Creativity Techniques – Start Here!



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The tools in this section can help you to become more creative. They are designed to help you devise creative and imaginative solutions to problems, and help you to spot opportunities that you might otherwise miss.

Before you continue, it is important to understand what we mean by creativity, as there are two completely different types. The first is technical creativity, where people create new theories, technologies or ideas. This is the type of creativity we discuss here. The second is artistic creativity, which is more born of skill, technique and self-expression. Artistic creativity is beyond the scope of these articles.

Many of the techniques in this chapter have been used by great thinkers to drive their creativity. Albert Einstein, for example, used his own informal variant of [**Provocation**](http://www.mindtools.com/pages/article/newCT_08.htm) to trigger ideas that lead to the Theory of Relativity.

Approaches to Creativity

There are two main strands to technical creativity: programmed thinking and lateral thinking. Programmed thinking relies on logical or structured ways of creating a new product or service. Examples of this approach are [**Morphological Analysis**](http://www.mindtools.com/pages/article/newCT_03.htm) and the [**Reframing Matrix**](http://www.mindtools.com/pages/article/newCT_05.htm) .

The other main strand uses 'Lateral Thinking'. Examples of this are [**Brainstorming**](http://www.mindtools.com/brainstm.html) , [**Random Input**](http://www.mindtools.com/pages/article/newCT_07.htm) and [**Provocation**](http://www.mindtools.com/pages/article/newCT_08.htm) . Lateral Thinking has been developed and popularized by Edward de Bono, whose books you can find in the appropriate articles.

Programmed Thinking and Lateral Thinking

Lateral thinking recognizes that our brains are pattern recognition systems, and that they do not function like computers. It takes years of training before we learn to do simple arithmetic –something that computers do very easily. On the other hand, we can instantly recognize patterns such as faces, language, and handwriting. The only computers that begin to be able to do these things do it by modeling the way that human brain cells work . Even then, computers will need to become more powerful before they approach our ability to handle patterns.

The benefit of good pattern recognition is that we can recognize objects and situations very quickly. Imagine how much time would be wasted if you had to do a full analysis every time you came across a cylindrical canister of effervescent fluid. Most people would just open their can of fizzy drink. Without pattern recognition we would starve or be eaten. We could not cross the road safely.

Unfortunately, we get stuck in our patterns. We tend to think within them. Solutions we develop are based on previous solutions to similar problems. Normally it does not occur to us to use solutions belonging to other patterns.

We use lateral thinking techniques to break out of this patterned way of thinking.

Lateral thinking techniques help us to come up with startling, brilliant and original solutions to problems and opportunities.

It is important to point out that each type of approach has its strength. Logical, disciplined thinking is enormously effective in making products and services better. It can, however, only go so far before all practical improvements have been carried out. Lateral thinking can generate completely new concepts and ideas, and brilliant improvements to existing systems. In the wrong place, however, it can be sterile or unnecessarily disruptive.

Taking the Best of Each...

A number of techniques fuse the strengths of the two different strands of creativity. Techniques such as the [**Concept Fan**](http://www.mindtools.com/pages/article/newCT_06.htm) use a combination of programmed and lateral thinking. [**DO IT**](http://www.mindtools.com/pages/article/newCT_09.htm) and Min Basadur's [**Simplex**](http://www.mindtools.com/pages/article/newCT_10.htm) embed the two approaches within problem solving processes. While these may be considered 'overkill' when dealing with minor problems, they provide excellent frameworks for solving difficult and serious ones.

The Creative Frame of Mind

Often the only difference between creative and uncreative people is self-perception. Creative people see themselves as creative and give themselves the freedom to create. Uncreative people do not think about creativity and do not give themselves the opportunity to create anything new.

Being creative may just be a matter of setting aside the time needed to take a step back and allow yourself to ask yourself if there is a better way of doing something. Edward de Bono calls this a 'Creative Pause'. He suggests that this should be a short break of maybe only 30 seconds, but that this should be a habitual part of thinking. This needs self-discipline, as it is easy to forget.

Another important attitude-shift is to view problems as opportunities for improvement. While this is something of a cliché, it is true. Whenever you solve a problem, you have a better product or service to offer afterwards.

Using Creativity

Creativity is sterile if action does not follow from it. Ideas must be evaluated, improved, polished and marketed before they have any value. Other sections of Mind Tools lay out the evaluation, analysis and planning tools needed to do this. They also explain the time and stress management techniques you will need when your creative ideas take off.

Have fun creating!

SCAMPER

Improving Products and Services

It can often be difficult to come up with new ideas when you're trying to develop or improve a product or service.

This is where creative brainstorming techniques like SCAMPER can help. This tool helps you generate ideas for new products and services by encouraging you to think about how you could improve existing ones.

We'll look at SCAMPER in this article.

About the Tool

SCAMPER is a mnemonic that stands for:

* Substitute.
* Combine.
* Adapt.
* Modify.
* Put to another use.
* Eliminate.
* Reverse.

You use the tool by asking questions about existing products, using each of the seven prompts above. These questions help you come up with creative ideas for developing new products, and for improving current ones.

Alex Osborn, credited by many as the originator of brainstorming, originally came up with many of the questions used in the SCAMPER technique. However, it was Bob Eberle, an education administrator and author, who organized these questions into the SCAMPER mnemonic.

