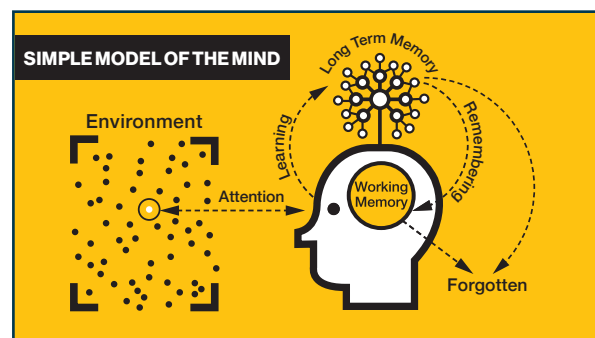**BARAK ROSENSHINE**

# PRINCIPLES OF INSTRUCTION
## 10 RESEARCH-BASED STRATEGIES THAT ALL TEACHERS SHOULD KNOW

## PRINCIPLES OF INSTRUCTION

**10 Research-Based Classroom Strategies**

Barak Rosenshine's 'Principles of Instruction' offers a comprehensive synthesis of decades of research, providing educators with ten foundational strategies to enhance teaching and learning. Grounded in cognitive science, observations of master teachers, and cognitive support research, these principles serve as a blueprint for effective instruction. The framework emphasises the significance of understanding cognitive limitations, applying incremental learning, and ensuring student mastery. It is crucial to understand that these strategies should not be rigidly used as a checklist but be applied in a nuanced manner.

**SIMPLE MODEL OF THE MIND**

Environment · Long Term Memory · Learning · Remembering · Attention · Working Memory · Forgotten

**LEARNING & MEMORY DIAGRAM BY OLIVER CAVIGLIOLI**

## LIMITATIONS OF WORKING MEMORY

**Tailoring Instruction for Maximum Learning**

At the heart of Rosenshine's Principles lies an understanding of the limitations of working memory, a crucial aspect of cognition where we process and temporarily store information. Our working memory has a limited capacity, capable of holding only a few pieces of information at any given moment. Overloading it with too much information can lead to confusion and hinder the learning process. This understanding underpins Rosenshine's advocacy for more explicit and instructional teaching and learning methods. For example, Rosenshine's research suggests should consider working memory limitations by presenting new material in manageable, small amounts, allowing students to master each concept before moving on to the next and asking questions to connect knowledge. These strategies ensure that students are not overwhelmed and can effectively process information meaningfully. Factors surrounding working memory are perfectly visualised in the above graphic by Oliver Caviglioli.

### 1 DAILY REVIEW
**Review Previous Learning**
Daily review aids students in connecting new concepts with existing knowledge, making learning more durable and meaningful. By engaging students in regular review, through activities like retrieval practice quizzes, homework correction tasks, and addressing common misconceptions as a class, students rehearse and enhance their skills to the point of automaticity. This form of daily practice makes it easier for students to acquire and assimilate future knowledge into their existing schemas.

### 2 SMALL STEPS
**Chunk New Information**
Rosenshine explains that our working memory (the place where we process information) is small and therefore it can only process a few pieces of information at once. Because too much information swamps working memory, teachers should break down curriculum concepts and key processes into small manageable steps and allow for focused practice after each step. Breaking down information facilitates better understanding and gives teachers insights into students' knowledge gaps.

### 3 QUESTIONS
**Check Students' Answers**
Frequent questioning is an effective method of engaging students actively with new content and linking it to their existing knowledge. Utilising a broad range of questioning techniques (such as Doug Lemov's 'Cold Calling' or the 'Think, Pair, Share' routine) allows teachers to assess all students' understanding and promotes a culture of active participation. Questioning strategies also help to deepen students' grasp of the material by requiring them to apply and articulate their learning.

