EBOOK

# METACOGNITION

The Teacher CPD Academy.

Recognised time and time again as **a highly efficient and cost-effective way to boost student learning and performance**, Metacognition is important for schools to have on their radar. We often see it described as "thinking about thinking", but there is much more to it than this.

In this ebook, we've collated a series of articles to help you better understand **what Metacognition actually is (and isn't)** and the top strategies to help your students develop to reap its benefits.

# 3 METACOGNITION QUESTIONS TO IMPROVE GRADES

*By teacherCPDacademy.com*

Metacognition is a term that is being increasingly used in education since being highlighted as one of the most cost-effective ways to help students improve their learning.

But what actually is metacognition, how can it benefit students, and how can it be improved?

## METACOGNITION AND ITS BENEFITS

The term metacognition refers to the extent to which an individual is aware of their thoughts, and their ability to choose an effective thought process.

Evidence suggests that the use of metacognitive strategies can:

- Improve academic performance
- Improve problem solving skills
- Reduce stress associated with exams
- Lead to the development of new skills applicable to daily life

## A SIMPLE WAY TO IMPROVE METACOGNITION

Researchers found that having students ask themselves three simple questions can make a drastic difference...

### *1. "Which resources do I need to help me study?"*

This question encourages students to think strategically when selecting study resources. This ensures that they only use useful and effective study resources as part of the revision process.

***2. "Why are these resources useful?"***

This question encourages students to consider why a specific resource is helpful to their learning, as well as getting students to think about how to maximise the potential of that resource.

***3. "How will I use this resource?"***

This question helps encourage the creation of specific and realistic plans looking at when, where and how students will use their chosen study resources.

What did the researchers find? By asking themselves these three simple questions, students in the study obtained a third of a grade higher in their exams compared to those in the control group, and also felt less stressed about their upcoming exams.

## 5 MORE TIPS TO IMPROVE METACOGNITION

If you are looking for further tips on how to improve student metacognition, why not consider the following strategies?

***1. Set realistic goals***

Goal setting can be used to give students a specific target to aim for when beginning a task, hence making their efforts more focused.

However, these goals need to be balanced so that they are both challenging and realistic. Goal setting has been shown to improve student effort, attention, and persistence.

***2. Monitor and evaluate***

Encourage students to track their progress whilst completing a task, then reflect on what went well and what they could improve on next time after the completion of the task.

***3. Understand weaknesses***

Encourage students to seek out the gaps in their knowledge so that they are motivated to fill them. Knowing what you know is key.

### *4. Prepare properly*

Ensure that students are fully prepared for the process of studying, as this can save them a lot of time later on.

### *5. Give feedback*

Ensure that students consistently receive detailed feedback that is challenging but realistic, and that they can employ when they look to complete similar tasks in the future.

## FINAL THOUGHT

Whilst Metacognition may appear to be a complicated term, integrating metacognitive strategies into student learning does not have to be complicated.

You can achieve this by asking students to consider the resources they need to help them study, why the resources are useful and how they will use the resources. Having these skills at their disposal will not only help students academically, but also equip them with key skills they can employ outside of the classroom for the rest of their lives.

# FOUR MISCONCEPTIONS ABOUT METACOGNITION

*By teacherCPDacademy.com*

Put simply, Metacognition is the ability to critically analyse and monitor the way we think. As the concept of Metacognition has grown in popularity in the education sector, so too has the number of misconceptions associated with the term. So, what are these misconceptions?

The Education Endowment Foundation recently released a very thorough and helpful overview of what is currently known about Metacognition and Self-Regulation.

We thought their section on the common misconceptions about metacognition was particularly interesting, so we summarised them in this article...

## "METACOGNITION CAN ONLY BE DEVELOPED IN OLDER STUDENTS"

Whilst older children often use a wider range of metacognitive strategies, research suggests that younger children can demonstrate metacognitive skills too.

In one particular study, children aged as young as 3 years old were found to demonstrate metacognitive skills by being able to accurately predict their levels of ability on a task. Clearly, younger students have both the capacity and ability to further improve their metacognitive abilities.

## "METACOGNITION IS A GENERAL SKILL THAT DOESN'T REQUIRE SUBJECT KNOWLEDGE"

There is a misconception that if students can improve their metacognitive skills, then they will show improved academic performance across all subjects. However, whilst some metacognitive strategies are applicable to a number of subjects and lead to academic improvement, students still need subject knowledge.

Essentially, it is easier to regulate one's thinking if you know about the topic at hand.

