a learner
- Bounce – developing ideas, strengthening evidence, adding depth


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IS GRASS

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Pedagogy and Technique

- Each group will be provided with a grid initially containing 6 questioning styles. Each one is also explained.
- Each group may be provided with a specific column.
- Each questioning style should be rated from poor to excellent.
- Groups will decide on their answers and then complete their own, and then the board, grid.

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Agree?

Committing to experiment

We have looked at a number of techniques around questioning:

- Why we ask questions
- The kinds of questions we can ask
- The differing styles of questioning we can use

But the most important bit is experimentation…

Which techniques(s) will you experiment with?

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Participation in a peer-observation group, offering feedback to colleagues within group

Recording of session and used just by the individual teacher to reflect on objectives.

An observation of part of lesson by member of observation team.

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Advanced questioning – Asking more probing questions

- To reflect on why we ask questions
- To explore what kinds of questions we can ask
- To evaluate different questioning styles

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Advanced Questioning - Extension

Did you know?

- Teachers ask up to two questions every minute, up to 400 in a day, around 70,000 a year, or two to three million in the course of a career
- Questioning accounts for up to a third of all teaching time, second only to the time devoted to explanation
- Most questions are answered in less than a second. That's the average time teachers allow between posing a question and accepting an answer, throwing it to someone else, or answering it themselves
- Research has found, however, that increasing the wait time improves the number and quality of the responses - three seconds for a lower-order question and more than 10 seconds for a higher-order question

If you've been teaching for around 14-and-a-half years, you could be about to ask your one millionth question. Teachers ask up to two questions every minute, up to 400 in a day, around 70,000 a year, or two to three million over the course of a career. Clearly, questioning is an integral part of the teaching process. But if you're going to be asking three million questions, it's probably worth making sure you ask the right ones in the right way. What can you do to improve your questioning technique? How can you present yourself as a mentor coaxing out answers, not an interrogator seeing who cracks first? And how can you get children to ask questions of you, so learning becomes an interactive dialogue, rather than an uninterrupted diatribe?

Why do teachers ask so many questions?

When Socrates defined teaching as "the art of asking questions", he had in mind the cut and thrust of lofty philosophical debate. The prosaic truth of the modern-day classroom is rather different. Four hundred questions a day may seem a startling statistic, but a large proportion of these (anything between 30 and 60 per cent) are procedural rather than learning-based. In other words, they tend to be of the is-your-name-on-it? or have-you-finished-yet? variety.
But questioning is still a key means of knowledge transfer. It accounts for up to a third of all teaching time, second only to the time devoted to explanation. And many experts believe it should be even more prominent.
"Good learning starts with questions, not answers," says Guy Claxton, professor of learning science at Bristol University. The consensus is that questioning leads to more effective learning - and more enjoyable teaching - than explanation alone.

Questions serve many purposes. They can help pupils to reflect on information and commit it to memory. They can develop thinking skills, encourage discussion and stimulate new ideas. Questions allow teachers to determine how much a class understands and enable them to pitch lessons at an appropriate level. They are an important tool for managing the classroom, helping to draw individuals into the lesson and keeping them interested and alert. And questions have a symbolic value - sending a clear message that pupils are expected to be active participants in the learning process.

What is a question?

Learning to recognise various types of question - and the functions they serve - is one of the keys to effective questioning. Different experts categorise questions in different ways. Ted Wragg, professor of education at Exeter University, offers a model comprising three groups: empirical (requiring answers based on facts); conceptual (concerned with definitions and reasoning); and value questions (investigating personal beliefs and moral issues). The Department for Education and Skills talks of product questions (which work towards an answer), and process questions (which focus on the method or reasoning). Others use Bloom's Taxonomy of Learning, Teaching and Assessing (see resources) as a model - where questions are pigeon-holed in six categories according to whether they test knowledge, comprehension, analysis, application, synthesis or evaluation.

But the simplest and most important distinction, recognised by all experts, is between lower-order questions, which require children to remember, and higher-order questions, which require them to think. As a general rule, lower-order or factual recall questions tend to be closed, with a single right answer, and are likely to be what, who, when or where. Higher-order are more likely to start with how, why or which, and tend to be open - with a range of possible responses.

