

Example 1: Integrating metacognition into a KS2 history topic – Exploring Viking invasions of England through metacognition and learning-to-learn activities

Objective: Pupils will learn about the Viking invasions of England while developing metacognition and learning-to-learn skills.

Materials:

1. Visual aids (maps, images of Vikings, England, and Viking ships).
2. Age-appropriate books, articles, or online resources on the Viking invasions.
3. Writing materials (notebooks, pencils, coloured markers).
4. Metacognition tools (metacognitive prompts, self-assessment forms).
5. Art supplies for creative activities.
6. Optional: Historical fiction books or Viking-related stories.

Q1

This lesson plan integrates the study of Viking invasions with metacognition, promoting critical thinking and self-awareness among primary school pupils. Of course, not all metacognitive development needs to happen across a sequence of lessons. In the following example we will look at developing metacognition in a KS2 maths lesson.

Example 2: Integrating metacognitive development into a KS2 maths lesson – solving multiplication word problems

Set a clear learning objective, for example, ‘Today, we will learn how to solve multiplication word problems.’

Activate prior knowledge: Ask pupils to recall and share their prior knowledge related to the topic. This helps them to make connections and activate their existing understanding. For example, ask them to share any strategies they have previously used to solve word problems.

Model metacognitive thinking: Demonstrate metacognitive thinking by thinking aloud as you solve a word problem. Explain the strategies you are using, why you are using them, and how you are monitoring your progress. For example, say, 'I am going to read the problem carefully, underline the important information, and then decide which operation to use.'

Provide guided practice: Give pupils a series of multiplication word problems to solve in pairs or small groups. Encourage them to use the metacognitive strategies you modelled and discuss their thinking with their peers. Circulate the room to provide support and ask probing questions to deepen their understanding.

Reflect on learning: After pupils have solved the word problems, bring the class back together for a reflection discussion. Ask pupils to share their strategies, challenges they faced, and what they learned about their thinking process. This encourages metacognitive reflection and helps pupils to become aware of their own learning process.

Provide feedback and next steps: Give specific feedback to pupils about their problem-solving strategies and metacognitive thinking. Highlight areas of strength and suggest areas for improvement. Encourage pupils to continue practising metacognitive thinking in future math lessons.

By integrating metacognitive development into the lesson, pupils will not only improve their problem-solving skills, but also develop a deeper understanding of their own thinking processes and become more independent learners.

Example 3: Integrating metacognitive development into a KS3 geography topic – plate tectonics

Lesson 1: Introduction to Plate Tectonics

Objective: Introduce the concept of plate tectonics and lay the foundation for further exploration.

Day 1: Introduction and Metacognition Activity

Engage (10 minutes):

Show images and videos of natural disasters like earthquakes and volcanic eruptions.

Ask pupils to share what they know and what questions they have about these events.

Instruction (20 minutes):

Present a brief overview of plate tectonics using visual aids.

Discuss Earth's structure and the role of the lithosphere.

Activity – Think–Pair–Share (15 minutes):

Ask pupils to reflect on what they've learned so far.

In pairs, have them share their thoughts and questions.

Then, as a class, discuss their findings and questions.

Homework (5 minutes):

Repeat the principle of plan – monitor – evaluate.

Get pupils to develop a plan for studying a text on plate tectonics assigned to them.

Lesson 2: Plate Boundaries

Objective: Explore different types of plate boundaries.

Day 2: Plate Boundaries and Metacognition Activity

Retrieval practice (10 minutes):

Check for understanding from previous lesson.

Discuss what pupils learned from the previous lesson.

Explore (20 minutes):

Introduce the different types of plate boundaries (divergent, convergent, and transform).

Explain the movements and geological features associated with each type.

Activity – Metacognition Journal (15 minutes):

Provide pupils with a metacognition journal.

In their journals, ask them to write down what they find most interesting or challenging about plate boundaries.

Encourage them to reflect on their learning process and what they can do to improve their understanding.

Group Activity – Plate Boundary Simulation (30 minutes):

Divide pupils into groups.

Provide materials to simulate plate boundary interactions (e.g., cardboard for plates, markers for boundaries).

Have each group create a model to demonstrate one type of plate boundary.

Lesson 3: Plate Tectonics and Earth's Features

Objective: Explore the impact of plate tectonics on Earth's surface features.

Day 3: Features and Metacognition Activity

Recap (10 minutes):

Review the different types of plate boundaries using retrieval practice activities.

Explore (20 minutes):

Discuss how plate tectonics influence the formation of mountains, ocean basins, and volcanic islands.

Activity – Concept Map (15 minutes):

Ask pupils to create a concept map illustrating the relationship between plate tectonics and Earth's surface features.

Hands-On Activity – Modelling Mountain Formation (30 minutes):

Provide materials for a hands-on activity in which pupils model mountain formation due to convergent boundaries.

Get pupils to plan the activity, thinking about the materials needed, knowledge required, and where to search for additional knowledge.

Provide sheets for reflection on how the activity is going half-way through.

Provide an evaluation sheet with questions on what they would have done differently, what knowledge and skills were required to complete the activity, and what they have learnt from it.

Lesson 4: Historical Perspectives and Metacognition

Reflection

Objective: Explore the history of plate tectonics and encourage metacognition reflection.

Day 4: History and Metacognition Reflection

Recap (10 minutes):

Review the concepts covered in the previous lessons.

Explore (20 minutes):

Present the history of plate tectonics, including the contributions of scientists like Alfred Wegener and the evidence that supports the theory.

Activity – Socratic Seminar (30 minutes):

Conduct a Socratic seminar where pupils discuss the historical development of plate tectonics.