## "METACOGNITION IS MORE IMPORTANT THAN COGNITION OR SUBJECT KNOWLEDGE"

Metacognition should not be seen as "higher-order" thinking. It is not the top of a triangle, with "lower-order" skills such as remembering information at the bottom. Instead, the two should be seen as entwined.

As the authors of the research state, "*we should look to develop both concurrently and not create false hierarchies where they do not exist*".

## "METACOGNITIVE SKILLS CAN BE EASILY TAUGHT IN DISCRETE 'THINKING SKILLS' LESSONS"

Metacognition is best developed during their subject lessons. This is because it is notoriously difficult to transfer between different contexts. Displaying high levels of Metacognition looks very different in Year 4 Maths to how it does in Year 7 French or Year 11 Physics.

Therefore, students should be taught the most relevant strategy at a time when it is applicable to the task at hand, so that they can better understand how such skills can be integrated into their studies.

However the authors of the report do also note that "*over time, Metacognition can become more generic, and older metacognitive learners can possess an array of strategies that*

*they then judiciously apply across a range of contexts and to a range of tasks*".

This means that older students may be better at applying the right thinking strategy to new or different types of problems.

## FINAL THOUGHT

Whilst previous research has suggested that developing Metacognition is an effective way to improve students' academic performance, it does need to be implemented in a certain way and teachers need to be mindful of common misconceptions.

It is important to know that metacognitive strategies can be introduced at a young age, should be weaved into lessons and, if paired with strong subject knowledge, can offer a great way forward to help students learn, develop and improve.

# PLAN, DO, REVIEW: THE PLANNING PART OF THE METACOGNITIVE PROCESS

*By teacherCPDacademy.com*

Identified over and over again as one of the most effective ways to boost student learning, Metacognition can be defined as "thinking about thinking".

Specifically, it is a person's ability to reflect and critically analyse the way that they think so they can monitor, reflect on and analyse their performance. Students with high Metacognition have high self-awareness, control over their thoughts and regularly choose the most appropriate and helpful strategies to complete a task.

So, how can you encourage Metacognition in the classroom? Meet metacognitive strategies, which can be divided into three stages: Planning, Doing and Reviewing.

In the first of this three-part article series, we will be unpacking what metacognitive strategies students can engage in during the Planning stage of a task...

## UNPACK THE TASK

When starting a new task, many students don't know what to do or the direction they want to go in. This overthinking can result in students getting stressed and consequently procrastinating because they're overwhelmed.

Therefore, when completing a task or trying to solve a problem, it's important that students break down what the question is asking

them to do before doing anything. If students cannot unpack the question and immediately rush into answering it, they're likely going to make mistakes.

If students are feeling stuck on a task, ask them to consider whether it relates to anything they've previously done before. Whether it's if they've answered a question with the same command term before or a different question on the same topic, it's important that students make these associations.

Not only will it boost their self-confidence if they know they've done something like the task before, but it will also help students make connections in their learning and consequently enhance their memory recall. By taking this important step back to unpack the question, students are in a better position to complete the task.

## ENGAGE IN SELF-QUESTIONING

During the Planning phase of a task, an important metacognitive strategy that students can engage in is self-questioning.
If students know how to talk to themselves constructively and helpfully, they'll perform better academically.

In fact, one study found that participants who asked themselves questions such as "will I do well?" before a task performed significantly better on a challenging anagrams task than those participants who had made declarations such as "I will do well".

Therefore, before completing a task, students should be asking themselves good questions. Some examples of these are:

- *"Is this similar to a previous task?"*
- *"Why is this true?"*
- *"What should I do first?"*
- *"What do I need to do first?"*
- *"What do I want to achieve first?"*

## SET GOALS

Before completing a task, it's important that students do goal setting right and set both long-term and short-term goals. When done correctly, not only can goal setting improve intrinsic motivation and focus attention, but it can also improve performance by increasing students' persistence and effort.

Setting long-term goals gives students something to strive towards and can help them overcome any minor setbacks that inevitably happen during the Doing phase of a task. Students should set goals that are challenging, as this will encourage them to apply more effort, but also realistically achievable.

However, goal setting isn't just about the final destination - it's about the journey as well. During the Planning stage, students should also set themselves short-term goals as they serve two main purposes:

- ***They keep you on track*** - By breaking a task up into smaller, more easily attainable chunks, students will be able to keep track of their progress during the Doing phase, which can help boost motivation.
- ***They make you more productive*** - Students are less likely to procrastinate if they only have to focus on one small task at a time. By seeing how their small efforts are contributing to their long-term goal, students will develop a better sense of purpose.