**Note:**

Remember that the word "products" doesn't only refer to physical goods. Products can also include processes, services, and even people. You can therefore adapt this technique to a wide range of situations.

How to Use the Tool

SCAMPER is really easy to use.

First, take an existing product or service. This could be one that you want to improve, one that you're currently having problems with, or one that you think could be a good starting point for future development.

Then, ask questions about the product you identified, using the SCAMPER mnemonic to guide you. [**Brainstorm**](http://www.mindtools.com/brainstm.html) as many questions and answers as you can. (We've included some example questions, below.)

Finally, look at the answers that you came up with. Do any stand out as viable solutions? Could you use any of them to create a new product, or develop an existing one? If any of your ideas seem viable, then you can explore them further.

Example Questions

Let's look at some of the questions you could ask for each letter of the SCAMPER mnemonic:

Substitute

* What materials or resources can you substitute or swap to improve the product?
* What other product or process could you use?
* What rules could you substitute?
* Can you use this product somewhere else, or as a substitute for something else?
* What will happen if you change your feelings or attitude toward this product?

Combine

* What would happen if you combined this product with another, to create something new?
* What if you combined purposes or objectives?
* What could you combine to maximize the uses of this product?
* How could you combine talent and resources to create a new approach to this product?

Adapt

* How could you adapt or readjust this product to serve another purpose or use?
* What else is the product like?
* Who or what could you emulate to adapt this product?
* What else is like your product?
* What other context could you put your product into?
* What other products or ideas could you use for inspiration?

Modify

* How could you change the shape, look, or feel of your product?
* What could you add to modify this product?
* What could you emphasize or highlight to create more value?
* What element of this product could you strengthen to create something new?

Put to Another Use

* Can you use this product somewhere else, perhaps in another industry?
* Who else could use this product?
* How would this product behave differently in another setting?
* Could you recycle the waste from this product to make something new?

Eliminate

* How could you streamline or simplify this product?
* What features, parts, or rules could you eliminate?
* What could you understate or tone down?
* How could you make it smaller, faster, lighter, or more fun?
* What would happen if you took away part of this product? What would you have in its place?

Reverse

* What would happen if you reversed this process or sequenced things differently?
* What if you try to do the exact opposite of what you're trying to do now?
* What components could you substitute to change the order of this product?
* What roles could you reverse or swap?
* How could you reorganize this product?

**Tip 1:**

Some ideas that you generate using the tool may be impractical or may not suit your circumstances. Don't worry about this – the aim is to generate as many ideas as you can.

**Tip 2:**

To get the greatest benefit, use SCAMPER alongside other creative brainstorming and lateral thinking techniques such as [**Random Input**](http://www.mindtools.com/pages/article/newCT_07.htm) , [**Provocation**](http://www.mindtools.com/pages/article/newCT_08.htm) , [**Reversal**](http://www.mindtools.com/pages/article/newCT_01.htm) , and [**Metaphorical Thinking**](http://www.mindtools.com/pages/article/newCT_93.htm) .

Key Points

SCAMPER helps you develop new products and services. Many of the questions used in SCAMPER were created by Alec Osborn, but Bob Eberle developed the mnemonic.

SCAMPER stands for:

* Substitute.
* Combine.
* Adapt.
* Modify.
* Put to another use.
* Eliminate.
* Reverse.

To use SCAMPER, you simply go down the list and ask questions regarding each element. Remember, not every idea you generate using SCAMPER will be viable; however, you can take good ideas and explore them further.

DO IT

A Simple Process for Creativity

DO IT is a process for creativity.

Techniques outlined earlier in this chapter focus on specific aspects of creative thinking. DO IT bundles them together, and introduces formal methods of problem definition and evaluation.

These help you to get the best out of the creativity techniques.

DO IT is an acronym that stands for:

**D** – Define problem.
**O** – Open mind and apply creative techniques.
**I** – Identify best solution.
**T** – Transform.

These stages are explained in more detail below:

1. Define Problem

This section concentrates on analyzing the problem to ensure that the correct question is being asked. The following steps will help you to do this:

* Check that you are tackling the problem, not the symptoms of the problem. To do this, ask yourself why the problem exists repeatedly until you get to the root of it.
* Lay out the bounds of the problem. Work out the objectives that you must achieve and the constraints that you are operating under.
* Where a problem appears to be very large, break it down into smaller parts. Keep on going until each part is achievable in its own right, or needs a precisely defined area of research to be carried out. See[**Drill Down**](http://www.mindtools.com/pages/article/newTMC_02.htm) for a detailed description of this process.
* Summarize the problem in as concise a form as possible. Robert W Olsen suggests that the best way to do this is to write down several of two-word problem statements and choose the best one.

2. Open Mind and Apply Creative Techniques

Once you know the problem that you want to solve, you are ready to start generating possible solutions. It is very tempting just to accept the first good idea that you come across. If you do this, you will miss many even better solutions.

At this stage of DO IT we are not interested in evaluating ideas. Instead, we are trying to generate as many different ideas as possible. Even bad ideas may be the seeds of good ones.

You can use the whole battery of creativity techniques covered earlier in this section to search for possible solutions. Each tool has its particular strengths and benefits, depending on the problems that you want to solve. While you are generating solutions, remember that other people will have different perspectives on the problem, and it will almost certainly be worth asking for the opinions of your colleagues as part of this process.

