

# Guided Inquiry, Not Free Discovery

Inquiry works when the guidance is designed in. Four principles that separate productive investigation from busy confusion.

## Knowledge before the question

Learners investigate with knowledge, not instead of it. Teach the concepts the inquiry will use first.

**In class:** Before the bridge-building task: ten minutes of explicit teaching on triangulation, checked.

## Scope the question tightly

An investigable question has a method learners can own and an answer they can reach this lesson.

**In class:** Not: how do plants grow? But: does the cress on the window beat the cress in the cupboard, and why?

## Guide the process visibly

Process scaffolds (steps, prompts, data tables) do the guiding so the thinking stays with learners.

**In class:** The planning sheet asks: what will you change, measure, keep the same? Three boxes, no escape.

## Consolidate or it evaporates

The inquiry ends with explicit teaching that names what was found and connects it to the concept.

**In class:** Whiteboards away: here is what our results show, here is the scientific term for it, write the sentence.

# Inquiry Guidance Cards

Four levels of guidance, matched to how much the class already knows. Start heavier than feels natural; fade as expertise grows.

## Process constraints

Limit the choices: two variables, three materials, one method. Constraint is kindness for novices.

**Say:** "You may change ONE thing. Choose it before you touch anything."

## Status prompts

Regular checkpoints that force a pause and a look at the evidence so far.

**Say:** "Stop. What have you found out so far, in one sentence, before you continue?"

## Heuristics

Rules of thumb for the messy middle: fair-test reminders, measurement habits.

**Say:** "Measure three times. If the numbers disagree wildly, something in the method is loose."

## Direct presentation

When the class lacks the concept, stop the inquiry and teach it. Resuming after is strength, not failure.

**Say:** "Pause your investigations. Everyone needs this idea before the next step makes sense."

# Teach a Concept With Examples

Concepts form fastest from contrasting cases. A hands-on routine for any subject, ten minutes flat.

## 1. Yes and no examples

Show two clear examples and two non-examples of the concept, physically where possible.

**In class:** These two circuits light the bulb; these two do not. No definitions yet.

## 2. Spot the difference

Pairs list what the yes-examples share that the no-examples lack.

**In class:** Both working circuits make a complete loop. The broken ones have gaps.

## 3. Name and define

Now give the term and a precise definition, anchored to what they just noticed.

**In class:** That loop is called a complete circuit. Current flows only when the loop closes.

## 4. Test the boundary

Offer tricky borderline cases; learners judge and justify. The boundary is where understanding lives.

**In class:** A circuit with a switch open: complete or not? Defend your answer.

# Planning a Guided Inquiry

Run before any investigation lesson. The evidence is blunt: the guidance you design is the learning they get.

## The knowledge

- The concepts the inquiry uses have been taught and checked beforehand.
- The question is investigable within the lesson with the equipment in the room.
- I know what a successful conclusion looks like, in one sentence.

## The guidance

- Process scaffolds exist: planning frame, data table, step checkpoints.
- Choices are constrained for novices; openness is reserved for experienced classes.
- I have a planned intervention point if the room heads down a dead end.

## The consolidation

- Ten protected minutes at the end connect findings to the concept, explicitly.
- Learners write the conclusion in their own words against the original question.
- The concept reappears in next week's retrieval starter.

# Inquiry Learning: A 5-Minute Evidence Briefing

The inquiry debate, settled as far as the evidence allows: it is about guidance, not ideology.

## ■ Guided inquiry genuinely works

Across 72 studies, inquiry with adequate guidance beats expository teaching on activities, performance and outcomes. The effect sizes are respectable ( $d = 0.50$  to  $0.71$ ), and guidance is the active ingredient.

## ■ Unguided discovery genuinely does not

The cognitive-architecture argument stands: novices lack the internal guidance to learn from open exploration, and half a century of comparisons backs this. Free discovery is the version that fails.

## ■ The middle ground is the method

Problem-based approaches are defensible precisely because their guidance is adjustable. The practical rule: guidance heavy for novices, faded as prior knowledge grows.

## ■ The honest caveat

Inquiry meta-analyses vary in quality and many comparisons confound guidance level with subject and age. Anchor your practice to the agreed finding (guidance matters) rather than headline effect sizes from any single review.

### Evidence base

Lazonder, A.W. and Harmsen, R. (2016). Meta-analysis of inquiry-based learning: effects of guidance. *Review of Educational Research*.  
Kirschner, P.A., Sweller, J. and Clark, R.E. (2006). Why minimal guidance during instruction does not work. *Educational Psychologist*.  
Schmidt, H.G. et al. (2007). Problem-based learning is compatible with human cognitive architecture: commentary on Kirschner, Sweller, and Clark (2006). *Educational Psychologist*.