Concept Mapping Thinking

Idea In Short

Complex topics often fail to make sense because the pieces sit in a list. A concept map places ideas on a page and joins them with labeled links, so that relationships become visible and arguable. Joseph Novak developed the method at Cornell University in the 1970s as a way to represent what students knew about science, and teams now use it to plan strategy, untangle processes, and onboard new colleagues. The key feature is the labeled link, which turns two concepts into a statement you can check. This article explains how concept maps work, how they differ from mind maps, how to build one around a focus question, and where the tool can mislead.

A hospital team argues about why discharges run late. Each person lists causes: slow pharmacy, missing transport, unclear orders, family delays. The list has no shape. When a facilitator draws the causes on a whiteboard and links them with phrases such as "delays" and "depends on," the group sees that three apparent causes feed one hidden step, the final physician sign-off.

What a concept map is

A concept map is a drawing in which ideas appear as labeled boxes and lines show how they relate. Carnegie Mellon University's teaching resources, drawing on Novak and Cañas, describe concept maps as graphical tools for organizing and representing knowledge.1

The same resource explains that propositions are statements about some object or event, formed when two or more concepts connect through linking words or phrases. Such statements are sometimes called semantic units, or units of meaning.

Joseph Novak, in a book chapter published by Cambridge University Press, gives a vivid illustration. Statements such as "grass is green," "grass is a plant," and "grass grows" each add meaning and precision to the concept of grass.2

The lesson for managers is simple. Meaning comes from relationships. A box labeled "pricing" says little, while "pricing signals quality to buyers" says something you can discuss.

Where it came from

Wikipedia traces concept mapping to Novak and his research team at Cornell University in the 1970s, who used it to represent the emerging science knowledge of students. The method has since been used to increase meaningful learning in the sciences and other subjects, and in Novak's words, meaningful learning involves assimilating new concepts and propositions into existing cognitive structures.3

The idea rests on David Ausubel's psychology, which holds that learning happens when new ideas attach to ones a person already holds. A map makes the attachment points visible.

For organizations, this matters. New hires, new teams, and new strategies all need to connect to what people already know. A map shows where the connections exist and where they are missing.

Hierarchy and focus

Concept maps usually run from general to specific. Imperial College London's guidance explains that maps are created with the broader, more inclusive concepts at the top of the hierarchy, connecting through linking words to more specific concepts below.4

CMU's note adds that it is best to construct concept maps with reference to a particular question that you seek to answer. That focus question keeps the map from sprawling.

A good focus question is specific and answerable. "How does our onboarding process lead to early churn?" works well. "What is our business?" does not. The question tells you which concepts to include and which to leave out.

Links as claims

The labeled link is the heart of the method. An educational technology wiki stresses that links should be understood as propositions, so each connection forms a statement that

someone can read from one concept to the next.5

Weak links read as vague: "relates to," "is about," "involves." Strong links say something: "reduces," "requires," "is measured by," "increases the cost of." Choose verbs that commit you to a claim.

Because each link is a claim, it can be wrong. A team can read the map aloud, sentence by sentence, and ask whether each statement holds. Disagreements show up at once, and they point to specific links and not to general feelings.

Concept maps and mind maps

People often confuse the two. Mind maps radiate from one central idea in a tree structure. Wikipedia notes that mind mapping is restricted to a tree structure, while concept maps can be free-form, with multiple hubs and clusters.

The difference matters for complex problems. In a tree, each idea has one parent. Real situations are tangled, with one factor affecting several others. Concept maps allow cross-links, which join separate branches and often reveal the most useful insights.

Use a mind map for quick brainstorming from a single starting point. Use a concept map when you need to understand how parts of a system interact.

Building a map step by step

Start with the focus question, written at the top. List ten to twenty key concepts on sticky notes, with short labels.

Arrange them roughly from general to specific. Place the most inclusive concepts at the top and the specific ones below. Move notes until clusters appear.

Draw lines and label each one with a verb or phrase. Read each link as a sentence. If the sentence sounds wrong, change the link or the concepts. Look for cross-links between clusters, and mark them, since they show integration.

Finally, step back and ask what the map tells you. Are there concepts with no links? Are

there hubs with many? Is any key part missing? The answers guide the next step in your work.

Uses in organizations

Concept maps help in strategy discussions. A leadership team can map how market trends, capabilities, and customer needs connect to its goals. Gaps in the map reveal strategic blind spots.

They help in process improvement. Mapping how a defect arises from earlier steps often shows causes that a flowchart hides, since the map includes factors beyond the sequence of tasks.

They help in training. Ask new employees to draw their understanding of a system, then compare with an expert's map. The comparison reveals misconceptions quickly and gives trainers specific points to address.

Keeping maps alive

A map is a working draft and not a monument. Date it, store it where the team can reach it, and revise it as evidence arrives. When a test disproves a link, change the label or remove the line, and note why.

Review maps at natural checkpoints, such as the start of a quarter or after a major launch. Ask which links proved true, which were weaker than expected, and which new concepts have entered the picture. The changes show how the team's understanding has grown.

Compare maps across teams. When two groups map the same question and produce different pictures, the differences point to the assumptions that need discussion. Those conversations often prevent costly misunderstandings later.

Common mistakes

New mappers often list concepts without verbs on the links, which leaves a diagram of nouns and no claims. Others cram sentences into the boxes, which hides the structure. Keep concept labels short, and put the meaning on the links.

Another mistake is skipping the focus question. Without one, the map grows in every direction and answers nothing. Write the question first, and check each new concept against it.

A third is drawing the map alone. The value lies in the conversation, so build it with the people who hold the pieces of the puzzle.

A hypothetical example

Imagine a hypothetical software firm whose customer support, sales, and product teams disagree about why trials fail to convert. Each team presents a different list. A facilitator asks them to build a single map around the question, "What leads trial users to buy or leave?"

The map shows that "slow setup" links to "no early success," which links to "low confidence," which links to "no purchase." Sales had seen the last link, support had seen the first, and product had seen none. The firm focuses on the first week of setup. The case is invented, but it shows how a shared map joins partial views.

Cautions

Do not treat a tidy map as proof. A map shows what a group believes about relationships, and those beliefs may be wrong. Test key links with evidence.

Avoid overload. Maps with fifty boxes become unreadable. Limit each to one focus question, or break a big map into linked smaller ones.

Finally, remember that the process matters as much as the picture. The talk that occurs while building the map is where people discover shared and conflicting views.

- 1Concept maps
- 2The nature and uses of concept maps
- 3Concept map
- 4What is concept mapping?
- 5Concept map, EduTech Wiki

Summary

Concept mapping thinking means organizing ideas spatially, with concepts as nodes and labeled links that form statements. It rests on Novak's view that meaningful learning comes from connecting new ideas to what a learner already knows. Maps help teams surface hidden assumptions, find gaps, and agree on how parts of a problem relate. They work best when built around a clear focus question, arranged from general concepts to specific ones, and revised as understanding grows. A tidy map can still be wrong, so treat each link as a claim to test. Pick a topic your team debates, write a focus question, and draw ten concepts with labeled links.