Elementary Science

TESS India

Teacher's questioning: forces

Teacher Education through School-based Support in India
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TESS-India (Teacher Education through School-based Support) aims to improve the classroom practices of elementary and secondary teachers in India through the provision of Open Educational Resources (OERs) to support teachers in developing student-centred, participatory approaches. The TESS-India OERs provide teachers with a companion to the school textbook. They offer activities for teachers to try out in their classrooms with their students, together with case studies showing how other teachers have taught the topic and linked resources to support teachers in developing their lesson plans and subject knowledge.

TESS-India OERs have been collaboratively written by Indian and international authors to address Indian curriculum and contexts and are available for online and print use (http://www.tess-india.edu.in/). The OERs are available in several versions, appropriate for each participating Indian state and users are invited to adapt and localise the OERs further to meet local needs and contexts.

TESS-India is led by The Open University UK and funded by UK aid from the UK government.

Video resources

Some of the activities in this unit are accompanied by the following icon:  *. This indicates that you will find it helpful to view the TESS-India video resources for the specified pedagogic theme.*

The TESS-India video resources illustrate key pedagogic techniques in a range of classroom contexts in India. We hope they will inspire you to experiment with similar practices. They are intended to complement and enhance your experience of working through the text-based units, but are not integral to them should you be unable to access them.

TESS-India video resources may be viewed online or downloaded from the TESS-India website, http://www.tess-india.edu.in/). Alternatively, you may have access to these videos on a CD or memory card.

Version 2.0 ES06v2
All India - English

What this unit is about

Many teachers ask a lot of questions during their lessons in school. But how many of these contribute significantly to students' thinking? In fact, teachers often spend more than half their time in class asking questions. Many questions only require one-word answers and students are given very little time to answer, so many are not enthusiastic about being involved in the lesson.

However, there is a variety of ways that questions could be used and formed more effectively in the classroom to stimulate students' thinking and participation. This unit focuses on identifying the most productive types of questions that teachers can use to promote students' thinking and extend their learning. It also gives you the opportunity to try some of these techniques and skills in your own lessons. Through activities investigating forces and their properties, you will discover how questions can help students to build a deeper understanding. The skills of questioning can also be transferred across all science topics and across other subjects to enhance learning.

What you can learn in this unit

- The different types of questions you can use to stimulate students' thinking and learning.
- New ways and skills in using more open questioning techniques in practical science lessons to extend students' understanding.

Why this approach is important

As a teacher, being able to ask pertinent and challenging questions is an important skill to learn, because it stimulates students' thinking and their responses provide you with a range of useful information and insights into their knowledge and current ideas. Figure 1 highlights the key advantages of asking purposeful questions.

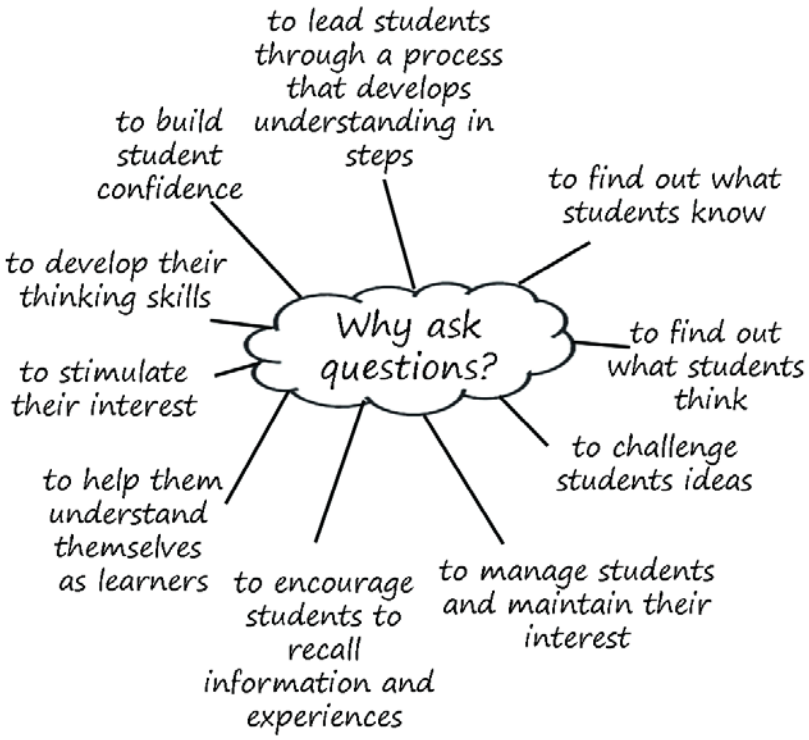

Figure 1 Key advantages of asking purposeful questions.

