SOFTWARE & TECH

List Of Research Based Teaching Strategies

PUBLISHED
November 25, 2026

REFERENCE
#1795583188851859

Introduction: The Science Behind Effective Teaching

Every educator wants to make a real difference in the classroom. But with so many theories, trends, and techniques circulating in the world of education, it can be difficult to separate what actually works from what simply sounds good. The answer lies in evidence. Over the past several decades, cognitive psychologists and education researchers have identified specific methods that consistently improve student outcomes. These are known as research based teaching strategies, and they form the backbone of effective instruction. Rather than relying on intuition or tradition alone, teachers who adopt these approaches use practices that have been tested, measured, and proven to enhance learning. This article provides a detailed list of research based teaching strategies that you can implement in your classroom today, along with practical guidance for each one.

What Are Research Based Teaching Strategies?

Research based teaching strategies are instructional methods that have been validated through empirical studies. These strategies are not theoretical ideas but practical approaches that have shown measurable results in real classroom settings. They are grounded in how the brain learns, retains information, and builds understanding. When you use research based teaching strategies, you are not guessing what might work. You are applying methods that have been tested across diverse student populations, subjects, and grade levels. This evidence based approach to teaching helps ensure that your time and effort lead to meaningful learning gains.

The Complete List Of Research Based Teaching Strategies

The following list of research based teaching strategies covers a broad range of techniques suitable for various subjects and age groups. Each strategy is supported by research and can be adapted to fit your specific teaching context.

1. Active Learning

Active learning moves students from passive recipients of information to active participants in their own education. Instead of simply listening to a lecture, students engage in discussions, problem solving activities, case studies, and hands-on projects. Research consistently shows that active learning leads to deeper understanding and better retention compared to traditional lecture based instruction. Studies from the Proceedings of the National Academy of Sciences have demonstrated that students in active learning classrooms perform significantly higher on assessments than those in lecture settings. To implement active learning, consider incorporating think-pair-share activities, minute papers, or collaborative problem solving sessions into your lessons.

2. Retrieval Practice

Retrieval practice is one of the most powerful research based teaching strategies available. It involves regularly asking students to recall information from memory without looking at their notes. This could take the form of low stakes quizzes, flashcards, or simply asking students to write down everything they remember about a topic. Research by cognitive scientists like Henry Roediger and Jeffrey Karpicke has shown that retrieval practice significantly strengthens long term memory. The act of pulling information out of the brain creates stronger neural pathways than rereading or reviewing notes. To use this strategy effectively, incorporate frequent, low pressure retrieval exercises throughout your instruction.

3. Spaced Practice

Spaced practice is the opposite of cramming. Instead of studying a topic intensely in one session, spaced practice involves spreading learning out over multiple sessions with increasing intervals of time between them. Research dating back to Hermann Ebbinghaus and continuing through modern studies confirms that spacing improves long term retention. When students revisit material after a gap, they have to work harder to recall it, which strengthens their memory. As a teacher, you can implement spaced practice by revisiting key concepts from previous units, using spiral review in your curriculum, and scheduling periodic cumulative assessments.

4. Interleaving

Interleaving involves mixing different topics or types of problems within a single study session. This contrasts with blocked practice, where students focus on one concept at a time until mastery. While blocked practice can feel more productive in the moment, interleaving leads to better long term learning. Research by Nate Kornell and Robert Bjork has shown that interleaving forces students to discriminate between concepts and select the appropriate strategy for each problem. This deepens their understanding and improves transfer. For example, in a math class, instead of doing ten similar problems in a row, students might work through a mix of problems that require different formulas or approaches.

5. Elaboration

Elaboration is the process of connecting new information to existing knowledge. When students explain concepts in their own words, generate examples, or relate ideas to their own experiences, they create richer mental representations. Research indicates that elaboration promotes deeper processing and improves recall. You can encourage elaboration by asking students to explain why a fact is true, to describe how a concept relates to something they already know, or to create analogies. This strategy works well in any subject and helps students move beyond surface level understanding.

6. Dual Coding

Dual coding theory, developed by Allan Paivio, suggests that combining verbal and visual information enhances learning. When students see a diagram or image alongside written or spoken text, they create two mental representations of the same information, which reinforces memory. Research based teaching strategies that incorporate dual coding include using graphic organizers, concept maps, timelines, infographics, and annotated diagrams. The key is to ensure that the visual and verbal information are closely aligned and presented together. Avoid simply adding decorative images that do not connect directly to the content.

7. Concrete Examples

Abstract concepts can be difficult for students to grasp. Providing concrete examples makes ideas more tangible and accessible. Research shows that examples help students understand principles and apply them to new situations. When introducing a new concept, start with specific, relatable examples before moving to the abstract rule or definition. Encourage students to generate their own examples as well. This strategy is particularly effective in subjects like science, mathematics, and social studies, where abstract theories are common.

8. Direct Instruction

Direct instruction is sometimes misunderstood as simply lecturing, but it is a highly structured, evidence based approach that involves clear modeling, guided practice, and immediate feedback. Research by John Hattie and others has shown that direct instruction can be extremely effective, especially when teaching foundational knowledge or skills. The key elements include stating the learning objective clearly, modeling the skill or concept, providing guided practice with feedback, and then allowing independent practice. Direct instruction is most effective when combined with other strategies like retrieval practice and formative assessment.

