THIRD SPACE LEARNING

A Guide To Enhancing Rosenshine's Principles With AI For Secondary Schools

Save planning and resourcing time while implementing research-backed teaching strategies with these ready-made AI prompts

SLT Guides

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Introduction

Rosenshine's Principles of Instruction remain one of the most evidence-based frameworks for effective teaching. Barak's ten principles have guided thousands of teachers in creating lessons that genuinely improve learning outcomes across all subjects and year groups.

Yet many teachers find themselves time-poor when it comes to implementing these principles consistently. Creating varied review activities, developing scaffolded questions, and designing differentiated practice materials can consume hours and take up time that busy educators like yourself simply don't have.

This is where AI can make a positive difference.

When used thoughtfully, AI tools can help you implement Rosenshine's principles more efficiently and effectively than ever before. Rather than creating resources from scratch, you can use AI to generate starting points that you can adapt and refine based on your professional expertise and knowledge of your students.

By no means should AI replace your professional judgement. AI should simply amplify your teaching skills.

The prompts in this guide are created and designed in partnership with Victoria Hedlund, founder of GenEd Labs.ai, to save you time on resource creation while ensuring your pedagogical foundations remain sound.

What you'll find in this guide

This resource provides ready-to-use AI prompts aligned to each of Rosenshine's ten principles. Each prompt has been carefully crafted to:

- Generate educationally sound activities and questions
- Consider different learning needs and cognitive styles
- Include real-world contexts that make learning meaningful
- Respect diverse ways of thinking and responding
- Avoid AI-bias

The prompts cover KS1-4, from Year 1 through to Year 11, with specific examples for maths topics across primary and secondary phases.

You can copy and paste these prompts directly into your preferred AI tool (ChatGPT, Claude, Gemini, or similar), then adapt the outputs to match your students' specific needs.

Shaping the future of education with AI

At Third Space Learning, we've spent over 10 years delivering one-to-one online maths tutoring over 2 million+ hours in more than 4,000 UK schools.

This experience has led us to develop Skye, our **spoken AI maths tutor**, with the same research-led approach and robust oversight we bring to all our tutoring. But at a much lower cost.

Our academic team of teachers have trained Skye to teach maths in the same way as our traditional tutors, using many of Rosenshine's principles of instruction such as modelling, scaffolding, asking questions and independent practice.

Skye talks pupils through our teacher-created maths problems and lessons, speaking, listening, and guiding them through step-by-step explanations at their own pace.

How AI tutor Skye applies Rosenshine's principles

1. **Daily review**
   Every lesson begins with a skill check linked to the lesson objective. Skye adapts the session depending on how the pupil responds, revisiting prerequisite skills if needed.

2. **Present new material in small steps**
   Lessons follow a structured "I do, we do, you do" model. Skye presents one concept or step at a time, supported by simplified visuals and clear instructions to manage cognitive load.

3. **Ask questions**
   Skye is trained to ask diagnostic and open-ended questions throughout the lesson, encouraging pupils to explain their reasoning aloud, promoting metacognition and deeper understanding.

4. **Modelling and examples**
   Skye presents worked examples and models using teacher-created slides and clear, verbal explanations. Learners are prompted and guided to analyse and replicate correct methods.

5 Guided practice
Skye supports learners through scaffolded steps. Hints are provided if pupils struggle, building confidence and helping them succeed at each stage of the problem.

6 Check for understanding
Real-time verbal interaction lets Skye identify misconceptions and confusion through pupil responses and tone. Skye adapts instruction immediately, providing tailored support.

7 Obtain a high success rate
Skye is designed to help students achieve success through careful pitch, adaptive dialogue and scaffolding, providing enough challenge without overload.

8 Provide scaffolding
Lessons include up to three graduated hints per task. Visual aids, sentence stems and focused attention tools (e.g. blurring irrelevant content) support complex thinking.

9 Independent practice
In the “you do” phase, Skye steps back while pupils work independently, then checks understanding with a ‘go further’ question in a new context .

10 Weekly and monthly review
Pupils revisit concepts through spaced repetition in ongoing programmes.

If you have any questions about AI tutoring from Third Space Learning or any feedback or questions, we’d love to hear from you.

Get in touch: hello@thirdspacelearning.com

“Today, we’re thrilled to be at the forefront of using Third Space Learning’s AI voice tutoring. This innovative one-to-one maths tutoring solution offers an even more cost-effective alternative. The children are thoroughly enjoying the experience, and their engagement and focus are clearly evident.”

