

Discussion in science: malnutrition



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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.

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What this unit is about

Discussion can be an effective way of enabling students to explore a range of scientific topics in elementary science, including those that are more sensitive, such as malnutrition. Often, we expect students to accept scientific ideas and evidence without giving them the opportunity to consider whether and how they might be true. Using discussion in the classroom can help students to develop their critical thinking skills as they consider relevant evidence, form opinions and justify their points of view.

This unit will discuss the process of facilitating student dialogue in elementary science by considering ways of introducing, organising and concluding classroom discussions. Various strategies that support effective discussion of malnutrition and diet will be explored to illustrate how the strategies can be enacted in the classroom.

What you can learn in this unit

- The benefits of using discussion as a tool to develop critical thinking
- How to use effective discussion in your lessons to promote a deeper understanding about a topic like malnutrition.

Why this approach is important

Discussion is an active approach to helping students construct meaning and understanding of scientific concepts, issues and ethics. Your students will have their own ideas around a subject or topic like malnutrition. Such understandings will have been built up through previous science lessons throughout their schooling and from their personal and family experiences. Extending students' knowledge even further by providing opportunities for them to consider the implications of eating healthily, will influence the kinds of life decisions they make as they mature into adulthood.

In effective discussions, students are encouraged to do most of the talking with one another as they explore concepts and ideas. It is only by talking that we often begin to think more deeply about the subject. This is not only helpful in enabling students to learn from one another but it also reveals to you any confused ideas they may have, so that, subsequently, you can plan ways to direct learning. Helping and supporting your students from an early stage to talk about science and share their thoughts, will make them more able to argue their case in later life.

1 What is a discussion?

A 'discussion' is an umbrella term for exploratory interaction between a group of two or more people. A 'debate' is a more formal (and potentially more intense) type of discussion that usually involves two distinct or contrasting viewpoints or 'sides'. This unit uses the word 'discussion' to encompass both types of group interaction.

Case Study 1: Using discussion to explore students' ideas

Mrs Asha Goyal often talks to a colleague, Suman, about their lessons. Suman encouraged her to try letting her students have a discussion about a topic.

Suman told me how she had tried having a discussion with her class after reading an article in a science journal about how it can help students think more. I was impressed by her enthusiasm and her description of how her students had responded, and so agreed to have a go. I was very nervous but with her help I planned the session on exploring 'What is a healthy diet/meal?'

I explained to my Class IV students what I wanted them to do. I had been helping my students talk about problems in science by using pair work and small groups, but this was a more open-ended discussion so I was not sure they would be able to do it in pairs. I decided to use groups of five students.

I put two pictures I had drawn of a meal, on the blackboard. One was of a meal that was only carbohydrates; another of a mixed meal of vegetables, chicken and carbohydrates. I asked them to think about which, if any, of these meals was a balanced meal. I gave them a few minutes to talk and then asked for some comments. I noted their key ideas on the blackboard. They included comments and questions like 'Both meals are OK!', 'I don't like chicken so I wouldn't eat that one', 'Do all meals have to be balanced?' and 'What happens if you only eat vegetables – is it balanced?' I was very impressed by these and asked the students then to talk further about what they understood by the idea of a balanced diet rather than just a balanced meal.

This raised many more comments and a lot more questions. It showed me how much they understood about a balanced diet but also showed the gaps in their understanding, especially about what kind of balance there needed to be between carbohydrates and proteins, etc., and the impact of not having a balanced diet.

My next lesson would provide an opportunity for all of them to find out more about what is involved in having a healthy diet. It was a very good way to assess their current knowledge, and my students were so animated as they talked. I was pleased at how well they listened to each other, even if they disagreed with the speaker.



Pause for thought

- Have you ever used discussion with your class? If so, how did it go?
- If you haven't used discussion previously, can you think of ways you could use a form of discussion in your science lessons?

2 Encouraging discussion

A well-crafted discussion involves student-to-student as well as teacher-to-student conversations. When students talk to each other without teacher intervention or interaction, the kind of interaction that takes place is often freer – students are prepared to take risks and share half-formed ideas.

However, many students may be reluctant at first to speak out in whole-class discussions because they do not want to expose their ignorance. If this is the case, it is important to build up a culture of support that allows students to feel confident enough to know that their contributions will be accepted and handled sensitively.