Asking good questions in a planned and purposeful way will make a significant difference to the students' achievement. Questions can be used to give students feedback about their ideas, their understanding and their progress. Most students welcome such information, especially if it is given in a positive and constructive way. It helps them to measure their progress and gives them confidence.

The important thing to do when planning a lesson is to be clear about the kind of questions that you could use to help you achieve the intended learning outcomes. Developing students' scientific understanding about forces and how they affect the movement of objects in different ways is not an easy task.

1 Questioning and thinking

One of the important factors in helping the students link theory and their own experience together and so develop a deeper understanding about forces is to ask questions that they can investigate and hopefully solve. To do this, you need to be able use your questioning skills in creative and dynamic ways so that students are encouraged to think.

Case Study 1: Two teachers and forces

Mrs Nair is questioning her class about what she is doing. Here, she describes what she did.

At the start of my lesson I asked the students to watch me push a book across my desk and asked the class, 'What am I doing?' One of the class replied, 'Pushing the book.'

'Good,' I say, 'and that is what a force is. Say after me, "A force is a push."' The class said what I asked, and I asked them to say it again. I asked again what a force was, and they repeated it over and over until I thought they knew it.

Next, I pulled the book across my desk towards myself and ask the pupils, 'What am I doing?' They replied that I was pulling the book and I said that that was correct. I next asked them to repeat, 'A pull is a force.' I tell them to repeat the statement several times before we return to the textbook and the next section.

Mrs Sharma is working with her class on forces. She explains how she started her lesson and then continued it.

First I asked my class, in their groups, to list as many things as they could think of that move. As they wrote, I went round and gave each group a set of objects – a mixture of all kinds of things, from a stone to a picture of a rickshaw bike [Figure 2] taken from the newspaper. The collection included small and large, heavy and light objects.

Figure 2 A rickshaw: an example of an object that moves.

I then asked them the question, 'How can you make these objects move?' I gave them several minutes to discuss and try out some of their ideas before asking each group to list their responses on a sheet of paper for all to see. They displayed these on the wall and together the students and I picked out the common ideas and words or terms they had used, such as 'push', 'pull', 'lift', 'drop', 'strong', 'weak', 'gentle', 'friction', 'heavy', 'light' and 'movement'. Next I asked them, 'Can you write a sentence or two to describe what you think causes things to move?'

Pause for thought

- Which of these two teachers do you think is encouraging their students to think more deeply and develop their understanding about movement and forces most?
- How is that teacher doing this? What teaching strategies is she using?
- How is her teaching and use of questions different from the other?

It is easy to see that the second teacher, Mrs Sharma, is helping her students explore their own ideas in a more practical way by asking them higher-order types of questions, as well as also asking them to share their ideas with each other. The students in the first lesson are not being challenged intellectually as much as those in the second.

Mrs Sharma is giving them time to respond to the questions and follows up some of their questions with probing supplementary questions. By being able to feel the difference between the force that is needed to push, say, a brick across the mat on the floor of the classroom, and how much easier it is to push a smooth round stone or ball across the same surface, the students will be able to build up ideas in their head that fit in with what they have felt happening. It helps them to relate theory with their observations better.

As a teacher, your role is to help your students gradually build up their understanding of the science of forces. To do this, you need to probe their ideas. Activity 1 asks you to think about the kind of questions that you use in your classroom and explore ways of extending your skills.

Activity 1: The questions you use

Think of a science lesson you taught during the week and go through what you did and said to your students. If you can, list all the questions that you asked. Do not change them at all. Now look at your list, however short it is, and think about how much these questions helped your students in their learning about what you were doing and talking about during the lesson.

