Tackling common misconceptions

It is important to remember that adults hold misconceptions as well as children. Pupils needs to feel comfortable to share their ideas with you, so that you can support the development of their thinking over time. So, an important way in which you can help pupils to master foundational concepts and knowledge is to foster a classroom climate where the sharing and discussing of ideas is encouraged. The more comfortable pupils feel with sharing their ideas, the easier it will be for you to identify any misconceptions that they may have.

How can you respond to common misconceptions?

Here are some ways you can respond to common misconceptions:

- Explicitly address misconceptions through explanation
- Provide evidence that might conflict with pupils' inaccurate thinking
- Provide activities to support pupils to restructure their thinking
- Use formative assessment to check that pupils' thinking is changing
- Revisit misconceptions to remind pupils of what they thought in the beginning and acknowledge how their thinking has changed

An example of how to address a common misconception

Below you will see an example of a misconception that is common for primary pupils when learning about partitioning to add. This is followed by a part-whole model which can be used to help pupils to master the concept.

What's the misconception?

In key stage one, it is common for pupils to misunderstand the place value of digits within numbers. This is problematic when solving calculations because it means they are highly likely to make errors.

For example, when teaching pupils to partition two-digit numbers to add or subtract, they will sometimes partition like this:

...instead of this:

This occurs because pupils do not have a secure understanding of the value that the digits represent.

How can this be addressed?

In order to prevent this misconception from developing, it's important to support and develop pupils' understanding of number using concrete objects or representation when first introducing pupils to the strategy of partitioning to add. There are several ways that this can be done, but one way is to use a part-whole model:

Figure 1: Part-whole model. *Cited in WhiteRose, Year 2, Autumn Scheme of Learning.*

The 'whole' – 28 – is represented at the top and the 'parts' are represented in the circles attached to the whole. Pupils could be provided with blank models to fill out or partially completed ones like the one above. They can be given Dienes blocks or place value counters to explore partitioning the numbers and identifying relationships between them.

As you can see, this teaching strategy has been carefully thought about and planned into the scheme of work because the misconception is a common one for pupils.

Utilising experienced colleagues

You will need to consider the common misconceptions that may arise during your scheme of work and identify strategies to address them. Discussing how to help pupils to master important concepts with experienced colleagues will support you to identify the most effective teaching methods and to utilise effective strategies for addressing common misconceptions.