

CREATIVE TEACHING METHODS

Assumption Busting

What: An assumption is an unquestioned, assumed truth. Assumption busting is particularly effective when one is stuck in current thinking paradigms or has run out of ideas.

Benefits: Everyone makes assumptions about how the world around us, which in creative situations, can prevent seeing or generating possibilities. Deliberately seeking out and addressing previously unquestioned assumptions stimulates creative thinking.

How: List assumptions associated with a task or problem, for example, that a solution is impossible due to time and cost constraints; something works because certain rules or conditions; and people believe, need or think of certain things. Then ask under what conditions these assumptions are not true, continue the process of examination as old assumptions are challenged and new ones are created. An alternative way of proceeding is to find ways to force assumptions to be true. This is the opposite of challenging assumptions in the previous step.

Brainstorming

What: Brainstorming, a useful tool to develop creative solutions to a problem, is a lateral thinking process by which students are asked to develop ideas or thoughts that may seem crazy or shocking at first. Participants can then change and improve them into original and useful ideas. Brainstorming can help define an issue, diagnose a problem, or possible solutions and resistance to proposed solutions.

How: Define the problem clearly lay out any criteria to be met. Keep the session focused on the problem, but be sure that no one criticizes or evaluates ideas during the session, even if they are clearly impractical. Criticism dampens creativity in the initial stages of a brainstorming session. Ideas should be listed, rather than developed deeply on the spot; the idea is to generate possibilities. Accordingly, participants should be encouraged to pick up on ideas offered to create new ones. One person should be appointed as note-taker, and ideas should be studied and evaluated after the session.

Negative (or Reverse) Brainstorming

What: Negative brainstorming involves analyzing a short list of existing ideas, rather than the initial massing of ideas as in conventional brainstorming. Examining potential failures is relevant when an idea is new or complex or when there is little margin for error. Negative brainstorming raises such questions as: "What could go wrong with this project?"

Benefits: Reverse brain-storming is valuable when it is difficult to identify direct solutions to a problem.

How: After clearly defining a problem or challenge, ask “How could I cause this problem?” or “How could I make things worse?” As with brainstorming, allow ideas to flow freely without rejecting any. Evaluating these negative ideas can lead to possible positive solutions. See also [Negative Brainstorming](#).

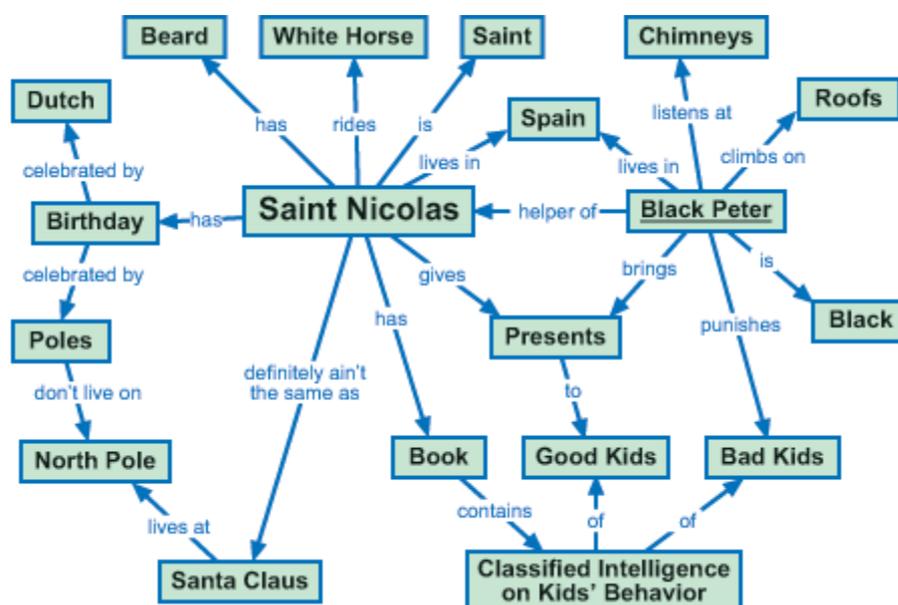
Concept Mapping

What: Concept maps represent knowledge graphic form. Networks consist of nodes, which represent concepts, and links, which represent relationships between concepts.