## DON'T FALL VICTIM TO THE PLANNING FALLACY

A common issue among students is poor time management: they often miscalculate how long a task will take to complete. Many students believe a task will take them less time than it actually will, which results in them putting off the assignment until the last minute. This difficulty in predicting how long a task will take is a phenomenon called the Planning Fallacy, which many students fall victim to.

One research study found that over 70% of students took longer to finish their assignment than they had originally predicted, with the average time taken being over 55 days compared to an average prediction of 34 days.

But why are students so bad with time management?

Research shows that because of their age, to teenagers, time seems to move more slowly than it does for adults. To a 16-year-old, a year is 6.25% of their life, whilst the same time frame represents 2.5% to a 40-year-old.

Consequently, students believe they have more time to complete a task than they actually do. So, when it comes to the Planning stage of a task, make sure that students give themselves more time to complete the task than they think they need so they don't become stressed about completing the task on time. Usually, a 15-20% time buffer is a safe bet.

# PLAN, DO, REVIEW: THE DOING PART OF THE METACOGNITIVE PROCESS

*By teacherCPDacademy.com*

Metacognition is thought to be one of the most efficient and cost-effective ways students can boost their academic performance. Research shows that successfully implementing metacognitive strategies alongside self-regulation strategies can increase student progress by up to 8 months for primary students, up to 7 months for secondary students.

In the previous article, we covered four metacognitive strategies students should utilise in the Planning stage of a task. In this one, we will be unpacking five metacognitive strategies teachers should be encouraging their students to use during the Doing stage of a task...

## ASK QUESTIONS

Many students are scared to ask their teachers or peers for help for fear of looking "stupid" or like they weren't paying attention. However, if a student gets stuck, it's important that they ask for help to avoid cementing any misconceptions or misunderstandings they may have into their long-term memory.

Asking questions allows students to not only consolidate their knowledge, but also to figure out what topics or concepts they don't understand as well. As a result, they perform better academically.

Research shows that seeking clarification on things we're unsure about can reduce stress, self-doubt and worry and improve overall well-being, as it makes us feel less alone and more connected to others. Asking questions is also the sign of a

high-performing student: it allows them to seek feedback and advice on how to improve or adapt their strategies so they can become a better learner.

## ENGAGE IN SELF-QUESTIONING

Just like during the Planning stage of a task, it's also important that students engage in self-questioning whilst they're doing the task. This will not only allow them to see whether they're on track, but also to start reflecting on their performance and determine whether any goals need to be tweaked.

Research shows that students who engage in metacognitive thought have better learning gains, memory recall and academic performance in areas such as reading comprehension and science.

Five questions that a student can ask themselves whilst completing a task are:

- *"Am I on the right track?"*
- *"Have I made my point?"*
- *"What can I do differently?"*
- *"Have I allocated enough time?"*
- *"Who can I ask for help?"*

## MONITOR PROGRESS

It's not enough to make a plan at the beginning: students have to constantly be monitoring their progress whilst completing a task.

Monitoring your progress is the best way to ensure you're on track to meet those short-term and long-term goals you set yourself and to see whether you need to adapt your strategies to the obstacles you've encountered. It also helps you identify whether your goals are translated into action - even when starting with good intentions, people often fall back into old habits when dealing with something new.

The more time and effort students spend in the Planning stage, the easier self-monitoring is as they know exactly what they want

to work towards. Asking yourself questions, setting clear deadlines, referring to your goals and having a checklist of the things you have already done and still need to do are a few great ways to track progress.

## IMPROVE SELF-REGULATION

Self-regulation can be defined as one's ability to manage their thoughts, feelings, and actions whilst striving towards a goal and is a key trait needed for success. Students with good self-regulation strategies have strong intrinsic motivation, are self-aware of their strengths and weaknesses and are less likely to procrastinate. On the other hand, students who are impulsive aren't as good at delaying gratification, regulating their learning activities, staying on task and are easily distractible.

So how can students improve their self-regulation? Here are two self-regulating strategies students can use:

- ***Manage time effectively*** - Make sure students are sticking to the deadlines they set themselves during the Planning stage and are adapting their strategies based on how long the task is taking them.
- ***Remove distractions*** - Research shows that after being distracted, it takes around 25 minutes to get back to focusing on the task at hand. So, that quick 2-minute Instagram scroll? It's really a 27-minute distraction. Students who perform best are those who ask themselves "where do I work best?" This may be in the library for some, or at their desk with their phone in another room so they're concentrating on the task at hand for others.