Chris Harris, Deputy Headteacher
Admirals Academy, part of EMAT

How to get the most from these prompts

Before you start, remember that AI is a tool; the pedagogical decisions remain yours. Here's how to use these prompts effectively:

1. **Start with the general template** for each principle, then customise the specific details in square brackets to match your lesson objectives
2. **Review and refine the output.** AI provides a starting point, but your expertise determines what works for your students
3. **Ask follow-up questions** such as "What assumptions have you made here?" to understand the AI's reasoning
4. **Adapt for your context.** Consider your students' prior knowledge, interests, and any additional support needs

Use these tools to reclaim time for the aspects of teaching that truly require your human touch and expertise, building relationships, providing personalised feedback, and making those crucial in-the-moment decisions that create wonderful learning experiences.

A note on quality and safety

While these prompts have been designed with best practice in mind, always review AI-generated content before using it with students. Check for accuracy, appropriateness, and alignment with your curriculum requirements. AI can occasionally make errors or assumptions that don't align with your specific context or cohort.

AI prompts for Rosenshine's principles of instruction

Principle 1: Daily Review

Principle Overview:	Teachers should provide students with the opportunity to review their prior learning every lesson.
General Template:	[Verb of choice] an activity to access prior learning for [year] focused on the objective of [objective] and [further details]. Ensure your answer considers different cognitive styles and is accessible for all learners.

Examples:

KS2, Year 4 (Times Tables):
Generate a times tables activity for Year 4, focusing on multiples of 6 up to 60. Provide instructions that encourage students to show their answers using different methods, such as drawing, using counters, a number line, or saying them aloud. Include reflection questions about which multiples are easiest and which need more practice. Make sure the activity allows students to record their thinking in a way that suits them best.

KS3, Year 8 (Solving Linear Equations):
Create a lesson activity for Year 8 on solving linear equations, using $3x + 5 = 20$ as the example. Ask students to explain each step, with options to write, draw, use diagrams, or talk it through. The activity should prompt them to imagine explaining to a friend who learns differently. Include suggestions for supporting different communication styles.

KS4, Year 10 (Area of a Circle):
Write a problem-solving activity for Year 10 where students work out the area of a circle with a radius of 4 metres. Include guidance for students to show and explain their method, with options to write, draw diagrams, use a calculator, or choose a digital tool. Make sure your instructions support different ways of reasoning and allow for choice in how students present their answers.

Principle 2: Present New Material in Small Steps

Principle Overview:	New ideas are easier to understand when broken down into manageable steps (chunking). This ensures focus on specific objectives and avoids cognitive overload.
General Template:	[Verb of choice] an activity for [year] focused on the objective of [objective] and [further details]. Manage the cognitive load of the activity by chunking it. Ensure your answer considers different cognitive styles and involves real-life context.

Examples:

KS1, Year 1 (Counting in Twos):
Create a Year 1 activity that helps students practise counting in twos from 0 to 20. Use real-life examples such as socks and shoes, and provide options for students to show their understanding by drawing, moving objects, or saying numbers aloud. Make sure all learners can participate in a way that suits them.

KS2, Year 5 (Decimal Place Value):
Generate a three-step explanation of decimal place value for Year 5. Include the use of a number line and offer ways for students to show their understanding using diagrams, words, or talking through each step. The activity should be accessible and flexible for different learning needs.

KS4, Year 11 (Factorising Quadratics):
Write an explanation for Year 11 on how to factorise quadratics ($x^2 + bx + x$). Provide a checklist for the process and encourage students to record each step using their preferred method — writing, colour coding, diagrams, or a short audio explanation. Ensure the checklist is adaptable for all learners.

Principle 3: Ask Lots of Questions

Principle Overview:	Asking questions promotes deep thinking, promotes metacognition and can identify misconceptions. Questions should be varied and matched to cognitive demand to challenge all stud...
General Template:	[Verb of choice] an activity for [year] focused on the objective of [objective] and [further details]. The activity should promote deep thinking, metacognition and be designed to reveal misconceptions. Ensure your answer includes questions that are matched to cognitive demand. Explain your assumptions in your output.

Examples:

KS1, Year 2 (Shapes):
Generate three questions for Year 2 that facilitate students explaining the difference between a square and a rectangle. Include at least one question where students can respond by drawing, using objects, or giving a spoken explanation. Make sure all students have a way to show their understanding.

KS2, Year 6 (Ratio):
Write a hinge question on ratio for Year 6, with a follow-up question for those who are unsure. Give options for students to answer using pictures, objects, or words so everyone can participate, whatever their preferred way of working.

KS4, Year 10 (Probability):
Create three challenging probability questions for Year 10. Make sure at least one question invites a written explanation, and offer students the choice to respond using diagrams, words, or a short video/audio. Adapt your prompts to support different learning needs.