As a teacher, you should be interested in what everyone has to say on the topic. Encouraging more in-depth thinking, getting a variety of viewpoints and creating a classroom environment where everyone's questions and contributions are valued, are key to effective discussion. With younger students, the kinds of discussion that you plan need to take account of the limited knowledge and experience that they have compared to older students and to their different stage of intellectual development.

Classroom discussions can take the form of free-flowing conversations or can be organised in more structured ways. It may be necessary to stage the discussion in steps, and plan ways to organise the students, such as using pairs, groups or the whole class. Resource 1, 'Using pair work', summarises the advantages of using pair work and may help you do the next activity"

Activity 1: Using pairs to discuss

Think of a topic or issue about nutrition or malnutrition that your students could talk to their neighbour about. What do you want them to learn from the experience, both in terms of science and in being able to discuss more effectively?

This, along with the age and range of ability of your students, will determine the type of question you might ask. For example, questions such as 'What would happen to your body if you did not eat?' or 'What if you only ate rice?' can clearly be used with younger students. They could also be used with older students but you would expect a deeper exchange of ideas about why we eat food and its impact if we don't eat sensibly.

Having identified the question the students are going to discuss, think about how you will introduce the activity and organise the pairs. If you have a large class, for convenience, the students could talk to their neighbour on their left.

Will your students need any extra information to help them talk about the issue and, if so, where can they get this? It could be from the internet, radio, tapes, TV or the textbook or you could write some facts on the blackboard. What will be your role as they talk – will you go around and just listen or will you interact with pairs? If so, when and why?

Write out your plan and then hold the discussion.



Video: Talk for learning

<http://tinyurl.com/video-talkforlearning>



Pause for thought

- How did your students respond to being able to talk to each other without interference from you? Were they all involved and talking?
- What went well in the discussion? How do you know this?
- What was not so successful? Why was this?
- What could you do to change this?
- Which students did you need to prompt?

3 Developing discussion skills

As soon as students have developed the skills of listening and responding to one another, they can engage in classroom discussion. It is important to identify as many opportunities as possible for your students to work together, explain their ideas and solve problems collaboratively. These activities will support them when taking part in scientific discussion.

In Activity 1 you may have found that asking the students to work in pairs limited the depth of discussion. However, as a starting point, it is a safe and easier context in which students can start learning to share ideas and explain concepts to each other.

In a large class, asking the students to work in pairs makes it hard for you to move around the classroom and listen in. But you can focus on the students that you know are less confident at speaking out or are unsure about their knowledge of science. Moving on to using group discussion and whole-class discussion will take time and preparation, both for you and your students, but the benefits in terms of confidence, motivation and interest will be easy to see, as will the rise in achievement (see Resource 2, 'Using groupwork', for further insights). With groups, you have fewer separate units to monitor and you can hear and see at once how more students are responding to the task and situation.



Figure 1 Working in groups will improve your students' achievement.

Mr Bhana uses groups in the next case study; look at the ways he supports his students.



Video: Using groupwork

<http://tinyurl.com/video-usinggroupwork>

Case Study 2: Group discussion

Mr Bhana decided to teach his students about the causes of malnutrition through classroom discussion. He chose this teaching strategy because the causes of malnutrition are complex and controversial, involving a combination of biological, social and cultural factors. Also, his students would be able to relate directly to some of the issues involved.

I began the lesson by organising the class into groups of four. I explained to my students that they were going to discuss two questions. The first question I asked them was 'What does malnutrition mean?' I set them a five-minute time limit to share their ideas.

I wanted the discussions to be free-flowing so I did not allocate roles in the groups or ask them to note down their ideas. As I walked around the class, I discreetly listened to my students' discussions without interrupting. This gave me the opportunity to establish what they understood by the term 'malnutrition'.

After five minutes, I asked my students to share what they had been talking about with the rest of the class. As they spoke, I repeated their ideas and wrote them on the blackboard. These included 'Malnutrition means not getting enough food' and 'It means you are not getting the right goodness into your body.' I explained that I would share some definitions of malnutrition with them at the end of the lesson.

I then asked them the second question, 'What are the consequences of malnutrition?' As I listened in to their discussions, I noticed that a number of students were finding it difficult to explain their ideas. I therefore asked each group one or two additional questions to help them, including 'Can you explain how malnutrition is not good for your body?' and 'In what ways might your body stop working properly?'

