Facilitating evidence-based discussions

with Primary Connections

Click here to download and display the questions starters in your classroom.
Click here to download and display the discussion skills in your classroom.
Click here to watch evidence-based discussion in action.

Introduction

Argumentation is at the heart of what scientists do; they pose questions, make claims, collect evidence, debate with other scientists and compare their ideas with others in the field. In the primary science classroom, argumentation is about students:

- articulating and communicating their thinking and understanding to others
- sharing information and insights
- presenting their ideas and evidence
- receiving feedback, and giving feedback to others
- finding flaws in their own and others' reasoning, based on evidence and data
- reflecting on how their ideas have changed.

It is through articulating, communicating and debating their ideas and arguments that students are able to develop a deeper understanding of science and the way scientists think and work.

Establish norms

Introduce norms before starting a science discussion activity. For example:

- Listen when others speak.
- Ask questions of each other.
- Criticise ideas not people.
- Listen to and discuss all ideas before selecting one.

Claim, Evidence and Reasoning

In science, arguments that make claims are supported by evidence. Sophisticated arguments follow the **QCER** process:

Q – What question are you trying to answer?
For example, 'Does the number of bulbs in a circuit affect their brightness?'

C – The claim.
For example, 'The more bulbs in a circuit the duller the bulbs become'.

E – The evidence.
For example, 'When I increased the number of bulbs in a circuit the bulbs became duller each time another bulb was added'.

R – The reasoning.
For example, 'The more bulbs there are the harder it is for the electrical energy to flow. There is more resistance in the circuit.'

Encourage students to move from making claims only, to citing evidence to support their claims. Older students can develop full conclusions that include a claim, evidence and reasoning. This is an important characteristic of the nature of science and an aspect of scientific literacy. Using science question starters (see below) helps to promote evidence-based discussion in the classroom.

Science Question Starters

Science Question Starters can be used to model the way to discuss a claim and evidence for students. Teachers encourage team members to ask these questions of each other when preparing their claim and evidence. They can also be used by peers during a whole class discussion when a team is presenting its results.

Question type	Question starter
Asking for evidence	I have a question about _____ . What is your evidence to support your claim?
Agreeing	I agree with _____ because _____ .
Disagreeing	I disagree with _____ because _____ . One difference between my idea and yours is _____ .
Questioning further	I wonder what would happen if _____? I have a question about _____ . I wonder why _____? What caused _____? How would it be different if _____