3. Identify the Best Solution

Only at this stage do you select the best of the ideas you have generated. It may be that the best idea is obvious. Alternatively, it may be worth examining and developing a number of ideas in detail before you select one.

The [**Decision Making Techniques**](http://www.mindtools.com/pages/main/newMN_TED.htm) section of Mind Tools explains a range of excellent decision making techniques. [**Decision Tree Analysis**](http://www.mindtools.com/dectree.html) and [**Force Field Analysis**](http://www.mindtools.com/dectree.html) are particularly useful. These will help you to choose between the solutions available to you.

When you are selecting a solution, keep in mind your own or your organization's [**goals**](http://www.mindtools.com/page6.html) . Often Decision Making becomes easy once you know these.

4. Transform

Having identified the problem and created a solution to it, the final stage is to implement this solution. This involves not only development of a reliable product from your idea, but all the marketing and business side as well. This may take a great deal of time and energy.

Many very creative people fail at this stage. They will have fun creating new products and services that may be years ahead of what is available on the market. They will then fail to develop them, and watch someone else make a fortune out of the idea several years later.

The first stage in transforming an idea is to develop an [**Action Plan**](http://www.mindtools.com/pages/article/newHTE_04.htm) for the transformation. This may lead to creation of a Business or Marketing Plan. Once you have done this, the work of implementation begins!

DO IT was devised by Robert W Olsen in his book 'The Art of Creative Thinking'.

Key Points

DO IT is a structured process for creativity. Using DO IT ensures that you carry out the essential groundwork that helps you to get the most out of creativity tools.

These steps are:

1. Problem Definition: During this stage you apply a number of techniques to ensure that you are asking the right question.
2. Open Mind: Here you apply creativity techniques to generate as many answers as possible to the question you are asking. At this stage you are not evaluating the answers.
3. Identify the best solution: Only at this stage do you select the best solutions from the ones you came up with in step 2. Where you are having difficulty in selecting ideas, use formal techniques to help.
4. Transform: The final stage is to make an Action Plan for the implementation of the solution, and to carry it out. Without implementation, your creativity is sterile.

Generating New Ideas

Think Differently and Spark Creativity

"We need to think differently!"
"This needs some fresh ideas!"
"We have got to be more creative around here!"

Are messages like these popping up more and more in your workplace?

Faced with complex, open-ended, ever-changing challenges, organizations realize that constant, ongoing innovation is critical to stay ahead of the competition.

This is why we need to be on the lookout for new ideas that can drive innovation, and it's why the ability to think differently, generate new ideas, and spark creativity within a team becomes an important skill. You need to work actively on building and cultivating this skill, and it can be done!

Often, though, we make the mistake of assuming that good ideas just happen. Or worse still, we get caught in the mind trap that creativity is an aptitude; some people have it, others don't. Then there is the other self-defeating belief – "I am not intelligent enough to come up with good ideas."

These assumptions are rarely true. Everyone can come up with fresh, radical ideas – you just need to learn to open your mind and think differently. This article shows you how to do so.

How to Generate New Ideas

Standard idea-generation techniques concentrate on combining or adapting existing ideas. This can certainly generate results. But here, our focus is on equipping you with tools that help you leap onto a totally different plane. These approaches push your mind to forge new connections, think differently and consider new perspectives.

A word of caution – while these techniques are extremely effective, they will only succeed if they are backed by rich knowledge of the area you're working on. This means that if you are not prepared with adequate information about the issue, you are unlikely to come up with a great idea even by using the techniques listed here.

Incidentally, these techniques can be applied to spark creativity in group settings and brainstorming sessions as well.

Breaking Thought Patterns

All of us can tend to get stuck in certain thinking patterns. Breaking these thought patterns can help you get your mind unstuck and generate new ideas. There are several techniques you can use to break established thought patterns:

* **Challenge assumptions:** For every situation, you have a set of key assumptions. Challenging these assumptions gives you a whole new spin on possibilities.

*You want to buy a house but can't since you assume you don't have the money to make a down payment on the loan. Challenge the assumption. Sure, you don't have cash in the bank but couldn't you sell some of your other assets to raise the money? Could you dip into your retirement fund? Could you work overtime and build up the kitty in six months? Suddenly the picture starts looking brighter.*

* **Reword the problem:** Stating the problem differently often leads to different ideas. To reword the problem look at the issue from different angles. "Why do we need to solve the problem?", "What's the roadblock here?", "What will happen if we don't solve the problem?" These questions will give you new insights. You might come up with new ideas to solve your new problem.

*In the mid 1950s, shipping companies were losing money on freighters. They decided they needed to focus on building faster and more efficient ships. However, the problem persisted. Then one consultant defined the problem differently. He said the problem the industry should consider was "how can we reduce cost?" The new problem statement generated new ideas. All aspects of shipping, including storage of cargo and loading time, were considered. The outcome of this shift in focus resulted in the container ship and the roll-on/roll-off freighter.*

* **Think in** [**reverse**](http://www.mindtools.com/pages/article/newCT_01.htm) **:** If you feel you cannot think of anything new, try turning things upside-down. Instead of focusing on how you could solve a problem/improve operations/enhance a product, consider how could you create the problem/worsen operations/downgrade the product. The reverse ideas will come flowing in. Consider these ideas – once you've reversed them again – as possible solutions for the original challenge.
* **Express yourself through different media:** We have multiple intelligences but somehow, when faced with workplace challenges we just tend to use our verbal reasoning ability. How about expressing the challenge through different media? Clay, music, word association games, paint, there are several ways you can express the challenge. Don't bother about solving the challenge at this point. Just express it. Different expression might spark off different thought patterns. And these new thought patterns may yield new ideas.