Each group then shared what they had discussed with the rest of the class. Again, I repeated their contributions and made notes about them on the blackboard. I concluded the lesson by giving them the definitions of malnutrition [see Resource 3] and briefly explaining what its effects are on the human body.



Pause for thought

- What strategies did Mr Bhana use to help his students as they discussed the causes of malnutrition?
- Which strategies did you especially like? What did he notice?
- How did he respond to what he noticed?

4 The role of the teacher

Mr Bhana's role as teacher during the discussion was to manage the introduction to the topic (including presenting any introductory questions), organise and monitor the groups, and summarise the students' ideas.

While the role of observer can be valuable in giving you insights into your students' understanding and thought processes, at times it can be helpful to intervene and prompt students. Careful additional questioning can help your students to clarify their ideas, expand their points and explain their reasoning better. The following kinds of prompting questions can help your students to think more widely and deeply about a topic:

- What do you mean by ...?
- Can you expand on ...?
- Can you explain why you don't agree with ...?

Activity 2: Using groups in discussion

Think about what you want your students to learn more about within the topic of malnutrition. Then formulate a question that they can discuss in small groups.

Next, plan how you will organise the groups. These could be friendship groups or mixed ability groups to encourage a mix of ideas, as this will help students support each other more and develop understanding and sensitivity to different perspectives and abilities.

Do they need any additional information? If so, how will you supply this? How will you support your students during the discussion and afterwards? Now plan your lesson and carry it out with the chosen class.



Pause for thought

- What did you notice about:
 - student participation?
 - the level and depth of discussion in the groups?
 - your role as supporter?
 - your questioning skills?
 - the groups that found the activity more difficult?
- What changes would you make next time, across these areas?



Video: Using questioning to promote thinking

<http://tinyurl.com/video-usingquestioning>

Activity 3: Students' perception of discussions

Either at the end of Activity 2 or at the beginning of the next lesson, spend a few minutes asking your class for their views on the experience of having discussions in their science lessons. Some of your students may not want to speak directly to you, but could talk in groups and then give you written feedback of the groups' ideas. Devise one or two open questions for them, such as:

- What do you like about talking about different ideas in science with your peers?
- What could be done to make them better?
- Did the discussion help you learn new information? Why is this? Why not?

Give the students time to talk before you ask them to summarise their feedback to you.

Use their feedback alongside your own reflections of Activity 2 to identify the strengths of your discussion lessons and areas that you need to work on to make the discussion more effective. Keep these available so that when you next do a discussion activity, you can remind yourself about your targets for improvement.

5 Using different approaches to a discussion

During classroom discussions, students should normally be allowed to freely express what they think and believe to be true. As their teacher, you can ask them to clarify their ideas and justify why they think something. Ask them for the evidence for their ideas – what have they observed or heard?

Listening to your students talk will help you gain insight into their scientific understanding. It will also enable you to identify any confused ideas that your students may have so that you can address these at the end of the discussion or in subsequent lessons. To help students do this, you need to give them a range of differently structured discussions. The key resource 'Talk for learning' (<http://tinyurl.com/kr-talkforlearning>) summarises the advantages of using talk and lists some strategies you could use.

Additionally, alternatives are given in Resource 4 – some of these are valuable exercises for older, more experienced and competent students, who will be better at considering issues from different perspectives.

Case Study 3: A balloon debate

When Mrs Pandya was training to be a teacher, she was introduced to an activity called a balloon debate. The idea behind a balloon debate is that a hot air balloon is descending too quickly. In order to lighten the load and save the passengers, some items from within the basket must be thrown overboard. Taking the role of a passenger in the basket, each student 'owns' a particular item or concept, and must argue why they should be allowed to keep it.

I explained to my class what a balloon debate was and organised them into groups of five. I explained that each group of five represented a passenger in the balloon's basket and had to argue why their foods should be kept in the basket. I gave the students in each group a set of cards, on which the following food groups were written:

- fruit and vegetables
- starchy foods: bread, rice, potatoes and pasta (including whole-grain varieties)
- meat, fish, eggs and beans
- milk and dairy foods
- all fats and sugars.