- How many of your questions involved yes or no answers? How many involved students spending time thinking about possible answers and/or problem solving? (These are often called ' open-ended' questions.)
- Can you remember how the students responded to the different types of questions? Who responded? Is it always the same students? Why do you think this happens?
- Did you give students time to think before asking a student to reply?

Make a few notes about your use of questioning in your classes in response to the questions above. Look through your notes and assess your own questioning skills. Decide where your strengths lie and think about what skills you could and would like to improve and extend before you read on. Remember that your role as a teacher is to help students to understand and learn about forces. To do this, you need to challenge their current ideas and explore how well-formed they are.

Video: Using questioning to promote thinking

http://tinyurl.com/video-usingquestioning

2 Ways of handling questions

When you ask a question, do all the students think about the question? How do you know? How can you encourage all the students to participate more?

Research shows that many teachers only allow one second for students to think before calling for an answer. Do you give students time to think about their answers? Teachers also often ask the same students to answer questions, because they have their hands up first and the lesson can move on. But by just waiting a few seconds longer before asking someone to answer, you will see an increase in:

- the length of pupil responses
- the number of pupils offering responses
- the frequency of pupil questions
- the number of responses from less capable pupils
- positive interactions between pupils.

The next activity asks you to try some of these techniques in your next lesson to see if this happens to you.

Activity 2: Increasing thinking time

Plan your next lesson on forces, or another topic, and think about the questions that you want to ask.

List the questions you might ask. The questions below illustrate how a simple change in the way you construct your questions means that your students would be encouraged to think more deeply before they speak.

- What do you think will happen if you push this brick along the table?
- What happens if you push harder?
- What might happen if we put the brick on the concrete playground and we push? Will it be the same? If, yes why? If not, why?

You should allow time for students to think before you ask for responses. Then, as you teach your class, remind yourself every time you ask a question just to pause a little longer and note what happens. You may want to encourage more reticent students to think more by asking a short supplementary question. For example, if you have asked 'What do you think will happen if you push the log harder?', after a few seconds you may ask 'What will happen to the speed of the log if you push harder still?' Think of other questions like this that you could use.

After the lesson, take time to think about the students' reaction to your new use of questions. Note down any significant responses and reactions from the students.

Pause for thought

Most of your students may not have been aware of the subtle changes you made, but what effect did it have? How well did you manage the questioning? Were you able to pause and let them think longer? How did it affect their participation? Who participated, responded or had greater involvement in the lesson?

How do you know this? What did they say or do that made you think the students were more interested?

Extending your students' thinking

Helping students to think more deeply and improve the quality of their answers is a crucial part of your role. Extending your questioning by using hints and/or supplementary questions, as suggested above, will draw in those more reluctant learners. You could also ask more questions when a student gives a correct answer, and ask them what would happen if they pushed on a different part of the log to get them to suggest what might happen. To help you develop and extend your questioning skills, read Resource 1, 'Using questioning to promote thinking' – especially the section on 'Improving quality of responses', because this suggests different ways to explore students' ideas by employing different strategies.

Another way to raise students' participation is to give time to sequencing your questions so that they are progressive and extend thinking. If necessary, probe their answers further to ensure that they really do understand and can link it to other situations.

Listening to students

To be able to do any of the above, you need to listen carefully to what students say and give them time to express themselves. Students will only feel confident enough to offer answers if you are sensitive to each student as they speak.

Linked to this building of confidence is the necessity of sensitive handling of wrong or muddled answers. The way that incorrect responses are handled will determine whether pupils continue to respond to the teacher's questions. 'That's wrong', 'You are stupid' or 'No', or other humiliation or punishment, often stops pupils volunteering any more answers from fear of further embarrassment or ridicule. Instead, if you can pick out parts of the answers that are correct and ask them in a supportive way to think a bit more about their answer, you may encourage more active participation (Figure 3). This helps your students to learn from their mistakes in a way that negative behaviour towards them does not.

Figure 3 A teacher listening to students as they work.

So listening enables you not just to look for the answer you are expecting, but alerts you to unusual or innovative answers that you may not have expected. Such answers could highlight misconceptions or misunderstandings that need correcting, or they may show a new approach that you had not considered. Your response to these – for example, 'I hadn't thought of that. Tell me more why you think that way' – could be very important in maintaining motivation.