Benefits: Concept maps can aid in generating ideas, designing complex structures, or communicating complex ideas. Because they make explicit the integration of old and new knowledge concept maps can help instructors assess students’ understanding.

How: Create a focus question specifying the problem or issue the map should help resolve. List the key concepts (roughly 20-25) that apply to the area of knowledge. Put the most general, inclusive concepts at the top of the list, and most specific at the bottom.

Build a hierarchical organization of the concepts, using post-its on a wall or whiteboard, large sheets of paper, etc. Revision is a key element in concept mapping, so participants need to be able to move concepts and reconstruct the map. Seek cross links between concepts, adding linking words to the lines between concepts.



Adapted from Novak, J. & Cañas, A. (2006). The theory underlying concept maps and how to construct and use them.

Role-playing

What: In most role-playing exercises, each student takes the role of a person affected by an issue and studies an issue or events from the perspective of that person.

How: Role plays should give the students an opportunity to practice what they have learned and should interest the students. Provide concrete information and clear role descriptions so that students can play their roles with confidence. Once the role play is finished, spend some time on debriefing. See also [Role-Playing Games: An Overview](#).

Storyboarding

What: Story-boarding can be compared to spreading students' thoughts out on a wall as they work on a project or solve a problem. Story boards can help with planning, ideas, communications and organization.

Benefits: This method allows students to see the interconnections, how one idea relates to another, and how pieces come together. Once the ideas flow, students become immersed in the problem and hitch-hike other ideas.

How: Use a cork board or similar surface to pin up index cards or use Post-it notes on a whiteboard. Begin with a set of topic cards, and under each place header cards for general points, categories, etc. Under these, place sub-heading cards that will contain ideas and details generated that support the headers.

During a story board session, consider all ideas relevant, no matter how impractical they appear.

DO IT

What: DO IT stands for Define problems, be Open to many possible solutions, Identify the best solution and then Transform it into effective action. Ten catalysts or prompts are designed to help students with each of these steps.

Benefits: DO IT accelerates and strengthens one's natural creative problem-solving ability and to stimulate a large number of good, diverse ideas. When time allows, students can take advantage of incubation (unconscious thinking) and research processes (find out what ideas have already been tried).

Random Input

What: Random input, a lateral thinking tool, is useful for generating fresh ideas or new perspectives during problem solving.

Benefits: It offers new perspectives on a problem, fosters creative leaps, and permits escape from restrictive thinking patterns.

How: Select a random noun, whether from a prepared set, from the dictionary, or one's own list of 60 words. It is helpful to get new insight by selecting a word from outside the field being studied. List the word's attributions or associations, then apply each to the problem at hand. With persistence, at least one of these may catalyze a creative leap.

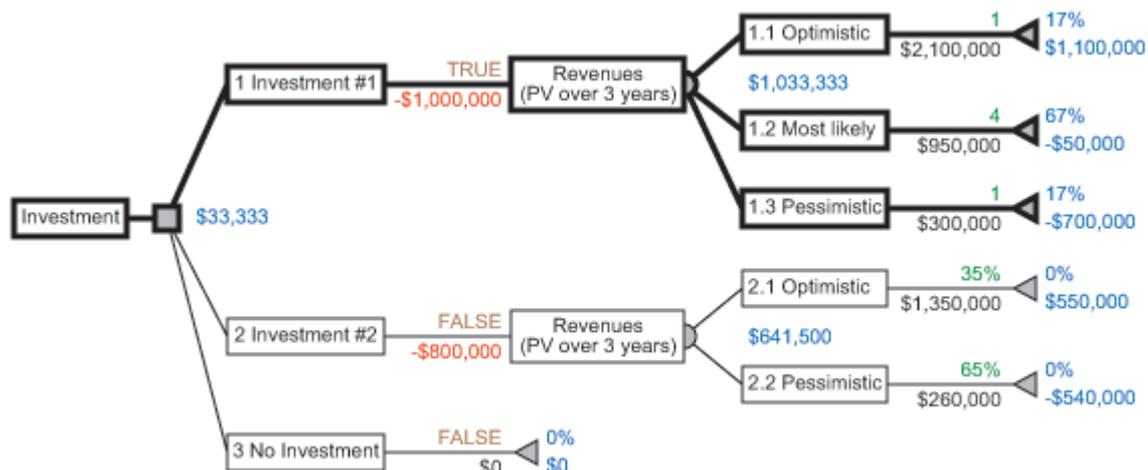
Example: Students thinking about reducing car pollution have so far considered all the conventional solutions, e.g. catalytic conversion and clean fuels. Selecting a random noun from the titles of books in a bookcase, a student may see "Plants." Brainstorming from this, the class could generate a number of new ideas, such as planting trees on the side of roads or passing exhaust gases through a soup of algae, to reduce carbon dioxide.