The students took turns to listen to one another's opinions and justifications as to why their foods should not be discarded. I identified a few students that were struggling to apply the knowledge that they had learnt, and supported them with additional questioning. Each group then explained to the rest of the class why their foods should remain in the basket.

We concluded the discussion by voting for a food group to be thrown out of the balloon. The students found it difficult to agree, as they realised that all the food groups had a vital role to play in the human body. In the end we agreed that if sugar had been listed as an item on its own – that is to say, separate from fats – we would throw it out of the basket.



Pause for thought

How does defending a viewpoint that is not necessarily theirs help your students' thinking and understanding about a topic?

Topics that are suitable for debate should ideally involve two or more contradictory viewpoints, thereby offering students the possibility of appreciating the tension between one side and another. These topics are often presented as proposals or questions.

Activity 4: Debating malnutrition

You should set up a normal debate or a balloon debate with your class (see Resource 4). You can select the categories that Mrs Pandya used with her class or devise your own for the balloon debate. For a straight debate between two teams in the class, you need to devise a statement about the causes of malnutrition. Select the students to support and oppose the statement if doing a straight debate or, for the balloon debate, choose the students who have to defend their place in the balloon. Give them time to prepare their argument by providing it as homework and give them any information they may need. Ask the rest of the class, for their homework, to revise all they know about food and malnutrition so they can ask useful questions during the debates.

On the day of the debate, direct the students who are speaking to sit or stand together where they can be seen and heard by all. Give clear instructions about what order they speak in and let the debate begin. Limit the time for each speaker. At the end, give time for questions and then ask all the students to vote for either what has to be 'thrown out' of the balloon or which viewpoint they support of the two opposing views.

Thank all the students for their efforts, especially the speakers, and ask if they are happy with the result of the vote.

A key benefit of adopting discussion as a teaching strategy is that it helps students to develop the ability to logically organise and express their thoughts in the presence of others, and thus communicate more effectively and with greater confidence. Similarly, students can learn to respect the different viewpoints presented. It also provides a forum for those less confident to watch and listen to public speaking, which can build confidence in their own understanding.

6 Summary

Discussion is an effective way for students to explore and share ideas, as well as explore different viewpoints on important social and ethical issues related to science. Malnutrition is a topic that provides many opportunities for discussions that embrace sensitive issues. During this unit you have been encouraged to think about the factors you need to consider when planning a debate. These include:

- selecting a topic that is suitable for discussion
- considering ways of initiating the discussion (for example, using the textbook, a newspaper extract, a recent incident or event)
- deciding how to organise your students, even with large classes
- sharing the intended learning objectives
- encouraging all students to express their ideas
- facilitating the proceedings by helping students to participate effectively
- helping students to summarise the main arguments at the end.

Resources

Resource 1: Using pair work

In everyday situations people work alongside, speak and listen to others, and see what they do and how they do it. This is how people learn. As we talk to others, we discover new ideas and information. In classrooms, if everything is centred on the teacher, then most students do not get enough time to try out or demonstrate their learning or to ask questions. Some students may only give short answers and some may say nothing at all. In large classes, the situation is even worse, with only a small proportion of students saying anything at all.

Why use pair work?

Pair work is a natural way for students to talk and learn more. It gives them the chance to think and try out ideas and new language. It can provide a comfortable way for students to work through new skills and concepts, and works well in large classes.

Pair work is suitable for all ages and subjects. It is especially useful in multilingual, multi-grade classes, because pairs can be arranged to help each other. It works best when you plan specific tasks and establish routines to manage pairs to make sure that all of your students are included, learning and progressing. Once these routines are established, you will find that students quickly get used to working in pairs and enjoy learning this way.

Tasks for pair work

You can use a variety of pair work tasks depending on the intended outcome of the learning. The pair work task must be clear and appropriate so that working together helps learning more than working alone. By talking about their ideas, your students will automatically be thinking about and developing them further.

Pair work tasks could include:

- **'Think-pair-share':** Students think about a problem or issue themselves and then work in pairs to work out possible answers before sharing their answers with other students. This could be used for spelling, working through calculations, putting things in categories or in order, giving different viewpoints, pretending to be characters from a story, and so on.
- **Sharing information:** Half the class are given information on one aspect of a topic; the other half are given information on a different aspect of the topic. They then work in pairs to share their information in order to solve a problem or come to a decision.
- **Practising skills such as listening:** One student could read a story and the other ask questions; one student could read a passage in English, while the other tries to write it down; one student could describe a picture or diagram while the other student tries to draw it based on the description.
- **Following instructions:** One student could read instructions for the other student to complete a task.
- **Storytelling or role play:** Students could work in pairs to create a story or a piece of dialogue in a language that they are learning.