Connect the Unconnected

Some of the best ideas seem to occur just by chance. You see something or you hear someone, often totally unconnected to the situation you are trying to resolve, and the penny drops in place. Newton and the apple, Archimedes in the bath tub; examples abound.

Why does this happen? The random element provides a new stimulus and gets our brain cells ticking. You can capitalize on this knowledge by consciously trying to connect the unconnected.

Actively seek stimuli from unexpected places and then see if you can use these stimuli to build a connection with your situation. Some techniques you could use are:

* **Use** [**random input**](http://www.mindtools.com/pages/article/newCT_07.htm) **:** Choose a word from the dictionary and look for novel connections between the word and your problem.
* [**Mind map**](http://www.mindtools.com/pages/article/newISS_01.htm) **possible ideas:** Put a key word or phrase in the middle of the page. Write whatever else comes in your mind on the same page. See if you can make any connections.
* **Pick up a picture.** Consider how you can relate it to your situation.
* **Take an item.** Ask yourself questions such as "How could this item help in addressing the challenge?", or "What attributes of this item could help us solve our challenge?"

Shift Perspective

Over the years we all build a certain type of perspective and this perspective yields a certain type of idea. If you want different ideas, you will have to shift your perspective. To do so:

* **Get someone else's perspective:** Ask different people what they would do if faced with your challenge. You could approach friends engaged in different kind of work, your spouse, a nine-year old child, customers, suppliers, senior citizens, someone from a different culture; in essence anyone who might see things differently.
* **Play the "If I were" game:** Ask yourself "If I were ..." how would I address this challenge? You could be anyone: a millionaire, Tiger Woods, anyone.

The idea is the person you decide to be has certain identifiable traits. And you have to use these traits to address the challenge. For instance, if you decide to play the millionaire, you might want to bring traits such as flamboyance, big thinking and risk-taking when formulating an idea. If you are Tiger Woods you would focus on things such as perfection, persistence and execution detail.

Employ Enablers

Enablers are activities and actions that assist with, rather than directly provoke, idea generation. They create a positive atmosphere. Some of the enablers that can help you get your creative juices flowing are:

* **Belief in yourself:** Believe that you are creative, believe that ideas will come to you; positive reinforcement helps you perform better.
* **Creative loafing time:** Nap, go for a walk, listen to music, play with your child, take a break from formal idea-generating. Your mind needs the rest, and will often come up with connections precisely when it isn't trying to make them.
* **Change of environment:** Sometimes changing the setting changes your thought process. Go to a nearby coffee shop instead of the conference room in your office, or hold your discussion while walking together round a local park.
* **Shutting out distractions:** Keep your thinking space both literally and mentally clutter-free. Shut off the Blackberry, close the door, divert your phone calls and then think.
* **Fun and humor:** These are essential ingredients, especially in team settings.

Key Points

The ability to generate new ideas is an essential work skill today. You can acquire this skill by consciously practicing techniques that force your mind to forge new connections, break old thought patterns and consider new perspectives.

Along with practicing these techniques, you need to adopt enabling strategies too. These enabling strategies help in creating a positive atmosphere that boosts creativity.

Synectics

A Useful "Backstop" Creativity Process

Synectics is a creativity and problem solving process which combines a structured approach to creativity with the freewheeling problem-solving approach used in techniques like brainstorming.

It's a useful technique when simpler creativity techniques like[**SCAMPER**](http://www.mindtools.com/pages/article/newCT_02.htm) , [**brainstorming**](http://www.mindtools.com/brainstm.html) and [**random input**](http://www.mindtools.com/pages/article/newCT_07.htm) (which are embedded within the synectics approach) have failed to generate useful ideas, as it uses many different triggers and stimuli to jolt people out of established mind sets and into more creative ways of thinking.

However, given the sheer range of different triggers and thinking approaches used within synectics, it can take much longer to solve a problem using it than with, say, traditional brainstorming – hence its best use as a "backstop" when other creativity techniques have failed.

**Background:**

The word "synectics" means "bringing different things together to create a unified connection", which is what's done using the synectics process.

It was developed by William J. J. Gordon in the early 1960s and developed (in an artistic context) by Nicholas Roukes.

How to Use the Tool

Generating ideas with Synectics is a three stage process:

The Reframing Matrix

Generating Different Perspectives



Things look different when you change perspective.

© iStockphoto

When you're stuck on a problem, it often helps to look at it from another perspective. This can be all that you need to do to come up with a great solution.

However, it is sometimes difficult to think about what these perspectives might be.

This is when a tool like the Reframing Matrix is useful. In this article, we'll look at how you can use it to look at problems from different perspectives.

