

Key Resource: Using explaining and demonstrating to assist learning

Introduction

Explaining is the giving of understanding to another. Demonstrations are ways of assisting the explanation process by using artefacts or other methods to show pupils something so that they understand it better.

Explaining

An explanation used in a lesson can help pupils to understand:

- concepts or ideas – including those that are new or unfamiliar to pupils, for example ‘density’ or ‘volume’;
- cause and effect – rain is caused by air cooling, a flat battery means the car won’t start;
- processes – how things work, how people and animals behave;
- relationships – between people, things and events: the role of grandparents in a family, why flies are insects and spiders are not, the common features of important yearly festivals.

To explain well, you, the teacher, have to understand the subject matter well (what is to be taught). For example, if you do not understand that a spider is not an insect, neither will your pupils.

Key knowledge features about explaining

When explaining new concepts or ideas, four key features will help you structure and sequence your explanation:

- Labels and names. The actual words used to name the concept (insect, electricity, colour, ambition)
- Attributes. There are two kinds, namely:
 - ‘Must have’ features, which are essential parts of the concept like ‘wings’ (bird) ‘thorax’ (insect);
 - ‘May have’ features that may occur, but not always. A sparrow is brown, but not all birds are. Some insects have hard shells, but not all do.
- Examples. In your explanations you will need to give examples that illustrate what you mean. For example, ants and flies are insects, but a snail, though it has antennae, is not an insect. It is a mollusc.
- Finally, you will have a set of ‘must have’ rules at the end that apply to what you are explaining. So your rules for insects would be: six legs, a head, thorax, abdomen, two antennae, and two or four wings.



TESSA (Teacher Education in Sub-Saharan Africa) aims to improve the classroom practices of primary teachers and secondary science teachers in Africa through the provision of Open Educational Resources (OERs) to support teachers in developing student-centred, participatory approaches. The TESSA 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.

TESSA OERs have been collaboratively written by African and international authors to address the curriculum and contexts. They are available for online and print use (<http://www.tessafrica.net>). The Primary OERs are available in several versions and languages (English, French, Arabic and Swahili). Initially, the OER were produced in English and made relevant across Africa. These OER have been versioned by TESSA partners for Ghana, Nigeria, Zambia, Rwanda, Uganda, Kenya, Tanzania and South Africa, and translated by partners in Sudan (Arabic), Togo (French) and Tanzania (Swahili) Secondary Science OER are available in English and have been versioned for Zambia, Kenya, Uganda and Tanzania. We welcome feedback from those who read and make use of these resources. The Creative Commons License enables users to adapt and localise the OERs further to meet local needs and contexts.

TESSA is led by The Open University, UK, and currently funded by charitable grants from The Allan and Nesta Ferguson Foundation, The William and Flora Hewlett Foundation and Open University Alumni. A complete list of funders is available on the TESSA website (<http://www.tessafrica.net>).

As well as the main body of pedagogic resources to support teaching in particular subject areas, there are a selection of additional resources including audio, key resources which describe specific practices, handbooks and toolkits.



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TESSA_EnPA_KR_all May 2016



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Assisting learning by demonstrating

How explaining is done is just as important as having good subject knowledge. Just giving out information is not enough. Demonstrating an idea or a concept in a practical way often assists pupil learning. This can be done by:

- using pictures, diagrams, models, specimens and artefacts to show what you mean;
- getting pupils themselves to examine the subject of your explanation. For instance, as you explain about a plant, they can see what you are talking about better if they have a specimen in front of them;
- enabling all pupils to see clearly what you are explaining. A demonstration provides the link between 'knowing about' and 'being able to do.' Let them experiment in small groups by handling, drawing, discussing, watching and experimenting. Demonstrations are most effective when they are accurate, when pupils are able to see clearly and understand what is going on, and when brief explanations and discussion occur during the demonstration.
- asking for feedback from the pupils about their understanding of what they have seen.

Explaining is not one-way

Always remember that to avoid pupil confusion in your explanations and demonstrations, you need to fully involve them to check that they understand what you are saying and doing. Important points to be aware of are:

- asking them questions to find out what they already know and understand;
- finding out about misconceptions that are holding them back and which need to be 'unlearned';
- using small groups to exchange ideas and understanding about the topic you are explaining or demonstrating;
- asking them to explain to you and to each other what they understand about the current topic;
- being prepared to use different words with different pupils to make your explanations clearer.

Summary

When explaining or demonstrating to really assist learning you need to:

- include the four key features named above;
- focus on clarity and a sequence to your explanation;
- check understanding as you go along, through questions and discussion;
- use effective teaching aids for your demonstrations that everyone is able to see;
- involve pupils in your explanations.