Managing pairs to include all

Pair work is about involving all. Since students are different, pairs must be managed so that everyone knows what they have to do, what they are learning and what your expectations are. To establish pair work routines in your classroom, you should do the following:

- Manage the pairs that the students work in. Sometimes students will work in friendship pairs; sometimes they will not. Make sure they understand that you will decide the pairs to help them maximise their learning.
- To create more of a challenge, sometimes you could pair students of mixed ability and different languages together so that they can help each other; at other times you could pair students working at the same level.
- Keep records so that you know your students' abilities and can pair them together accordingly.
- At the start, explain the benefits of pair work to the students, using examples from family and community contexts where people collaborate.
- Keep initial tasks brief and clear.
- Monitor the student pairs to make sure that they are working as you want.
- Give students roles or responsibilities in their pair, such as two characters from a story, or simple labels such as '1' and '2', or 'As' and 'Bs'). Do this before they move to face each other so that they listen.
- Make sure that students can turn or move easily to sit to face each other.

During pair work, tell students how much time they have for each task and give regular time checks. Praise pairs who help each other and stay on task. Give pairs time to settle and find their own solutions – it can be tempting to get involved too quickly before students have had time to think and show what they can do. Most students enjoy the atmosphere of everyone talking and working. As you move around the class observing and listening, make notes of who is comfortable together, be alert to anyone who is not included, and note any common errors, good ideas or summary points.

At the end of the task you have a role in making connections between what the students have developed. You may select some pairs to show their work, or you may summarise this for them. Students like to feel a sense of achievement when working together. You don't need to get every pair to report back – that would take too much time – but select students who you know from your observations will be able to make a positive contribution that will help others to learn. This might be an opportunity for students who are usually timid about contributing to build their confidence.

If you have given students a problem to solve, you could give a model answer and then ask them to discuss in pairs how to improve their answer. This will help them to think about their own learning and to learn from their mistakes.

If you are new to pair work, it is important to make notes on any changes you want to make to the task, timing or combinations of pairs. This is important because this is how you will learn and how you will improve your teaching. Organising successful pair work is linked to clear instructions and good time management, as well as succinct summarising – this all takes practice.

Resource 2: Using groupwork

Groupwork is a systematic, active, pedagogical strategy that encourages small groups of students to work together for the achievement of a common goal. These small groups promote more active and more effective learning through structured activities.

The benefits of groupwork

Groupwork can be a very effective way of motivating your students to learn by encouraging them to think, communicate, exchange ideas and thoughts, and make decisions. Your students can both teach and learn from others: a powerful and active form of learning.

Groupwork is more than students sitting in groups; it involves working on and contributing to a shared learning task with a clear objective. You need to be clear about why you are using groupwork for learning and know why this is preferable to lecturing, pair work or to students working on their own. Thus groupwork has to be well-planned and purposeful.

Planning groupwork

When and how you use groupwork will depend on what learning you want to achieve by the end of the lesson. You can include groupwork at the start, the end or midway through the lesson, but you will need to allow enough time. You will need to think about the task that you want your students to complete and the best way to organise the groups.

As a teacher, you can ensure that groupwork is successful if you plan in advance:

- the goals and expected outcomes of the group activity
- the time allocated to the activity, including any feedback or summary task
- how to split the groups (how many groups, how many students in each group, criteria for groups)
- how to organise the groups (role of different group members, time required, materials, recording and reporting)
- how any assessment will be undertaken and recorded (take care to distinguish individual assessments from group assessments)
- how you will monitor the groups' activities.