3 Using open-ended activities

As students work on activities and push and pull objects along, they are building up their own vocabulary of words to describe what they experience. By using different kinds of questions – particularly more open-ended questions – you will give the students time and space to think and share their ideas with their peers.

Together they are constructing understanding based on their individual experiences and shared knowledge. Some of their ideas may not be well-formed, but by working with others to solve problems posed by open-ended questions, they are able to discuss their ideas and think about what they thought they knew and how accurate that was. Together they can begin to adjust their ideas to fit the accepted science about what a force is and what forces do.

The case study below shows how one teacher uses open-ended questions to explore what her students know about forces.

Case Study 2: A set of open-ended activities

Mrs Das is working on Chapter 11 of the science textbook, exploring with her Class VIII students what they know about how things move and whether they are able to describe what a force is. She decides to use a series of small activities that her class can do to explore their ideas before she even uses the textbook with her students.

I planned to use four simple activities, because they did not involve much equipment for me to gather together. This 'circus' of activities would introduce my class to the real experience of forces at work, from which I could draw out their current understanding of forces. I told the students to do what it said at each 'station' and then try to explain what was happening by answering the question, 'What is happening and why?'

I asked them to work in their normal pairs. I had paired less confident and less able students with more confident students a few days earlier and reminded them all to listen and support each other as they tried to explain what was happening. I told them that there could be up to two pairs at a station at any one time, as I have three sets of each activity to cater for my class of 48. Providing enough resources for my class is difficult and this way of organising the students was suggested by a colleague who also has a large class. She said it gave them a chance to talk and share their ideas.

I gave each pair five minutes to do one task, answer the question(s) and write down their thoughts to share with the class later. I reminded them to keep their voices down so they did not disturb the other classes.

The activities were as follows:

- Push the book along the desk in as many ways as you can.
- Roll the ball down the slope. Then roll two different balls and watch what happens.
- Drop a flat piece of paper from waist height. Then drop a screwed-up piece of paper from the same height. Then try them both from a greater height.
- Roll the ball across the first surface. Then roll it across the second surface.

Every five minutes I clapped my hands and asked the pairs to move to the next activity. After 20 minutes or so they had done all the tasks. At one point I had to stop them because the noise became too loud. I was really pleased that the students were so interested and excited at what they were doing, but I did not want to disturb other classes. As they worked, I moved around the class and listened to their discussions and ideas, and asked the occasional questions such as 'Why do you think that?' or 'What would happen if you …?' to help students develop their ideas about what they thought was happening.

After they had done all four activities, I asked the pairs to form groups of four, take a few minutes to look at their answers and write one or two statements that they thought were true about what they had found out about forces.

Next I asked them to share their ideas. I wanted to give everybody a chance to offer feedback, so I would only take one answer at a time from a group of four and then recorded their answers on the blackboard. By the end of the lesson the students had agreed that a force is a push or pull that can be altered in different ways. I was pleased, because this allowed me to move onto looking at ways to change the impact of forces and ways of measuring forces using Newtons.

Pause for thought

Mrs Das's lesson used very simple materials and took little preparation. You may not be able to do a 'circus' of activities, but think how you could make use of more open-ended activities in your science lessons. If you have a large class, maybe you could do the practical in two halves, with one half doing their own work from their textbook while you work with the others; then you swap over next lesson. Another way to help students do the same activity of answering the open-ended questions is to collect some pictures from newspapers, like the photo Mrs Sharma used to enable the groups to talk about their ideas.

To help students understand the theoretical ideas about forces more deeply, it is important that they have experiences that allow them to feel the force as it impacts on objects and to think about what is happening. Your use of challenging questions will help them think more deeply.

Activity 3: An open-ended activity/investigation

For this activity, you need to think about the following questions and then plan your lesson before you do the activity with your students.

What aspect of forces do you want the students to learn about? You may want them to do something quite simple, such as exploring the impact of different pushes or pulls, or explore how you can use force to change direction. Next you need to think about the following questions and actions that you need to do as you plan your lesson:

- How can you make this a practical session without using too many resources?
- What open-ended question(s) do you want the students to think about and try to answer in relation to the activities?
- How will you introduce the lesson?
- Will you use just one activity or more?
- If you have limited resources or space, maybe some of the class could do other work whilst the others test their ideas and then swap over.