About the Matrix

The Reframing Matrix tool was created by Michael Morgan, and published in his 1993 book, "[**Creating Workforce Innovation**](http://www.amazon.com/Creating-Workforce-Innovation-Individual-Organizational/dp/1875680020/)." It helps you to look at business problems from various perspectives. Using these, you can come up with more creative solutions.

The approach relies on the fact that different people with different experiences are likely to approach problems in different ways. The technique helps you put yourself into the minds of different people, imagine the way that they would face these problems, and explore the possible solutions that they might suggest.

How to Use the Tool

The Reframing Matrix is very easy to use. All you'll need is a pen and paper to get started.

Step 1: Draw the Grid

Start by drawing a simple four-square grid, like the one pictured in figure 1 below.

Leave a space in the middle of the grid to define your problem, and then write the problem that you want to explore in this space.

**Figure 1 – Reframing Matrix Step 1**



From 'Creating Workforce Innovation' by Michael Morgan, p.75. © 1993. First published by [**Allen & Unwin**](https://www.allenandunwin.com/default.aspx?page=432), New South Wales. Reproduced with permission from Allen & Unwin.

**Tip:**

The boxes around the grid are there for your different perspectives. If this four-box approach doesn't suit you, feel free to change it.

Step 2: Decide on Perspectives

Now, decide on four different perspectives to use in your matrix. Two useful approaches for doing this are the 4Ps Approach and the Professions Approach.

The 4Ps Approach (not to be confused with the [**4Ps of marketing**](http://www.mindtools.com/pages/article/newSTR_94.htm) ) helps you look at problems from the following perspectives:

* **Product perspective:** Is there something wrong with the product or service? Is it priced correctly? How well does it serve the market? Is it reliable?
* **Planning perspective:** Are our business plans, marketing plans, or strategy at fault? Could we improve these?
* **Potential perspective:** How would we increase sales? If we were to seriously increase our targets or our production volumes, what would happen with this problem?
* **People perspective:** What are the people impacts and people implications of the problem? What do people involved with the problem think? Why are customers not using or buying the product?

(These are just some of the questions that you can ask as you look at your problem using these four perspectives.)

The Professions Approach helps you look at the problem from the viewpoints of different specialists, or [**stakeholders**](http://www.mindtools.com/pages/article/newPPM_07.htm) . For instance, the way a doctor looks at a problem would be different from the approach that a civil engineer or a lawyer would use. Or the way a CEO sees a problem may be different from the way an HR manager would see it.

This approach can be especially useful when you're trying to solve a problem that involves many different types of people, or if you need step away from your usual way of thinking so that you can be more creative.

Step 3: Brainstorm Factors

Finally, [**brainstorm**](http://www.mindtools.com/brainstm.html) factors related to your problem from each perspective, and add these in to the appropriate quadrant of the matrix.

Once you've completed the matrix, you'll have a better understanding of your problem, and you'll be able to generate more solutions.

**Tip 1:**

The [**Perceptual Positions**](http://www.mindtools.com/pages/article/newCS_93.htm) technique can be useful when you want to see things from other people's viewpoints.

**Tip 2:**

See our article on [**CATWOE**](http://www.mindtools.com/pages/article/newTMC_83.htm) for a similar approach. This asks you to look at a problem from the perspectives of Customers, Actors, the Transformation process, the World view, the Owner, and Environmental constraints.

Example Reframing Matrix

In the example in figure 2, below, a manager has used the 4Ps approach to explore why a new product is not selling well.

**Figure 2 – Example Reframing Matrix**



Key Points

The Reframing Matrix tool was originally created by Michael Morgan, and published in his book "Creating Workforce Innovation." It helps you to look at a problem from different perspectives.

You use the tool by drawing a simple four-square grid and putting your problem or issue in the middle of the grid.

You then choose four different perspectives that you will use to look at your problem, and brainstorm factors related to your problem, starting with each of those perspectives.

Brainstorming

Generating Many Radical, Creative Ideas

Brainstorm better with
James Manktelow & Amy Carlson.

How often have you used brainstorming to solve a problem? Chances are, you've used it at least once, even if you didn't realize it.

For decades, people have used brainstorming to generate ideas, and to come up with creative solutions to problems. However, you need to use brainstorming correctly for it to be fully effective.

In this article, we'll look at brainstorming: what it is, why it's useful, and how to get the best from it.

What is Brainstorming?

Madison Avenue advertising executive Alex Osborn developed the original approach to brainstorming and published it in his 1953 book, "[**Applied Imagination**](http://www.amazon.com/Applied-Imagination-Principles-Procedures-Problem-Solving/dp/0930222733/)." Since then, researchers have made many improvements to his original technique.

The approach described here takes this [**research**](http://carmine.se.edu/cvonbergen/Productivity%20Loss%20In%20Brainstorming_Toward%20the%20Solution%20of%20a%20Riddle.pdf) into account, so it's subtly different from Osborn's approach.

Brainstorming combines a relaxed, informal approach to problem solving with lateral thinking. It encourages people to come up with thoughts and ideas that can, at first, seem a bit crazy. Some of these ideas can be crafted into original, creative solutions to a problem, while others can spark even more ideas. This helps to get people unstuck by "jolting" them out of their normal ways of thinking.