Principle 4: Provide Models

Principle Overview:	Provide models and narrated worked examples.
General Template:	Create an activity for [year] focused on the objective of [objective] and [further details]. The activity should include a model(s) and narrated worked examples. Explain how your output manages cognitive load.

Examples:

- **KS1, Year 2 (Subtraction):**
  Create a worked example of 15 minus 7 for Year 2, showing both a number line and counters. Write simple explanations for each step, and include suggestions for students to use their own drawings, objects, or spoken explanations to show their thinking.

- **KS2, Year 5 (Long Multiplication):**
  Model how to multiply 34 by 6 for Year 5. Break the process into clear stages, and encourage students to follow along by adding their own notes, drawings, or using manipulatives. Make sure your instructions are accessible to all learners.

- **KS4, Year 11 (Cumulative Frequency Graphs):**
  Show how to draw a cumulative frequency graph from grouped data for Year 11. Provide a brief explanation for each stage, and offer students different ways to engage — such as creating a digital graph, drawing by hand, or explaining their process aloud.

Principle 5: Guide Student Practice

Principle Overview:	Guided practice helps students build confidence before moving to independent work.
General Template:	Create a guided practice activity for [year] focused on the objective of [objective] and [further details]. Demonstrate how the activity bridges between teacher-led practice and independent practice. Ensure the activity respects all ways of thinking and brings in real-world context.

Examples:

- **KS1, Year 2 (Doubling Numbers):**
  Generate five doubling questions for Year 2. Include pictures or visual aids for the first two questions, and use numbers only for the last three. Make sure the activity allows children to answer by drawing, writing, or saying their answers aloud, so everyone can access the task in their preferred way.

- **KS2, Year 4 (Division with Remainders):**
  Create a worksheet for Year 4 on division with remainders. Start with questions using counters or objects to share, and progress to questions that use numbers only. Encourage students to show their working through drawings, manipulatives, or written explanations to support different learning needs.

- **KS4, Year 10 (Expanding Double Brackets):**
  Design four practice questions for Year 10 on expanding double brackets. For the first question, guide students through every step with prompts or visual scaffolds; for the last question, present it as a challenge with minimal hints. Offer ways for students to show their thinking, such as writing, drawing, or using colour to highlight each stage.

Principle 6: Check for Understanding

Principle Overview:	Checking understanding during the lesson is essential for spotting misconceptions and ensuring responsive teaching.
General Template:	Design questions for [year] focused on the objective of [objective] and [further details]. The purpose of the questions is to check for understanding and identify or reveal misconceptions or incomplete knowledge/understanding. Ensure the check for understanding is accessible for all learners and learning needs.

Examples:

- **KS1, Year 1 (Odd and Even):**
  Generate three questions to check Year 1 understanding of odd and even numbers. Include one question where students are asked to spot and explain a mistake. Offer suggestions for students to show their answers by drawing, using objects, or talking through their thinking, so all learners can participate.

- **KS2, Year 5 (Perimeter):**
  Create a five-question quiz on perimeter for Year 5. Include at least one question where students need to draw a shape to answer, and provide options for them to explain their working with words, diagrams, or physical models. Make the quiz accessible for a range of learning needs.

- **KS4, Year 11 (Standard Form):**
  Design an exit ticket with three questions for Year 11 on converting numbers to and from standard form. Make sure one question asks for a reasoning or explanation, and give students the choice to respond using writing, annotated diagrams, or a short audio explanation. Support different ways of demonstrating understanding.

Principle 7: Obtain a High Success Rate

Principle Overview:	When students experience early success, their confidence grows. It sets them up for deeper learning and more challenge later on.
General Template:	Generate [number of questions] for [year] on [objective] that are [cognitive demand]. The purpose of these questions is for pupils to demonstrate a high success rate. Ensure the questions include different ways of learning and lived experience.

Examples:

- **KS1, Year 2 (Addition):**
  Generate three simple addition questions for Year 2, each supported with a visual scaffold such as a number line or ten-frame. Give suggestions so students can show their answers by drawing, moving objects, or saying the answer aloud—choose methods that include all learners.

- **KS2, Year 6 (Long Division):**
  Create two long division questions for Year 6 that require high cognitive demand. For each question, provide a helpful hint or strategy students can use. Allow for different ways of recording their working, such as step-by-step writing, diagrams, or talking through the process.

- **KS3, Year 7 (Bar Charts):**
  Design a sequence of three activities for Year 7 on bar charts. Start with a fill-in-the-blanks task, then move to interpreting a given chart, and finish by having students draw their own. Give students the option to complete activities using digital tools, paper, or manipulatives, so everyone can access and present their learning.