Which questions should I be asking?

No one type is intrinsically better than another. Lower-order questions, for example, have an important part to play in checking knowledge. But most research suggests teachers ask too many of these basic recall questions and not enough thought-provoking, higher-order questions.

A 1989 study of secondary school lessons by Lincoln University's Professor Trevor Kerry found that only 4 per cent of questions were of a higher-order nature. Ten years ago, Ted Wragg's extensive research in primary schools produced similar results - only 8 per cent of questions were of a higher-order nature. "Because teachers ask so many questions each day, it's easy for one style of questioning to become habitual," he says. "And lower-order questions feel safest because they keep the lesson moving."

Not that an emphasis on factual recollection is anything new - studies in 1912, 1935 and 1970 also showed that at least 60 per cent of teachers'

questions simply required pupils to recall information in the form in which it was presented. "This kind of questioning isn't teaching at all," argues Sue Jennings, head of initial teacher training at Exeter University. "You don't develop any thought processes - all you do is make those who don't know the answer feel like failures."

A report by US educationist Kathleen Cotton in 1988, which examined 37 research projects to do with questioning across the United States, came to two important conclusions. First, that at all ages, a combination of higher-order and lower-order questions was the most effective method. And second, that with pupils of top primary or secondary school age, increasing the proportion of higher-order questions to around 50 per cent brought significant gains in terms of student attitude and performance.

Your time starts now. . .

Life after death? The chicken or the egg? The sound of one hand clapping? Some questions preoccupy philosophers for a lifetime or span centuries of civilisation. Most questions asked in the classroom are answered in less than a second. That's the average time teachers allow between posing a question and accepting an answer, throwing the question to someone else or even answering it themselves. Weaker pupils are often given even less time - usually because the teacher is afraid of embarrassing them, or lacks confidence in their coming up with the right answer.

But another US study, conducted in New York in 1978 by Mary Budd Rowe, found that increasing the wait time improved the number and quality of the responses. For a lower-order recall question, three seconds was found to be the optimum wait time, while wait times of more than 10 seconds produced even better results with higher-order questions. The same research also found that extending the wait time between the pupil giving the answer and the teacher commenting on it (typically fractions of a second) allows pupils to revise or expand their response, and encourages other pupils to contribute.

"It's such a simple idea," says Bob Marshall of training company Smarter Learning. "But the impact is remarkable. Having the self-discipline to keep quiet for a moment is sometimes all you need to do to get children thinking." He suggests relaxing the rapid-response questioning of the classroom by sometimes posing a question at the end of each lesson which pupils can ponder over for discussion the following day.

To question or not to to question Not everyone believes questioning is the best way of teaching. Research by Julie Ann Anderson at Sheffield Hallam University in 2000 revealed that primary school children often find questioning in class to be stressful and a cause of anxiety. Part of the problem is that questions aren't just a learning tool. As MPs, barristers, policemen and journalists all know, they can be used to manipulate or accuse. Lower-order questions, in particular, are often closely linked to behaviour management, with teachers using them as a means of control in the classroom.

It's a common tactic to fire off questions like disciplinary bullets at children who aren't paying attention - and it can be tempting to ask ones they won't be able to answer, just to prove their whispered conversation at the back of the classroom really is a barrier to learning.

Even when questions aren't being used as part of a power struggle, pupils can still find interrogation intimidating. For example, research by Ian Mitchell in Melbourne, Australia, shows that children's main fear is not of being wrong, but of looking silly - saying something that will be ridiculed by the teacher or other pupils. Such "peer fear" is the main obstacle to children answering and asking questions. Just asking easier questions to weaker pupils in the hope they'll get something right doesn't seem to be the answer, as they increase the fear of being wrong. Mitchell's work suggests children are most happy to venture their opinions when they believe no one else in the class knows the answers.

Effective questioning - who to ask ?

