

Why **organising** information unlocks learning

What the research says about graphic organisers, concept maps and dual coding, and what it means on a Tuesday morning.

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The big idea, in plain English

2

Six findings, each with its study

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What it means in a classroom

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How Map It puts it to work

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Every reference, checked

The big idea

Memory is not a drawer of loose facts. It is closer to a web, and what we can recall depends on how the pieces are joined. A learner who has sorted ideas into groups, put steps in order or traced a cause to its effect has done more than read them. They have built the joins.

A graphic organiser puts that structure on paper. A mind map says "these belong together", a flow chart says "this comes next", a fishbone says "these all lead here". The shape does two jobs at once: it helps the learner think, and it lets the teacher see what the learner thinks.

The research is strongest on one point. The benefit comes from the organising, not from the picture. Learners gain most when they build the organiser themselves, and more again when they rebuild it from memory.

55

studies in a major review of concept maps, with 5,818 learners

0.72

average effect of creating a concept map, against 0.43 for studying one

808

learners with learning disabilities in a review of graphic organisers

How to read the findings

Each finding is labelled with the kind of study behind it, because a single experiment and a review of 50 studies deserve different weight.

Meta-analysis	Pools the results of many studies. The broadest view, but it mixes settings and methods.
Trial or experiment	Compares a group that got the approach with one that did not. Stronger on cause and effect, narrower in reach.
Observational study	Measures what already happens in classrooms and looks for links. Shows a pattern, not a cause.
Review or theory	Draws the evidence together into an explanation that the other studies can test.

What the research found

1

- META-ANALYSIS

Concept maps are linked to better retention

A review of 55 studies and 5,818 learners, from Year 5 to university, found that learning with concept maps was associated with increased knowledge retention, in subjects from science to statistics. The size of the benefit ranged from small to large, depending on how the maps were used and what they were compared with.

Source: Nesbit and Adesope (2006)

2

- META-ANALYSIS

Building the map beats being handed one

A later review pooled 142 effect sizes from 11,814 learners and found a moderate overall benefit ($g = 0.58$). Creating a concept map ($g = 0.72$) helped more than studying a finished one ($g = 0.43$), and the benefit held in science and maths and in other subjects too.

Source: Schroeder, Nesbit, Anguiano and Adesope (2018)

3

- META-ANALYSIS

Organisers help the learners who find text hardest

Across 16 studies of 808 learners with learning disabilities, aged roughly 9 to 18, graphic organisers were associated with gains in vocabulary, comprehension and inference, with moderate to large effects. The gains were smaller when learners were retested weeks later, which is a reason to come back to an organiser, not to use it once.

Source: Dexter and Hughes (2011)

What the research found, continued

4

• THEORY, TESTED IN EXPERIMENTS

Words and pictures are two routes to one idea

Dual coding theory proposes that the mind handles words and images in two linked systems. Mayer and Moreno built on this: pictures and words travel through separate channels, each with limited room, and meaningful learning happens when a learner builds connections between the two. A diagram with an explanation gives an idea two ways back in.

Source: Clark and Paivio (1991); Mayer and Moreno (2003)

5

• REVIEW

Mapping is a way of making sense, not decorating

Fiorella and Mayer name mapping as one of eight generative learning strategies, alongside summarising, drawing and self-explaining. Each asks the learner to reorganise new material and join it to what they already know, which is what lets them use it in a new situation.

Source: Fiorella and Mayer (2016)

6

• EXPERIMENT

Map it from memory, then check

When learners practised retrieving what they had read, they learned more than when they studied the text by building a concept map, even on a final test that asked them to create a concept map. The lesson for a classroom is not to drop the map. It is to have learners draw it with the book closed.

Source: Karpicke and Blunt (2011)

What it means in a classroom

- 1 Name the thinking first.** Ask what the lesson wants learners to do with the ideas (group, compare, sequence, explain a cause), then choose the organiser that has that shape.
- 2 Let learners build it.** A finished diagram on a slide is a picture. The benefit comes when learners decide where each item goes and why.
- 3 Close the book for the second go.** Once the content is familiar, have learners redraw the organiser from memory, then check it against the source and fill the gaps.
- 4 Make them explain one choice aloud.** The organiser shows what a learner decided. Asking why an item sits where it does shows whether they understood.

How Map It puts it to work

Map It turns these findings into a step in any lesson.

One question, one shape.

Nine organisers, each tied to a thinking word from the Thinking Framework, so the organiser follows the thinking the lesson asks for.

Learners build it on paper.

The planner writes the items to place, at three levels, and Present to Class puts the question and the organiser on the board.

The organiser is the evidence.

Learners explain one choice out loud, and Think Deeper questions stretch the ones who are ready.

Our own evidence

Make It Count, the University of East Anglia's Year 7 programme, was built on the Thinking Framework: over eight workshops learners tried talk tactics, graphic organisers and the blocks. Across four schools, the share of learners answering "I can" on the skills statements rose from **52% to 83%** (23 learners surveyed, 2024/25). The evaluators call the result indicative, because the group was small. It is a small study, and it did not test Map It on its own.

Source: the University of East Anglia's evaluation of Make It Count, 2024/25.

Read more, free: **Research briefings** structural-learning.com/briefings · **Free blank organisers** structural-learning.com

Limits, and the references

What this summary does not show

None of the studies in this summary tests Map It. They are about graphic organisers and concept maps in general, most of the evidence comes from reviews that mix many kinds of study, and the sizes of the benefit vary a lot from one setting to another. We have no controlled study of our own yet, and we say so.

References

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