Therefore, during brainstorming sessions, people should avoid criticizing or rewarding ideas. You're trying to open up possibilities and break down incorrect assumptions about the problem's limits. Judgment and analysis at this stage stunts idea generation and limit creativity.

Evaluate ideas at the end of the brainstorming session – this is the time to explore solutions further, using conventional approaches.

Why Use Brainstorming?

Conventional group problem solving can often be undermined by [**unhelpful group behavior**](http://www.mindtools.com/pages/article/newLDR_82.htm) . And while it's important to start with a [**structured, analytical process**](http://www.mindtools.com/pages/main/newMN_TMC.htm) when solving problems, this can lead a group to develop limited and unimaginative ideas.

By contrast, brainstorming provides a free and open environment that encourages everyone to participate. Quirky ideas are welcomed and built upon, and all participants are encouraged to contribute fully, helping them develop a rich array of creative solutions.

When used during problem solving, brainstorming brings team members' diverse experience into play. It increases the richness of ideas explored, which means that you can often find better solutions to the problems that you face.

It can also help you get buy-in from team members for the solution chosen – after all, they're likely to be more committed to an approach if they were involved in developing it. What's more, because brainstorming is fun, it helps team members bond, as they solve problems in a positive, rewarding environment.

While brainstorming can be effective, it's important to approach it with an open mind and a spirit of non-judgment. If you don't do this, people "clam up," the number and quality of ideas plummets, and morale can suffer.

Individual Brainstorming

While group brainstorming is often more effective at generating ideas than normal group problem solving, several [**studies**](http://onlinelibrary.wiley.com/doi/10.1002/ejsp.2420030402/abstract) have shown that individual brainstorming produces more – and often better – ideas than group brainstorming.

This can occur because groups aren't always strict in following the rules of brainstorming, and bad behaviors creep in. Mostly, though, this happens because people pay so much attention to other people that they don't generate ideas of their own – or they forget these ideas while they wait for their turn to speak. This is called "blocking."

When you brainstorm on your own, you don't have to worry about other people's egos or opinions, and you can be freer and more creative. For example, you might find that an idea you'd hesitate to bring up in a group develops into something special when you explore it on your own.

However, you may not develop ideas as fully when you brainstorm on your own, because you don't have the wider experience of other group members to draw on.

**Tip:**

To get the most out of your individual brainstorming session, choose a comfortable place to sit and think. Minimize [**distractions**](http://www.mindtools.com/pages/article/distractions.htm) so that you can focus on the problem at hand, and consider using [**Mind Maps**](http://www.mindtools.com/pages/article/newISS_01.htm) to arrange and develop ideas.

Individual brainstorming is most effective when you need to solve a simple problem, generate a list of ideas, or focus on a broad issue. Group brainstorming is often more effective for solving complex problems.

Group Brainstorming

With group brainstorming, you can take advantage of the full experience and creativity of all team members. When one member gets stuck with an idea, another member's creativity and experience can take the idea to the next stage. You can develop ideas in greater depth with group brainstorming than you can with individual brainstorming.

Another advantage of group brainstorming is that it helps everyone feel that they've contributed to the solution, and it reminds people that others have creative ideas to offer. Brainstorming is also fun, so it can be great for team building!

Group brainstorming can be risky for individuals. Unusual suggestions may appear to lack value at first sight – this is where you need to chair sessions tightly, so that the group doesn't crush these ideas and stifle creativity.

Where possible, brainstorming participants should come from a wide range of disciplines. This cross-section of experience can make the session more creative. However, don't make the group too big: as with other types of teamwork, groups of five to seven people are usually most effective.

How to Use the Tool

You often get the best results by combining individual and group brainstorming, and by managing the process according to the "rules" below. By doing this, you can get people to focus on the issue without interruption, you maximize the number of ideas that you can generate, and you get that great feeling of team bonding that comes with a well-run brainstorming session!

To run a group brainstorming session effectively, follow these steps.

Step 1: Prepare the Group

First, set up a [**comfortable meeting environment**](http://www.mindtools.com/pages/article/minimizing-work-space-stress.htm) for the session. Make sure that the room is well-lit and that you have the tools, resources, and refreshments that you need.

How much information or preparation does your team need in order to brainstorm solutions to your problem? Remember that prep is important, but too much can limit – or even destroy – the freewheeling nature of a brainstorming session.

Consider who will attend the meeting. A room full of like-minded people won't generate as many creative ideas as a diverse group, so try to include people from a wide range of disciplines, and include people who have a variety of different thinking styles.

When everyone is gathered, appoint one person to record the ideas that come from the session. This person shouldn't necessarily be the team manager – it's hard to record and contribute at the same time. Post notes where everyone can see them, such as on flip charts or whiteboards; or use a computer with a data projector.

If people aren't used to working together, consider using an appropriate warm-up exercise, or an [**icebreaker**](http://www.mindtools.com/pages/article/newLDR_76.htm) .

Step 2: Present the Problem

Clearly define the problem that you want to solve, and lay out any criteria that you must meet. Make it clear that that the meeting's objective is to generate as many ideas as possible.

Give people plenty of quiet time at the start of the session to write down as many of their own ideas as they can. Then, ask them to share their ideas, while giving everyone a fair opportunity to contribute.