Encourage them to reflect on how scientific knowledge evolves over time and the role of critical thinking.

Metacognition Reflection (15 minutes):

Have pupils reflect on how their understanding of plate tectonics has evolved.

Ask them to identify areas of strength and areas they still find challenging.

Lesson 5: Assessment and Application

Objective: Assess pupils' understanding and apply their knowledge.

Day 5: Assessment and Application

Quiz (30 minutes):

Administer a quiz to assess pupils' knowledge of plate tectonics, plate boundaries, and Earth's surface features.

Application Project (60 minutes):

Assign a project where pupils can choose an aspect of plate tectonics and create a presentation, report, or model to demonstrate their understanding.

Metacognition Discussion (15 minutes):

Lead a class discussion where pupils share how they applied metacognitive strategies to improve their learning during the unit.

Conclusion and Reflection (10 minutes):

Conclude the unit by discussing the importance of plate tectonics in understanding the Earth's dynamic processes.

Throughout these lessons, encourage metacognitive strategies such as think-pair-share, journaling, concept mapping, and reflection. This will help pupils develop a deeper understanding of plate tectonics while also becoming more aware of their own learning processes.

Example: 4 Integrating metacognitive development into a

KS4 Computing lesson – online safety

Lesson 1: Introduction to Online Safety and Metacognition

Objective: Understand the importance of online safety and introduce metacognitive strategies for learning.

Day 1: Introduction and Metacognition Activity

Starter (15 minutes):

Start with a discussion about the positive aspects of technology, followed by potential risks and challenges.

Ask pupils to share their experiences and concerns regarding online safety.

Instruction (20 minutes):

Introduce the concept of online safety, including privacy and identity protection.

Explain the importance of being aware of one's digital footprint.

Activity – Online Safety Brainstorm (15 minutes):

In pairs or small groups, have pupils brainstorm potential online safety concerns and their consequences.

Discuss their findings as a class.

Metacognition Activity – Think-Aloud (10 minutes):

Introduce the 'think-aloud' strategy where pupils verbally express their thought processes while learning.

Apply this strategy to reflect on what they've learned about online safety.

Lesson 2: Online Privacy and Identity Protection

Objective: Explore strategies for protecting online privacy and identity.

Day 2: Online Privacy and Identity Protection

Recap (10 minutes):

Review the key concepts from the previous lesson.

Instruction (20 minutes):

Discuss strategies for protecting online privacy, such as strong passwords, two-factor authentication, and privacy settings.

Explain the importance of thinking before sharing personal information online.

Activity – Create a Strong Password (15 minutes):

Guide pupils in creating strong, unique passwords.

Discuss the importance of changing passwords regularly.

Metacognition Reflection (15 minutes):

Ask pupils to reflect on their online behaviours and discuss the changes they plan to make to enhance their online privacy and security.

Lesson 3: Recognising and Reporting Concerns

Objective: Learn how to identify and report various online concerns.

Day 3: Recognising and Reporting Concerns

Recap (10 minutes):

Use retrieval practice to review the importance of online safety and privacy.

Instruction (20 minutes):

Introduce common online concerns, such as cyberbullying, online harassment, scams, and inappropriate content.

Discuss the importance of identifying and reporting these concerns.

Activity – Scenarios (20 minutes):

Present real-life scenarios related to online concerns.

In small groups, have pupils discuss how they would respond and report the issues.

Metacognition Discussion (15 minutes):

Lead a class discussion about the challenges of recognising online concerns and the importance of seeking help when needed.

Lesson 4: Reporting Mechanisms and Digital Citizenship

Objective: Understand the reporting mechanisms and practise responsible digital citizenship.

Day 4: Reporting Mechanisms and Digital Citizenship

Recap (10 minutes):

Review the key online concerns and the importance of reporting them.

Instruction (20 minutes):

Discuss different reporting mechanisms, including how to report concerns to school authorities, social media platforms, and law enforcement.

Activity – Digital Citizenship Pledge (20 minutes):

Ask pupils to create a digital citizenship pledge outlining their commitment to responsible online behaviour.

Metacognition Reflection (15 minutes):

Have pupils reflect on how the development of the pledge has or has not improved their knowledge and understanding of online safety, and what activities they might do to enhance this further.

Lesson 5: Final Assessment and Application

Objective: Assess pupils' understanding and encourage responsible online behaviour.

Day 5: Final Assessment and Application

Quiz (30 minutes):

Administer a quiz to assess pupils' knowledge of online safety, privacy, and reporting concerns.

Digital Citizenship Project (60 minutes):

Assign a project where pupils can create an informative poster, presentation, or video on online safety and responsible digital citizenship.

Get pupils to plan an activity, thinking about the materials needed, knowledge required, and where to search for additional knowledge.

Provide sheets for reflection on how the activity is going half-way through.

Provide evaluation sheet with questions on what they would have done differently, what knowledge and skills were required to complete the activity, and what they have learnt from it.

Metacognition Discussion (15 minutes):

Lead a class discussion where pupils share how they applied metacognitive strategies to improve their understanding of online safety and digital citizenship.

Conclusion and Future Planning (10 minutes):

Discuss the importance of continued vigilance and responsible online behaviour.

You will see that each of these examples has a somewhat different structure. This is to illustrate that there is no one way to do this, but that metacognition can be incorporated into the form of curriculum planning you and your school uses.

Ref: Muijs, D. (2024). 'Integrating metacognition into the curriculum'. In N. Burns (Ed.), *Teaching hacks: fixing everyday classroom issues with metacognition* (pp. 171-186). Sage Publications Ltd.