Decision Tree

What: A decision tree is a visual and analytical decision support tool, often taught to undergraduate students in schools of business, health economics, and public health.

Benefits: They are simple to understand and interpret, have value even in the absence of hard data, and can be combined with other decision techniques.

Example: A decision tree used in a finance class for deciding the better investment strategy.



Questioning activity

What: In this exercise in questioning, students create a list of 100 questions. There are no directions regarding what questions to ask and no judgments or criticism of questions.

Benefits: Students will ask a wide range of questions, increasing student productivity and motivation. As students focus on what they want to discover and generate their own questions, they pursue answers without prodding. Questions can be general or based on a particular topic or reading; instructors can give several examples from their own lists.

Slip writing

What: This method can gather ideas from large groups, numbering from the dozens to the hundreds. Participants are given slips of paper and asked to write down ideas which are discussed or evaluated.

Benefits: This method collects a large number of ideas swiftly and creates a sense of participation or ownership at the same time.

How: Each student is given a stack or note-pad of at least 25 small slips of paper. The pads can contain idea-jogging graphics or be designed so that ideas can be sorted and separated easily. A question or problem is read to the group (e.g., “How do we?” or “What would it take to?”). Students write down one idea per sheet, in any order. When writing begins to slow down, collect pads from students and offer quick feedback in the form of examples. If the group is very large, present examples from a limited sample of booklets. After the early feedback, analysis and evaluation can continue at a steadier pace to identify the most useful ideas and develop them into practicable proposals.

Laddering

What: Laddering or the “why method” involves toggling between two abstractions to create ideas. Laddering techniques involve the creation, reviewing and modification of hierarchical knowledge. In a ladder containing abstract ideas or concepts, the items lower down are members or sub-sets of the ones higher up, so one moves between the abstract and concrete.

Benefits: Laddering can help students understand how an expert categorizes concepts into classes, and can help clarify concepts and their relationships.

How: Beginning with an existing idea, “ladder up” by asking, of what wider category is this an example? “Ladder down” by finding more examples. Then “ladder up” again by seeking an even wider category from the new examples obtained from step 2.

Generally, “laddering up” toward the general allows expansion into new areas while “laddering down” focuses on specific aspects of these areas. Why questions are ladders up; so-what questions are ladders down. See also [Laddering Techniques](#).

Exaggeration

What: Exaggeration includes the two forms of magnify (or “stretch”) and minimize (or “compress”), part of the SCAMPER heuristic.

Forms of Exaggeration	Type	Examples
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Exaggerate upwards	Magnify	I have a million photocopiers standing idle
Exaggerate downwards	Minify	My photocopiers are barely used at all
Exaggerate scope	Invade context	The whole organization is underused
Exaggerate significance	Aggrandize	Our over-capacity is a nation scandal
Exaggerate selectively	Caricature	Reprographics Rest Home!

Benefits: This method helps in building ideas for solutions. It is useful to illustrate a problem, by testing unspoken assumptions about its scale. It helps one think about what would be appropriate if the problem were of a different order of magnitude.

How: After defining a problem to be addressed or idea to develop, list all the component parts of the idea or if a problem, its objectives and constraints. Choosing one component, develop ways of exaggerating it and note them on a separate sheet.