Groupwork tasks

The task that you ask your students to complete depends on what you want them to learn. By taking part in groupwork, they will learn skills such as listening to each other, explaining their ideas and working cooperatively. However, the main aim is for them to learn something about the subject that you are teaching. Some examples of tasks could include the following:

- **Presentations:** Students work in groups to prepare a presentation for the rest of the class. This works best if each group has a different aspect of the topic, so they are motivated to listen to each other rather than listening to the same topic several times. Be very strict about the time that each group has to present and decide on a set of criteria for a good presentation. Write these on the board before the lesson. Students can then use the criteria to plan their presentation and assess each other's work. The criteria could include:
 - Was the presentation clear?
 - Was the presentation well-structured?
 - Did I learn something from the presentation?
 - Did the presentation make me think?
- **Problem solving:** Students work in groups to solve a problem or a series of problems. This could include conducting an experiment in science, solving problems in mathematics, analysing a story or poem in English, or analysing evidence in history.
- **Creating an artefact or product:** Students work in groups to develop a story, a piece of drama, a piece of music, a model to explain a concept, a news report on an issue or a poster to summarise information or explain a concept. Giving groups five minutes at the start of a new topic to create a brainstorm or mind map will tell you a great deal about what they already know, and will help you pitch the lesson at an appropriate level.
- **Differentiated tasks:** Groupwork is an opportunity to allow students of different ages or attainment levels to work together on an appropriate task. Higher attainers can benefit from the opportunity to

explain the work, whereas lower attainers may find it easier to ask questions in a group than in a class, and will learn from their classmates.

- **Discussion:** Students consider an issue and come to a conclusion. This may require quite a bit of preparation on your part in order to make sure that the students have enough knowledge to consider different options, but organising a discussion or debate can be very rewarding for both you and them.

Organising groups

Groups of four to eight are ideal but this will depend on the size of your class, the physical environment and furniture, and the attainment and age range of your class. Ideally everyone in a group needs to see each other, talk without shouting and contribute to the group's outcome.

- Decide how and why you will divide students into groups; for example, you may divide groups by friendship, interest or by similar or mixed attainment. Experiment with different ways and review what works best with each class.
- Plan any roles you will give to group members (for example, note taker, spokesperson, time keeper or collector of equipment), and how you will make this clear.

Managing groupwork

You can set up routines and rules to manage good groupwork. When you use groupwork regularly, students will know what you expect and find it enjoyable. Initially it is a good idea to work with your class to identify the benefits of working together in teams and groups. You should discuss what makes good groupwork behaviour and possibly generate a list of 'rules' that might be displayed; for example, 'Respect for each other', 'Listening', 'Helping each other', 'Trying more than one idea', etc.

It is important to give clear verbal instructions about the groupwork that can also be written on the blackboard for reference. You need to:

- direct your students to the groups they will work in according to your plan, perhaps designating areas in the classroom where they will work or giving instructions about moving any furniture or school bags
- be very clear about the task and write it on the board in short instructions or pictures. Allow your students to ask questions before you start.

During the lesson, move around to observe and check how the groups are doing. Offer advice where needed if they are deviating from the task or getting stuck.

You might want to change the groups during the task. Here are two techniques to try when you are feeling confident about groupwork – they are particularly helpful when managing a large class:

- **'Expert groups':** Give each group a different task, such as researching one way of generating electricity or developing a character for a drama. After a suitable time, re-organise the groups so that each new group is made up of one 'expert' from all the original groups. Then give them a task that involves collating knowledge from all the experts, such as deciding on what sort of power station to build or preparing a piece of drama.
- **'Envoys':** If the task involves creating something or solving a problem, after a while, ask each group to send an envoy to another group. They could compare ideas or solutions to the problem and then report back to their own group. In this way, groups can learn from each other.

At the end of the task, summarise what has been learnt and correct any misunderstandings that you have seen. You may want to hear feedback from each group, or ask just one or two groups who you think have

some good ideas. Keep students' reporting brief and encourage them to offer feedback on work from other groups by identifying what has been done well, what was interesting and what might be developed further.

Even if you want to adopt groupwork in your classroom, you may at times find it difficult to organise because some students:

- are resistant to active learning and do not engage
- are dominant
- do not participate due to poor interpersonal skills or lack of confidence.

To become effective at managing groupwork it is important to reflect on all the above points, in addition to considering how far the learning outcomes were met and how well your students responded (did they all benefit?). Consider and carefully plan any adjustments you might make to the group task, resources, timings or composition of the groups.

Research suggests that learning in groups need not be used all the time to have positive effects on student achievement, so you should not feel obliged to use it in every lesson. You might want to consider using groupwork as a supplemental technique, for example as a break between a topic change or a jump-start for class discussion. It can also be used as an ice-breaker or to introduce experiential learning activities and problem solving exercises into the classroom, or to review topics.