Step 3: Guide the Discussion

Once everyone has shared their ideas, start a group discussion to develop other people's ideas, and use them to create new ideas. Building on others' ideas is one of the most valuable aspects of group brainstorming.

Encourage everyone to contribute and to develop ideas, including the quietest people, and discourage anyone from criticizing ideas.

As the group facilitator, you should share ideas if you have them, but spend your time and energy supporting your team and guiding the discussion. Stick to one conversation at a time, and refocus the group if people become sidetracked.

Although you're guiding the discussion, remember to let everyone have fun while brainstorming. Welcome creativity, and encourage your team to come up with as many ideas as possible, regardless of whether they're practical or impractical. Use thought experiments such as [**Provocation**](http://www.mindtools.com/pages/article/newCT_08.htm) or [**Random Input**](http://www.mindtools.com/pages/article/newCT_07.htm) to generate some unexpected ideas.

Don't follow one train of thought for too long. Make sure that you generate a good number of different ideas, and explore individual ideas in detail. If a team member needs to "tune out" to explore an idea alone, allow them the freedom to do this.

Also, if the brainstorming session is lengthy, take plenty of breaks so that people can continue to concentrate.

Taking Your Brainstorming Further

If you're not getting enough good quality ideas, try using the approaches below to increase the number of ideas that you generate:

* [**The Stepladder Technique**](http://www.mindtools.com/pages/article/newTED_89.htm)– This improves the contribution of quieter group members by introducing one person at a time.
* [**Brainwriting**](http://www.mindtools.com/pages/article/newCT_86.htm)– This is a written approach that you can use to encourage all individuals to generate and develop ideas.
* [**Online Brainstorming (also known as Brain-netting)**](http://www.mindtools.com/pages/article/online-brainstorming.htm)– An electronic method of brainstorming, this uses a document stored on a central server, or on a Cloud-based system.
* [**Crawford's Slip Writing Approach**](http://www.mindtools.com/pages/article/newCT_95.htm)– You can use this approach to get plenty of ideas from all participants, and to get a view of each idea's popularity.

These techniques help you in specific brainstorming situations:

* [**Reverse Brainstorming**](http://www.mindtools.com/pages/article/newCT_96.htm)– This is used to improve a product or service.
* [**Starbursting**](http://www.mindtools.com/pages/article/newCT_91.htm)– Starbursting helps you develop questions that you need to ask to evaluate a proposal.
* [**Charette Procedure**](http://www.mindtools.com/pages/article/newCT_90.htm)– This helps you brainstorm with large groups of people. (Conventional brainstorming becomes increasingly ineffective when more than 10 or 12 people are involved.)
* [**Round-Robin Brainstorming**](http://www.mindtools.com/pages/article/round-robin-brainstorming.htm)– You can use this approach to get people to contribute ideas without being influenced by others.
* [**Rolestorming**](http://www.mindtools.com/pages/article/rolestorming.htm)– This technique encourages group members to take on other people's identities while brainstorming, thereby reducing their inhibitions.

The Next Step – Taking Action

After your individual or group brainstorming session, you'll have a lot of ideas. Although it might seem hard to sort through these ideas to find the best ones, analyzing these ideas is an important next step, and you can use several tools to do this.

Use [**Affinity Diagrams**](http://www.mindtools.com/pages/article/newTMC_86.htm) to organize ideas and find common themes.

[**Decision Matrix Analysis**](http://www.mindtools.com/pages/article/newTED_03.htm) and [**Paired Comparison Analysis**](http://www.mindtools.com/pages/article/newTED_02.htm) will help you choose between different options. You can also use the [**Six Thinking Hats**](http://www.mindtools.com/pages/article/newTED_07.htm) technique to look at ideas from different perspectives; and [**Multi-Voting**](http://www.mindtools.com/pages/article/newTMM_97.htm) can help you choose between options as a team, particularly where the differences between options are quite subjective.

Key Points

When managed well, brainstorming can help you generate radical solutions to problems. Brainstorming can also encourage people to commit to solutions, because they have provided input and played a role in developing them.

The best approach to brainstorming combines individual and group brainstorming. During the brainstorming process, there should be no criticism of ideas, and creativity should be encouraged.

Reverse Brainstorming

A Different Approach to Brainstorming



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Reverse brainstorming helps you solve problems by combining [**brainstorming**](http://www.mindtools.com/brainstm.html) and [**reversal**](http://www.mindtools.com/pages/article/newCT_01.htm) techniques. By combining these, you can extend your use of brainstorming to draw out even more creative ideas.

To use this technique, you start with one of two "reverse" questions:

Instead of asking, "How do I solve or prevent this problem?" ask, "How could I possibly cause the problem?"

Instead of asking "How do I achieve these results?" ask, "How could I possibly achieve the opposite effect?"

How to Use the Tool

1. Clearly identify the problem or challenge, and write it down.
2. Reverse the problem or challenge by asking, "How could I possibly cause the problem?" or "How could I possibly achieve the opposite effect?"
3. Brainstorm the reverse problem to generate reverse solution ideas. Allow the brainstorm ideas to flow freely. Do not reject anything at this stage.
4. Once you have brainstormed all the ideas to solve the reverse problem, now reverse these into solution ideas for the original problem or challenge.
5. Evaluate these solution ideas. Can you see a potential solution? Can you see attributes of a potential solution?