## DEVELOP RESILIENCE

Students with high levels of resilience maintain their intrinsic motivation despite experiencing challenges or setbacks and don't give up easily when working towards a long-term goal.

When working on a new or difficult task, students can find it daunting and fall back on the "I can't" mentality. Those two words can have a big impact on students' self-confidence which can stop them from even trying.

However, with a bit of perseverance and self-belief, students may surprise themselves.

Students should reframe stressful situations into opportunities to become better learners. Any mistakes made along the way should be an opportunity for students to try different methods and techniques as problems may have more than one solution.

Alternatively, when students are stuck, they should ask themselves metacognitive questions such as “What could I do differently?” so they’re in a position to overcome obstacles along the way.

# PLAN, DO, REVIEW: THE REVIEWING PART OF THE METACOGNITIVE PROCESS

*By teacherCPDacademy.com*

Time and time again, Metacognition is highlighted as a low-cost, hyper-effective learning strategy for students. Metacognitive strategies specific to planning, monitoring and reviewing learning are particularly helpful for supporting students in the classroom.

Part one of this three-part article series covered four metacognitive strategies that students could use in the Planning stage of a task. Part two looked at five metacognitive strategies that could be used while doing a task.

In this third and last part, we're looking at four metacognitive strategies that teachers can encourage students to use during the Reviewing stage of a task...

## SELF-EVALUATE

After successfully completing a task, students may not remember what they struggled with and may not realise how much they learned. It is important that students engage in self-evaluation so that the next time they complete a task, they can apply what they have learned and avoid making the same mistakes.

Teachers can encourage self-evaluation by asking students to review their corrected homework, coursework and exams, paying special attention to recurring mistakes and teacher remarks.

Self-evaluation can also be done through self-correcting, which helps students become independent learners and develop a

Growth Mindset. Research suggests that students who correct their own exams and explain why they made the mistakes they did have a better understanding of the learning material.

This activity allows them to acknowledge their strengths and weaknesses, and to see where and why they went wrong on a task. However it should be noted that if students are novices, this will need to be heavily guided, as they may not yet have the schema in place to spot misconceptions. As they move towards being experts, we can look to reduce this support.

Teachers can also encourage self-evaluation by asking students to self-question. This involves students privately answering a set of questions to review what they have learned. These could include:

- *"What did I learn about this topic that I didn't know before?"*
- *"What content was challenging to learn? Do I understand it now?"*
- *"Why did I make the mistakes that I did? Where did I go wrong?"*

## TEST YOURSELF

Before an exam, students can use many techniques to help them remember information. Self-testing is one of the most effective of these strategies, allowing students to make sure that they really did retain the information necessary for an exam.

Self-testing allows students to review what content they know well, what content they need to study more, and what content they need to re-learn altogether.

One way to practice self-testing is by completing practice tests. Research suggests that taking practice tests improves student learning, particularly when they involve Retrieval Practice.

Teachers may also encourage students to teach their peers. Once the information has been learned, a powerful way to review how much you have learned is trying to teach others. Research has shown that students who taught other students about a scientific theory without using notes learned more than students who used a script or students who used Retrieval Practice.

Teaching as learning allows students to review what they know well enough to teach someone else.

## FIGURE OUT WHAT LEARNING STRATEGIES WORK BEST

Many learning strategies exist when it comes to studying, especially in relation to maximising memory. We recognise that not all studying strategies are equal.

Figuring out which strategies worked best for them will allow students to make the most out of their learning in the classroom. Teachers can encourage students to do this in many ways, for example by asking students to:

- Reflect on the pros and cons of the learning strategies they used
- Identify the most and least effective learning strategies
- Recognise what mistakes they made when trying new learning techniques and what could have gone better

## RECOGNISE GOOD AND BAD HABITS

Forming good habits and changing bad ones is a vital key to good performance. With research suggesting that 40% of behaviour can be accounted for by habits, it is clear that they play a big role in our everyday life and, for students, in their academic careers.

Bad study habits may prevent students from performing their best on exams or learning effectively in the classroom. Students should review whether habits such as eating breakfast, listening to music or sleeping sufficiently affect their ability to learn and their memory retention.

Teachers can prompt students to do this by suggesting that students keep a diary where they can keep track of habits that may affect revision. Identifying and maintaining good ones and avoiding bad ones may play a role in optimising student learning.