

Introduction to metacognition and self-regulation

Research has found that metacognition and self-regulation are important for pupil learning. The Education Endowment Foundation (EEF) has found that when harnessed effectively, these strategies can improve attainment of disadvantaged learners (EEF, 2018). Therefore, it is important to explicitly teach pupils metacognitive strategies linked to their subject knowledge, including how to plan, monitor and evaluate their work. This short session will aim to give you an introduction to metacognition and self-regulation, which will be built upon during your next mentor interaction.

Self-regulation

Self-regulation concerns the extent to which learners are aware of their strengths, weaknesses, and the strategies they use to learn.

In their [guidance report](#), the EEF (2018) state that cognition and metacognition are important parts of self-regulation. It's important to first understand what is meant by these two terms.

Cognition

Simply put, cognition is thinking. It's the mental process of knowing, understanding and learning (EEF, 2018). A good way to understand what cognition is, is to think of it as pupils thinking through a cognitive strategy. Pupils will learn many cognitive strategies when at school, and they will be subject specific. For example, if in maths pupils need to solve multiplication, they might have different cognitive strategies for doing so, such as using times tables, the box method, or long multiplication. These different strategies for solving multiplication are the pupils' cognitive strategies that they draw upon when working independently to solve problems. All these strategies are important for the pupil to know. However, the pupil needs to understand which strategy would be best to apply when solving different problems. For example, using times table facts to solve 7×8 would be efficient, but using times table facts alone to solve 1365×189 would be much more challenging. Pupils need to decide which strategies they should use and when. That's where metacognition comes in.

Metacognition

Very simply put, this is pupils thinking about their thinking (EEF, 2018). When approaching any task, pupils do so with metacognitive knowledge about:

- What the activity is asking them to do
- What cognitive strategies they could use
- Their own abilities and attitudes - knowledge of themselves as a learner

When undertaking a learning task, pupils start with this knowledge, then apply and adapt it. This is metacognitive regulation.

Metacognitive regulation:

Metacognitive regulation is when pupils plan, monitor and evaluate their thinking using their metacognitive knowledge. The diagram below helps to illustrate this process:

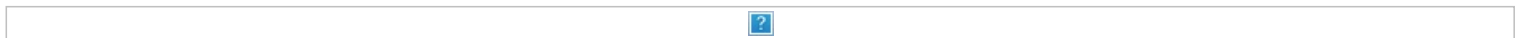


Figure 1: 'Metacognition' adapted from [Metacognition and Self-regulated Learning Guidance Report](#) (EEF, 2018)

Let's explore each of these stages in more detail.

Planning

When approaching a task, effective metacognitive learners have knowledge of what the task is asking them to do, knowledge of the cognitive strategies they could use, and knowledge of their own ability. They should use this information to plan the best cognitive strategy to use.

Monitoring

When using a specific cognitive strategy during a task, pupils should monitor how effective that cognitive strategy is. If they find it unsuccessful, then they should try a different cognitive strategy.

Evaluation

Once pupils have completed the task, they should evaluate how successful they were, so they know which strategies to use next time. By doing this, they begin to learn from their own experiences and refine their approach to completing similar tasks.

Example

To help make this clear, let's link it to the maths example we explored when thinking about cognition above. Imagine a pupil has been set the question of solving 1365×189 . Effective learners will apply metacognitive regulation whilst answering that question through the following stages:

Planning

First, the pupil examines the question. They can see it is multiplication from the operator symbol used. They know they are good at their times tables, so they decide to use their times tables to work it out.

Monitoring

When using their times tables, they become a little confused about which numbers they have multiplied and which numbers they still have left. They think they need to add some amounts together but are unsure. They realise that the strategy isn't very successful, so attempt to use long multiplication instead. They find this strategy much easier because they can keep track of which numbers they have already multiplied, and they are able to complete the question.

Evaluation

After the task, they reflect on their initial approach and decide that when trying to multiply large numbers, they will use long multiplication rather than their times tables.

In the above example, the pupil has been able to self-regulate their learning. They were able to acknowledge their own strengths and weaknesses when completing a task and, as a result, identified which strategy is most successful for them when multiplying large numbers together. When they come across a similar problem in the future, they can use what they have learned to inform their choice of cognitive strategy. This will refine their ability to solve this type of question.