- How will you help the students as they work? What kind of questions will help and provoke their thinking? Examples include 'What will happen if …?', 'Why do you think that happened?', 'Does it always happen?' and 'How can you change the outcome?' You will also need to think about how you will support those who need extra support to understand.
- Gather and prepare all the resources that you need.

Teach the lesson and practise using more open-ended questions as you go round the groups.

After the lesson, reflect on what went well in the lesson and why you think this was so. This will help you use the strategy again with more effect.

Pause for thought

The following questions may help you think over what happened:

- What did not go quite as you expected or would have liked? Why not? How can you make this better next time?
- How well did you do asking more open-ended questions? Did it encourage the students to think more?
- Were the students more motivated and involved in the lesson, and if so, how?

Students' learning naturally loops through a cycle of wonder, exploration, discovery, reflection and more wonder, especially when they are given opportunities to explore practically and talk about their ideas about such a topic as forces. Such activity leads them on to increasingly complex knowledge and sophisticated thinking. The power of open-ended questions comes from the way these questions tap into the natural curiosity, inviting students to pursue how the world works. Resource 2, 'Talk for learning' – particularly the sections labelled 'Why talk for learning is important' and 'Planning talk for learning activities in the classroom' – will help you to understand better the importance of talk for thinking.

Video: Talk for learning

http://tinyurl.com/video-talkforlearning

Using open-ended questions shows students that their teachers respect them and trust them to have good ideas, think for themselves and contribute in valuable ways. The resulting sense of autonomy, belonging and competence gives them confidence as learners.

4 Summary

Teaching about forces in a more interactive way helps students to engage more deeply in the ideas behind the science. Using more open-ended questions makes lessons more interactive, especially when students work in pairs or groups to answer questions. This increases the participation of all students and supports deeper learning. Developing your skills in formulating and using questions, especially more open-ended questions, is crucial across all science topics.

Open-ended questions support academic and social learning, and encourage children's natural curiosity, challenging them to think for themselves. The result is learners who are motivated and whose responses enlighten their classmates and their teacher.

Open-ended questions usually begin with phrases like 'What happens if …?', 'What do you think will happen?' or 'Why do you say that?' Simple ideas, such as giving students a little more time to think before answering your question, will result in better answers and greater thought by your students.

Resources

Resource 1: Using questioning to promote thinking

Teachers question their students all the time; questions mean that teachers can help their students to learn, and learn more. On average, a teacher spends one-third of their time questioning students in one study (Hastings, 2003). Of the questions posed, 60 per cent recalled facts and 20 per cent were procedural (Hattie, 2012), with most answers being either right or wrong. But does simply asking questions that are either right or wrong promote learning?

There are many different types of questions that students can be asked. The responses and outcomes that the teacher wants dictates the type of question that the teacher should utilise. Teachers generally ask students questions in order to:

- guide students toward understanding when a new topic or material is introduced
- push students to do a greater share of their thinking
- remediate an error
- stretch students
- check for understanding.

Questioning is generally used to find out what students know, so it is important in assessing their progress. Questions can also be used to inspire, extend students' thinking skills and develop enquiring minds. They can be divided into two broad categories:

- **Lower-order questions**, which involve the recall of facts and knowledge previously taught, often involving closed questions (a yes or no answer).
- **Higher-order questions**, which require more thinking. They may ask the students to put together information previously learnt to form an answer or to support an argument in a logical manner. Higher-order questions are often more open-ended.

Open-ended questions encourage students to think beyond textbook-based, literal answers, thus eliciting a range of responses. They also help the teacher to assess the students' understanding of content.

Encouraging students to respond

Many teachers allow less than one second before requiring a response to a question and therefore often answer the question themselves or rephrase the question (Hastings, 2003). The students only have time to react – they do not have time to think! If you wait for a few seconds before expecting answers, the students will have time to think. This has a positive effect on students' achievement. By waiting after posing a question, there is an increase in:

- the length of students' responses
- the number of students offering responses
- the frequency of students' questions
- the number of responses from less capable students
- positive interactions between students.