There's always going to be someone who doesn't want to be a millionaire and is happy being the weakest link. Falling into the habit of asking only those pupils who are going to know the answer is a good way of ensuring a quick-moving lesson, but a poor way of developing thinking skills. Getting your questions to produce some kind of response in every pupil - even if it is a covert response that is never voiced aloud - is the knack to clever questioning. A hands-up approach where children volunteer answers can lead to a few pupils dominating the lesson. Putting a question to the whole class, then asking an individual to respond - the nattily named "pose, pause and pounce" technique - allows you to target questions at specific children, but research suggests the lesson is still likely to centre around six to eight main contributors, who are usually in the teacher's immediate line of vision.

Some teachers overcome this by keeping records of who was asked a question in each lesson to make sure no one gets left out, but Sue Jennings argues that it's better to move away altogether from the idea of targeting individuals. "In European countries such as France, where there is a tradition of philosophical inquiry and social learning, the class work together to tease out the answers to challenging questions. You don't provide an answer, you simply make a contribution. It makes for some superb lessons."

Creating a comfortable environment where being right doesn't always matter will help ensure that it isn't always the quickest and most confident pupils who make those contributions. And whatever line of questioning you choose, be prepared to do some analysis of how you work. The questioning process is largely instinctive - with only a split second's thought before deciding what to ask, who to ask, and how to ask it - so, videoing your own lessons may be the only way to study the type of questioning that takes place and to establish what's working and what isn't.

Getting children to ask questions At the age of five, children ask dozens of questions a day - many of them higher-order questions starting with "why". But they don't ask questions in school.

Ted Wragg's 1993 research found that an average of just one spontaneous question each lesson came from the pupils, and that was more likely to do with procedure than with learning. Effective questioning isn't a one-way process. If the teacher asks the kind of questions that stimulate thought and debate, there's a strong chance their pupils will also start to ask more.

"Asking good questions is the basis for becoming a successful learner," says Guy Claxton. "If children aren't asking questions, they're being spoon-fed. That might be effective in terms of getting results, but it won't turn out curious, flexible learners suited to the 21st century."

There are plenty of strategies for encouraging children to ask more questions. Holding back on a new topic until the class has worked out what questions they would like answered in the course of the following lessons can get the curiosity juices flowing. And asking pupils to set tests at the end of a topic for other children in the class - awarding marks for the quality of the questions rather than the quality of the answers - can get them used to the varied forms of possible questions.

They need to know that questions aren't as scary as they might seem - using search engines on the internet to pose inquiries, working in small groups or making a question wall where students and teachers can pin up questions they would like answering, can all help overcome the natural fear of being caught out not knowing.

Above all, questions should be seen to be important. Finishing a lesson on the stroke of the bell with the familiar call of "Any questions?" (which, of course, really means "There aren't any questions, are there?") sends out the message that questions are a nuisance. It's worth making room with designated question time lessons, or asking children to come back next lesson with a question to ask. This will make it clear that they are encouraged and valued.

It ain't what you ask, it's the way that you ask it. . .

One of the main reasons children fail to respond is a failure to understand the question itself. "It's perfectly possible to ask a good question in a baffling way," says Ted Wragg. He emphasises the importance of pitching questions in a manner the whole class finds easy to understand so as to involve as many children as possible.

Presenting them as part of a sequence which makes them seem clearly and logically connected has also been shown to improve the quality of responses. "It's surprising how few questions are asked as part of a thought-out series," he says.

While it isn't realistic to plan every one, it may be worth having one or two key questions, perhaps written on the board, around which each lesson can be structured.

And it's not just a matter of what you ask, or how - but also of when you ask it. Kathleen Cotton's American research notes that lower ability and younger children respond more effectively to questions presented after they have been given the opportunity to look at material. With higher ability children it's the other way round - asking questions before they have seen the material allows them to examine it with particular inquiries in mind, and elicits better responses.

Having the answers How you deal with replies might shape a whole lesson. Showing interest in the reply yourself - not just moving on or correcting the answer - and getting other children to show an interest may well slow down, or even hijack, the best-planned lesson, but it's important to be prepared to digress. Good replies will always raise further questions.

"Of course, there's the constraint of the curriculum," admits Guy Claxton, "but teachers have to find time to explore the questions they are asked and the answers they are given. If children believe the teacher isn't interested in what they have to say, they will stop saying anything at all."

Additional research: Tracey Thomas