### 4 MODELS
**Provide Cognitive Support**
Rosenshine suggests that providing models and worked examples significantly aids students in problem-solving by offering essential cognitive support. This method, which includes teacher demonstrations and step-by-step explanations, helps reduce students' cognitive load. Effective modelling also includes think alouds where the teacher externalises their thinking process. Modeling is key in helping novices develop expertise by unveiling the expert's underlying thought processes.
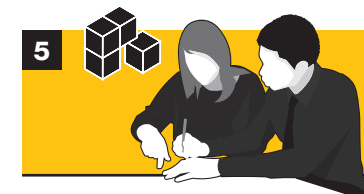
### 5 GUIDED PRACTICE
**Support Student Practice**
Guided practice is vital in the learning process as it ensures students actively engage with new material through sufficient rehearsal, crucial for transferring information to long-term memory. It involves the teacher spending significant time asking questions, checking understanding and correcting errors as students practice the new material. This iterative process of practice and feedback is essential for teachers in diagnosing any common misunderstandings and adjusting instruction accordingly.
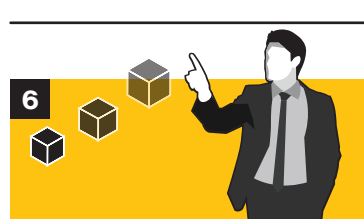
### 6 CHECK UNDERSTANDING
**Address Misconceptions**
Checking for understanding underscores the importance of regular assessment to ensure students grasp new material effectively. Frequent checks for understanding are critical, as they contribute to processing information into long-term memory and help teachers identify and rectify misconceptions early. Effective strategies include asking probing questions, encouraging students to summarise or explain concepts, and fostering discussions that require students to defend their specific viewpoints.

### 7 HIGH SUCCESS RATE
**Aim For 80% Success Rate**
Ensuring students achieve a high success rate during instruction is crucial, with Rosenshine's research advocating for an optimal success rate around 80 percent. This benchmark balances challenge and attainability, indicating that students are not only learning the material successfully but are also being sufficiently challenged. Teachers can use tools such as mini-whiteboards to quickly check for levels of success from the entire class. If it is below 80%, it is recommended to reteach the material.
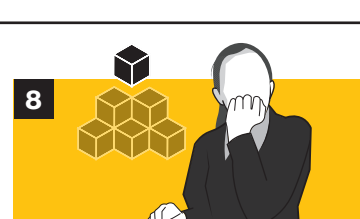
### 8 SCAFFOLDS
**Use Temporary Supports**
Temporary supports assist students in mastering challenging concepts. These instructional scaffolds include strategies such as live modeling, think-alouds, sentence starters, and checklists, which are designed to guide students through the learning of new information. Effective teachers introduce these supports, gradually phasing them out as students gain proficiency. Scaffolds and supports ensure that students are neither overwhelmed by complexity nor under-challenged by simplicity.

### 9 INDEPENDENT PRACTICE
**Build Fluency and Mastery**
Following teacher-led instruction and guided practice, students should engage in independent practice to help reinforce their learning. Rosenshine explains that practice is essential for achieving fluency in skills and knowledge, allowing for automatic recall that frees up working memory for more complex cognitive tasks. Independent practice should involve the same material as the guided practice. During this process, teachers should actively monitor and circulate the classroom to maintain engagement.
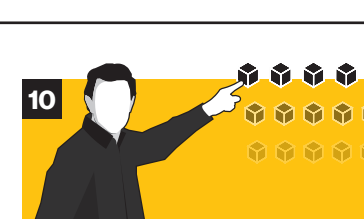
### 10 WEEKLY/MONTHLY REVIEW
**Extend Practice Over Time**
Rosenshine emphasises the importance of regular reviews, extending beyond daily checks to include weekly and monthly formative assessments. This advanced strategy, termed "successive relearning," involves spacing out retrieval practice over time to achieve mastery. Such reviews strengthen connections between new and old knowledge and ensures learning is transferred to long term memory. Effective retrieval practice tasks include cumulative quizzes, concept mapping, and class discussion.

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