Your response matters

The more positively you receive all answers that are given, the more students will continue to think and try. There are many ways to ensure that wrong answers and misconceptions are corrected, and if one student has the wrong idea, you can be sure that many more have as well. You could try the following:

- Pick out the parts of the answers that are correct and ask the student in a supportive way to think a bit more about their answer. This encourages more active participation and helps your students to learn from their mistakes. The following comment shows how you might respond to an incorrect answer in a supportive way: 'You were right about evaporation forming clouds, but I think we need to explore a bit more about what you said about rain. Can anyone else offer some ideas?'
- Write on the blackboard all the answers that the students give, and then ask the students to think about them all. What answers do they think are right? What might have led to another answer being given? This gives you an opportunity to understand the way that your students are thinking and also gives your students an unthreatening way to correct any misconceptions that they may have.

Value all responses by listening carefully and asking the student to explain further. If you ask for further explanation for all answers, right or wrong, students will often correct any mistakes for themselves, you will develop a thinking classroom and you will really know what learning your students have done and how to proceed. If wrong answers result in humiliation or punishment, then your students will stop trying for fear of further embarrassment or ridicule.

Improving the quality of responses

It is important that you try to adopt a sequence of questioning that doesn't end with the right answer. Right answers should be rewarded with follow-up questions that extend the knowledge and provide students with an opportunity to engage with the teacher. You can do this by asking for:

- a *how* or a *why*
- another way to answer
- a better word
- evidence to substantiate an answer
- integration of a related skill
- application of the same skill or logic in a new setting.

Helping students to think more deeply about (and therefore improve the quality of) their answer is a crucial part of your role. The following skills will help students achieve more:

- **Prompting** requires appropriate hints to be given – ones that help students develop and improve their answers. You might first choose to say what is right in the answer and then offer information, further questions and other clues. ('So what would happen if you added a weight to the end of your paper aeroplane?')
- **Probing** is about trying to find out more, helping students to clarify what they are trying to say to improve a disorganised answer or one that is partly right. ('So what more can you tell me about how this fits together?')
- **Refocusing** is about building on correct answers to link students' knowledge to the knowledge that they have previously learnt. This broadens their understanding. ('What you have said is correct, but how does it link with what we were looking at last week in our local environment topic?')
- **Sequencing** questions means asking questions in an order designed to extend thinking. Questions should lead students to summarise, compare, explain or analyse. Prepare questions that stretch students, but do not challenge them so far that they lose the meaning of the questions. ('Explain how

you overcame your earlier problem. What difference did that make? What do you think you need to tackle next?')

- Listening enables you to not just look for the answer you are expecting, but to alert you to unusual or innovative answers that you may not have expected. It also shows that you value the students' thinking and therefore they are more likely to give thoughtful responses. Such answers could highlight misconceptions that need correcting, or they may show a new approach that you had not considered. ('I hadn't thought of that. Tell me more about why you think that way.')

As a teacher, you need to ask questions that inspire and challenge if you are to generate interesting and inventive answers from your students. You need to give them time to think and you will be amazed how much your students know and how well you can help them progress their learning.

Remember, questioning is not about what the teacher knows, but about what the students know. It is important to remember that you should never answer your own questions! After all, if the students know you will give them the answers after a few seconds of silence, what is their incentive to answer?

Resource 2: Talk for learning

Why talk for learning is important

Talk is a part of human development that helps us to think, learn and make sense of the world. People use language as a tool for developing reasoning, knowledge and understanding. Therefore, encouraging students to talk as part of their learning experiences will mean that their educational progress is enhanced. Talking about the ideas being learnt means that:

- those ideas are explored
- reasoning is developed and organised
- as such, students learn more.

In a classroom there are different ways to use student talk, ranging from rote repetition to higher-order discussions.

Traditionally, teacher talk was dominant and was more valued than students' talk or knowledge. However, using talk for learning involves planning lessons so that students can talk more and learn more in a way that makes connections with their prior experience. It is much more than a question and answer session between the teacher and their students, in that the students' own language, ideas, reasoning and interests are given more time. Most of us want to talk to someone about a difficult issue or in order to find out something, and teachers can build on this instinct with well-planned activities.