9. Scaffolding

Scaffolding refers to providing temporary support that helps students accomplish tasks they could not do independently. As students gain competence, the support is gradually removed. This idea comes from the work of Lev Vygotsky and his concept of the zone of proximal development. Research based scaffolding strategies include breaking complex tasks into smaller steps, providing templates or frameworks, modeling thought processes aloud, and offering hints or prompts. The goal is to build student independence over time.

10. Metacognition

Metacognition is the ability to think about one's own thinking. When students are aware of how they learn, they can regulate their strategies and improve their outcomes. Research indicates that teaching metacognitive skills significantly enhances academic performance. You can promote metacognition by asking students to plan their approach before a task, monitor their understanding during the task, and evaluate their performance afterward. Simple prompts like "What strategy did you use?" and "How do you know you understand this?" can make a big difference.

11. Formative Assessment

Formative assessment is the process of gathering evidence of student learning during instruction, not after. Unlike summative assessments that measure what students have learned at the end of a unit, formative assessments provide real time feedback that can guide teaching. Research shows that formative assessment, when used effectively, can dramatically improve student achievement. Techniques include exit tickets, quick quizzes, hand signals, think-pair-share, and classroom polling. The crucial element is that the information gathered is used to adjust instruction to meet student needs.

12. Feedback That Feeds Forward

Not all feedback is equally effective. Research by John Hattie and Helen Timperley indicates that the most powerful feedback is task focused, specific, and provides guidance on how to improve. Instead of simply saying "good job" or providing a grade, effective feedback tells students what they did well, what needs improvement, and exactly how to close the gap. This is often called "feed forward" because it directs attention to future learning. To implement this, focus your comments on the task rather than the person, and always include a clear next step.

13. Cooperative Learning

Cooperative learning involves students working together in structured groups to achieve shared goals. Research has consistently shown that well designed cooperative learning promotes higher achievement, better interpersonal skills, and increased motivation. The key is that the groups are structured with individual accountability and positive interdependence. Strategies like jigsaw, think-pair-share, and reciprocal teaching are all research based approaches that fall under cooperative learning. Simply putting students in groups without structure does not produce the same benefits.

14. Inquiry Based Learning

Inquiry based learning centers on student driven questions and investigations. Rather than receiving

information directly, students explore problems, ask questions, and discover answers through guided exploration. Research shows that inquiry based learning develops critical thinking skills and deep conceptual understanding. However, it is most effective when the inquiry is carefully scaffolded by the teacher. Pure discovery learning without guidance can be ineffective, but structured inquiry with clear goals and teacher support leads to strong outcomes.

15. Differentiated Instruction

Differentiated instruction recognizes that students have diverse backgrounds, readiness levels, and learning preferences. Research supports the idea that tailoring instruction to meet individual needs improves engagement and achievement. Differentiation can take many forms: varying the content, the process, the product, or the learning environment. The key is to use ongoing assessment to understand where each student is and then adjust instruction accordingly. This does not mean creating a separate lesson for every student but rather providing multiple pathways to the same learning goals.

How To Choose The Right Strategies For Your Classroom

With so many research based teaching strategies available, it can be tempting to try to use them all at once. That approach is rarely effective. The best strategy is to select a few techniques that align with your subject area, your students' needs, and your own teaching style. Start by focusing on one or two strategies, implement them consistently, and gather data on their impact. Over time, you can add more strategies to your repertoire. Remember that the effectiveness of any strategy depends on how well it is implemented. Even the most research based approach will fail if it is applied poorly or without fidelity.

Combining Strategies For Maximum Impact

Research based teaching strategies are not mutually exclusive. In fact, they often work best when combined. For example, you might use retrieval practice as a warm up activity, followed by a cooperative learning exercise that incorporates elaboration. You could use direct instruction to introduce a new concept, then use inquiry based learning to allow students to explore it further. The most effective teachers are those who have a toolkit of strategies and know how to blend them flexibly based on their goals and the needs of their students.

The Role Of Technology In Research Based Teaching

Technology can amplify many research based teaching strategies. Digital tools make it easier to implement retrieval practice through online quizzes, spaced practice through adaptive learning platforms, and dual coding through multimedia presentations. However, technology is only effective when it is used intentionally. Simply digitizing a worksheet does not make it research based. The key is to choose tools that align with the underlying learning principles. When used well, technology can provide immediate feedback, personalize learning paths, and give teachers valuable data about student understanding.

Overcoming Common Challenges

Implementing research based teaching strategies is not always easy. Teachers face constraints like limited time, large class sizes, and pressure to cover extensive curricula. The key is to start small. You do not need to overhaul your entire teaching practice overnight. Choose one strategy, try it with one class or one unit, and reflect on the results. Many of these strategies, like retrieval practice or formative assessment, can be integrated into existing routines with minimal extra time. The investment pays off when students learn more deeply and retain information longer.

Conclusion: Evidence Is Your Best Guide

The list of research based teaching strategies provided in this article is not exhaustive, but it represents some

of the most well-supported approaches available to educators. What all these strategies have in common is that they are grounded in how people actually learn. They move teaching away from guesswork and toward deliberate, evidence informed practice. By incorporating these methods into your classroom, you are not following a trend. You are applying what science has revealed about effective instruction. The result is a learning environment where students are more engaged, understand more deeply, and remember more over time. As you continue your professional growth, let research be your guide. Your students will benefit from every evidence based step you take.

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