Principle 8: Scaffold Difficult Tasks

Principle Overview:	Scaffolding makes challenging tasks manageable. Breaking problems into smaller steps helps learners find a way in and reduces anxiety around new topics.
General Template:	Create [number of questions or tasks] scaffolded questions that scaffold the cognitive demand of [objective] for [year]. Break the problem into chunks and narrate the learner through the questions. Do not assume one set cognitive style. Justify how you have managed the cognitive load of the learner through the questions.

Examples:

- **KS1, Year 2 (Word Problems: Addition and Subtraction within 100)**
  Generate three scaffolded word problems for Year 2 where pupils add and subtract numbers within 100. For each, include a sentence starter and suggest ways for students to solve the problem using drawings, counters, or talking through their thinking, so all pupils can access the task.

- **KS2, Year 5 (Line Graphs: Interpreting Data)**
  Create two scaffolded questions for Year 5 on reading and interpreting line graphs. For the first, provide guiding prompts or hints to help pupils extract key information from the graph. For the second, make it more open, encouraging students to answer using drawings, explanations, or digital tools, so different learning needs are supported.

- **KS4, Year 10 (Trigonometry: Finding Unknown Sides Using Sine Rule)**
  Write a scaffolded trigonometry question for Year 10 where students need to use the sine rule to find the length of a side in a non-right-angled triangle. Start with a labelled diagram and include hint questions to break down the steps. End with an independent calculation. Allow students to show their reasoning using writing, labelled diagrams, or verbally, to ensure all learners are included.

Principle 9: Independent Practice

Principle Overview:	Independent practice helps students secure new learning and build confidence by working through problems at their own pace.

Examples:

- **KS1, Year 2 (Money – Addition and Subtraction):**
  Generate three scaffolded word problems for Year 2 involving adding and subtracting amounts of money using coins. For each, include a sentence starter and encourage students to solve them by drawing coins, using real or plastic coins, or explaining their reasoning aloud, so all pupils can access the task in a way that suits them.

- **KS2, Year 5 (Line Graphs – Comparing Two Sets of Data):**
  Create two scaffolded questions for Year 5 on comparing two different sets of data shown on a line graph. For the first question, give guiding prompts or hints to help pupils compare the changes over time. For the second, keep it more open, allowing students to answer by drawing, writing, or using a digital graphing tool to explain what they see.

- **KS4, Year 10 (Trigonometry – Calculating Angles in Right-Angled Triangles):**
  Write a scaffolded trigonometry question for Year 10 where students must use trigonometric ratios to find the size of an angle in a right-angled triangle. Begin with a diagram and hint questions for each stage, and finish with an independent problem to solve. Give students the option to show their working through writing, labelled diagrams, or by explaining their method aloud.

Principle 10: Weekly and Monthly Review

Principle Overview:	As with principle 1, spaced and interleaved practice is important for long-term memory retention.
General Template:	[Verb of choice] a [frequency] review quiz [or other task] for [year], based on the topic of [topic]at level [National curriculum or SoW reference]. Offer suggestions that deviate from the normative assumptions of learners.

Examples:

- **KS1, Year 2 (Time – Mixed Addition and Subtraction):**
  Generate a weekly review quiz for Year 2 with five questions that use addition and subtraction to solve problems involving telling the time (such as finding durations or times before/after). Offer suggestions for students to use clocks, drawings, or oral explanations so everyone can access the quiz in their preferred way.

- **KS2, Year 5 (Measurement – Fractions and Decimals in Context):**
  Design a monthly review quiz for Year 5 with six questions that apply fractions and decimals to real-life measurement problems (for example, length, mass, or capacity). Encourage students to show their answers using number lines, diagrams, or practical measurement tools, making the quiz accessible for all.

- **KS4, Year 11 (GCSE Maths – Mixed-Topic Exam Preparation):**
  Create a revision quiz for Year 11 with questions that cover algebra, probability, and interpreting statistical graphs from the GCSE specification. Include a mix of calculation, reasoning, and interpretation, and offer students the choice to respond in writing, with annotated diagrams, or by explaining their answers aloud to support different learning needs.

References

100 Quick GenAI Prompts for Teachers and Educators

genedlabs.ai/resources.

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Looking to improve your school's maths results without stretching your budget?

Tutoring from our spoken AI maths tutor Skye gives schools an even more affordable option for every pupil.

- 90% cheaper than other tutoring providers
- Curriculum-aligned lessons designed by qualified teachers
- Discounts available for long-term bookings and MATs

93% of teachers feel Third Space Learning lessons helped their pupils achieve higher assessment scores.

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