Planning talk for learning activities in the classroom

Planning talking activities is not just for literacy and vocabulary lessons; it is also part of planning mathematics and science work and other topics. It can be planned into whole class, pair or groupwork, outdoor activities, role play-based activities, writing, reading, practical investigations, and creative work.

Even young students with limited literacy and numeracy skills can demonstrate higher-order thinking skills if the task is designed to build on their prior experience and is enjoyable. For example, students can make predictions about a story, an animal or a shape from photos, drawings or real objects. Students can list suggestions and possible solutions about problems to a puppet or character in a role play.

Plan the lesson around what you want the students to learn and think about, as well as what type of talk you want students to develop. Some types of talk are exploratory, for example: 'What could happen next?',

'Have we seen this before?', 'What could this be?' or 'Why do you think that is?' Other types of talk are more analytical, for example weighing up ideas, evidence or suggestions.

Try to make it interesting, enjoyable and possible for all students to participate in dialogue. Students need to be comfortable and feel safe in expressing views and exploring ideas without fear of ridicule or being made to feel they are getting it wrong.

Building on students' talk

Talk for learning gives teachers opportunities to:

- listen to what students say
- appreciate and build on students' ideas
- encourage the students to take it further.

Not all responses have to be written or formally assessed, because developing ideas through talk is a valuable part of learning. You should use their experiences and ideas as much as possible to make their learning feel relevant. The best student talk is exploratory, which means that the students explore and challenge one another's ideas so that they can become confident about their responses. Groups talking together should be encouraged not to just accept an answer, whoever gives it. You can model challenging thinking in a whole class setting through your use of probing questions like 'Why?', 'How did you decide that?' or 'Can you see any problems with that solution?' You can walk around the classroom listening to groups of students and extending their thinking by asking such questions.

Your students will be encouraged if their talk, ideas and experiences are valued and appreciated. Praise your students for their behaviour when talking, listening carefully, questioning one another, and learning not to interrupt. Be aware of members of the class who are marginalised and think about how you can ensure that they are included. It may take some time to establish ways of working that allow all students to participate fully.

Encourage students to ask questions themselves

Develop a climate in your classroom where good challenging questions are asked and where students' ideas are respected and praised. Students will not ask questions if they are afraid of how they will be received or if they think their ideas are not valued. Inviting students to ask the questions encourages them to show curiosity, asks them to think in a different way about their learning and helps you to understand their point of view.

You could plan some regular group or pair work, or perhaps a 'student question time' so that students can raise queries or ask for clarification. You could:

- entitle a section of your lesson 'Hands up if you have a question'
- put a student in the hot-seat and encourage the other students to question that student as if they were a character, e.g. Pythagoras or Mirabai
- play a 'Tell Me More' game in pairs or small groups
- give students a question grid with who/what/where/when/why questions to practise basic enquiry
- give the students some data (such as the data available from the World Data Bank, e.g. the percentage of children in full-time education or exclusive breastfeeding rates for different countries), and ask them to think of questions you could ask about this data
- design a question wall listing the students' questions of the week.

You may be pleasantly surprised at the level of interest and thinking that you see when students are freer to ask and answer questions that come from them. As students learn how to communicate more clearly and

accurately, they not only increase their oral and written vocabulary, but they also develop new knowledge and skills.

Resource 3: Common mistakes in questioning

It is often said that 'questions are only as good as the answers they get'. If you are asking your students questions, you do not want to discourage them from offering answers or participating. Common errors in questioning are:

- asking too many questions at once
- asking a question and answering it yourself
- asking a difficult question too early
- always asking the same type of question
- asking a question in a threatening way
- not using probing questions
- not giving students enough time to think
- ignoring answers
- not correcting wrong answers
- failing to see the implications of answers
- failing to build on answers.

If you do any of these, think about how you might adapt your approach and find ways of doing the opposite. Watch and see the improvement in students' performance.

Additional resources

- Video about forces: http://archive.teachfind.com/ttv/www.teachers.tv/videos/primary-science-forces-pushes-pulls-and-friction.html
- Activities about students asking questions: http://www.primas-project.eu/servlet/supportBinaryFiles?referenceId=2&supportId=1362

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Acknowledgements

Video (including video stills): thanks are extended to the teacher educators, headteachers, teachers and students across India who worked with The Open University in the productions.