Resource 3: Definitions of malnutrition

1. Malnutrition is the condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function. (<http://medical-dictionary.thefreedictionary.com/malnutrition>)
2. Malnutrition is defined as poor health as the result of not digesting enough nutritious food. (<http://www.yourdictionary.com/malnutrition>)
3. Malnutrition is a broad term commonly used as an alternative to undernutrition but technically it also refers to overnutrition. People are malnourished if their diet does not provide adequate calories and protein for growth and maintenance or they are unable to fully utilise the food they eat due to illness (undernutrition). They are also malnourished if they consume too many calories (overnutrition). (<http://www.unicef.org/progressforchildren/2006n4/malnutritiondefinition.html>)
4. Malnutrition is a term used to refer to any condition in which the body does not receive enough nutrients for proper function. Malnutrition may range from mild to severe and life-threatening. It can be a result of starvation, in which a person has an inadequate intake of calories, or it may be related to a deficiency of one particular nutrient (for example, vitamin C deficiency). Malnutrition can also occur because a person cannot properly digest or absorb nutrients from the food they consume, as may occur with certain medical conditions. Malnutrition remains a significant global problem, especially in developing countries. (<http://www.medterms.com/script/main/art.asp?articlekey=88521>)
5. Malnutrition is a serious condition that occurs when a person's diet does not contain the right amount of nutrients. It means 'poor nutrition' and can refer to undernutrition (when you don't get enough nutrients) and overnutrition (when you get more nutrients than you need). (<http://www.nhs.uk/conditions/Malnutrition/Pages/Introduction.aspx>)

Resource 4: Some possible formats for organising a discussion

- **Organising statements:** Organise students into pairs or groups. Provide them with a list of statements to organise into an order of priority. An example might be as follows:

It is important to:

- *consume fruit and vegetables*
- *drink tea*
- *take a vitamin supplement*
- *consume fatty foods*
- *consume protein*
- *consume carbohydrates*
- *drink clean water.*

Students can then compare and contrast their list with those of other groups.

- **Snowballing:** In pairs, students discuss a question such as 'Do boys need more food than girls?' Then they join another pair to make a group of four and share their views with one another. The group of four then joins another group of four to make a group of eight, and repeats the process. The teacher then asks each group of eight to summarise the discussion they had.
- **Listening triads:** Working in groups of three, each student takes on a specific role in the discussion, namely the 'talker', the 'questioner' or the 'recorder'. The talker will explain their ideas and justify their opinions, the questioner will seek clarification, and the recorder will write down the ideas discussed. The recorders can then feed back the key points of their discussion to the whole class.
- **Envoys:** Divide the class into groups of four, giving each group a specific research task. For example, one group might investigate the importance of protein in the diet, while another might find out about the effects of limited calcium intake on the body. The students may need access to sources of information to assist them with their research. They will need sufficient time for this preparation. One person (the envoy) should volunteer or be selected from each group to speak to another group and summarise what they have found out. When they have finished, they should then listen carefully to their counterpart's research summary. The envoy then returns to their original group to discuss what the other group said.
- **Debate:** Divide the class into groups of four. Half of the groups must argue for a given proposal (also known as a 'motion'), and half against it. An example of a proposal might be 'Students must eat vegetables as part of their school lunch.' Allow time for students to prepare their arguments and research evidence that supports their point of view. They may need a whole lesson and perhaps homework to do this preparation. Allow each group to present their arguments in turn. When they have finished, conclude the discussion with a vote by a show of hands.
- **A balloon debate:** This involves a group of students, each being given a different viewpoint (not necessarily their own) on a topic, which they have to defend in order to ensure that the object or issue they have been given is not 'thrown out' of the hot air balloon. These students may need additional information to help them plan their argument before speaking. The rest of the students listen to each viewpoint and then a class vote is taken as to which item or view should be discarded.

Additional resources

- Wikipedia definition of malnutrition: <http://en.wikipedia.org/wiki/Malnutrition>
- 'Talking science in the primary school' by Martin Braund, Amber Hall and Kate Holloway: <http://www.york.ac.uk/media/educationalstudies/documents/research/DiPSworkshop.pdf>

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