Brain-sketching

What: To solve a specific problem, students make sketches and then pass evolving sketches to their neighbors.

How: Students sit in a group of 6-8 around a table or in a circle. Questions or problems should be well explained and understood by each student. Each participant privately makes one or more sketches and passes the sketch to the person on the right when it is finished or when a brief set time has passed. Participants develop or annotate the sketches passed to them, or use them to inspire new sketches which are also passed in turn. For effective learning, sketches could be posted and discussed by students.

Reversal

What: The reversal method takes a given situation and turns it around, inside out, backwards, or upside down. Any situation can be “reversed” in several ways.

Benefits: Looking at a familiar problem or situation in a fresh way can suggest new solutions or approaches. It doesn’t matter whether the reversal makes sense or not.

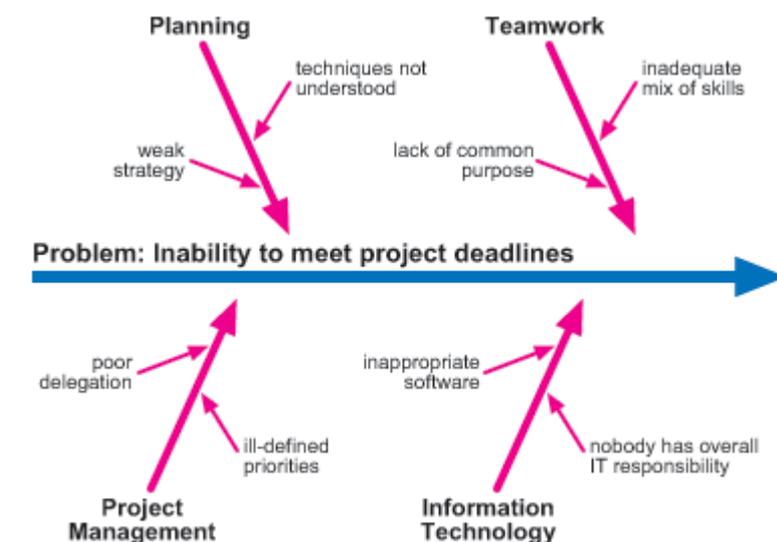
Example: In a marketing class, instead of asking “how can management improve the store?” reversal questions can ask: How can the store improve management? How can the store improve itself? How can management make the store worse?

Fishbone

What: The fishbone technique uses a visual organizer to identify the possible causes of a problem.

Benefits: This technique discourages partial or premature solutions and demonstrates the relative importance of, and interactions between, different parts of a problem.

How: On a broad sheet of paper, draw a long arrow horizontally across the middle of the page pointing to the right. Label the arrowhead with the title of the issue to be explained. This is the “backbone” of the “fish.” Draw “spurs” from this “backbone” at about 45 degrees, one for every likely cause of the problem that the group can think of; and label each. Sub-spurs can represent subsidiary causes. The group considers each spur/sub-spur, taking the simplest first, partly for clarity but also because a simple explanation may make more complex ones unnecessary. Ideally, the fishbone is redrawn so that position along the backbone reflects the relative importance of the different parts of the problem, with the most important at the head.



Fishbone Example

The Mystery Spot

What: Instructors set up a mystery story (videos, animations) that evolves a key concept such as DNA. Students try to solve the mystery by applying their knowledge. Meanwhile, the story evolves as students investigate on the problem, allowing the instructor to incorporate different knowledge/concepts, and different knowledge depths.

Benefits: The mystery integrates science learning within an exciting narrative. The narratives have wide appeal and involve students in learning. It is also a very flexible tool with which instructors can invent stories based on their lesson purposes/ targeted key points.

Example: The Blackout Syndrome

In this exercise, students are medical investigators. And as a blackout paralyzes the city, they are called in to investigate outbreak of a new disease. They need to take steps to identify how it's transmitted, characterize it, and figure out how to treat it.

The mystery tests literacy, problem solving skills and deductive reasoning. Students investigate why people have fallen ill, do lab tests in order to decide what kind of pathogen is involved, and work on solutions and how to best counter the disease. A conclusion offers further research readings.