**Tip:**

Reverse brainstorming is a good technique to try when it is difficult to identify solutions to the problem directly.

**Example**

Luciana is the manager of a health clinic and she has the task of improving patient satisfaction.

There have been various improvement initiatives in the past and the team members have become rather skeptical about another meeting on the subject. The team is overworked, team members are "trying their best" and there is no appetite to "waste time" talking about this.

So she decides to use some creative problem solving techniques she has learned. This, she hopes, will make the team meeting more interesting and engage people in a new way.

Perhaps it will reveal something more than the usual "good ideas" that no one has time to act on.

To prepare for the team meeting, Luciana thinks carefully about the problem and writes down the problem statement:

*"How do we improve patient satisfaction?"*

Then she reverses problem statement:

*"How do we make patients more dissatisfied?"*

Already she starts to see how the new angle could reveal some surprising results.

At the team meeting, everyone gets involved in an enjoyable and productive reverse brainstorming session. They draw on both their work experience with patients and also their personal experience of being patients and customers of other organizations. Luciana helps ideas flow freely, ensuring people to not pass judgment on even the most unlikely suggestions.

Here are just a few of the "reverse" ideas:

* Double book appointments.
* Remove the chairs from the waiting room.
* Put patients who phone on hold (and forget about them).
* Have patients wait outside in the car park.
* Discuss patient's problems in public.

When the brainstorming session runs dry, the team has a long list of the "reverse" solutions. Now it's time to look at each one in reverse to think about a potential solution. Well-resulting discussions are quite revealing. For example:

* "Well of course we don't leave patients outside in the car park – we already don't do that."
* "But what about in the morning, there are often patients waiting outside until opening time?
* "Mmm, true. Pretty annoying for people on first appointments."
* "So why don't we open the waiting room 10 minutes earlier so it doesn't happen"
* "Right, we'll do that from tomorrow. There are several members of staff working already, so it's no problem."

And so it went on. The reverse brainstorming session revealed many improvement ideas that the team could implement swiftly and Luciana concluded: "It was enlightening and fun looking at the problem in reverse. The amazing thing is, it's helped us become more patient-friendly by stopping doing things rather than creating more work".

Key Points

Reverse brainstorming is a good technique for creative problem solving, and can lead to robust solutions. Be sure to follow the basic rules of brainstorming to explore possible solutions to the full

Starbursting

Understanding New Ideas by Brainstorming Questions

When a colleague suggests a new product or idea, and you're trying to understand it and how it works, a typical response is to bombard the other person with questions.

What features would it have?

How much would it cost?

Where would we market it?

Who would buy it? And so on.

Asking questions like these is a valuable way of understanding the new idea, and of challenging it to ensure that all of the relevant aspects of it have been considered before any work begins on implementing it. To get the most out of this approach, it's important that the questions are asked in a systematic and comprehensive way.

That's why it’s worth going through a comprehensive, systematic questioning exercise every time you explore a new idea. Starbursting is useful way of doing this.

Starbursting is a form of brainstorming that focuses on generating questions rather than answers. It can be used iteratively, with further layers of questioning about the answers to the initial set of questions. For example, a colleague suggests a new design of ice skating boot. One question you ask might be “Who is the customer?”Answer: "Skaters". But you need to go further than this to ensure that you target your promotions accurately: “What kind of skaters?” Answer: "Those who do a lot of jumping, who need extra support", and so on. This would help focus the marketing, for example to competition ice dancers and figure skaters, rather than ice rinks that buy boots to hire out to the general public.

**Tip:**

If you want to explore a really significant proposal, make sure you also use techniques like [**Risk Analysis**](http://www.mindtools.com/pages/article/newTMC_07.htm) and [**Impact Analysis**](http://www.mindtools.com/pages/article/newTED_96.htm) to explore the questions you should ask.

How to Use the Tool

The best way to see the power of this simple but effective technique is to think of a product, challenge or issue to work on, and follow these steps:

Step 1

Download our free[**worksheet**](http://www.mindtools.com/pages/article/worksheets/StarburstingDownload.htm) and print it out or take a large sheet of paper, draw a large six-pointed star in the middle, and write your idea, product or challenge in the centre.

Step 2

Write the words "Who", "What", "Why," "Where," "When," and "How" at the tip of each point of the star.

Step 3

Brainstorm questions about the idea or product starting with each of these words. The questions radiate out from the central star. Don't try to answer any of the questions as you go along. Instead, concentrate on thinking up as many questions as you can.

Step 4

Depending on the scope of the exercise, you may want to have further starbursting sessions to explore the answers to these initial questions further.

Figure 1 below shows some of the questions you might generate in a short starbursting session, focused on the skates mentioned above.

**Figure 1 – Starbursting Diagram for New Product**



Key Points

Starbursting is a form of brainstorming used to generate questions in a systematic, comprehensive way.

It's a useful tool to support your problem solving or decision making processes by helping you to understand all aspects and options more fully.

Metaphorical Thinking

Using Comparisons to Express Ideas and Solve Problems



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"Time is money."

How often have heard that statement?

Probably many times and in various contexts.

By thinking about time as money, you can create some powerful images. Time wasted is money down the drain. Time well spent is an investment. The seconds are ticking away.

A direct comparison between two unrelated or indirectly linked things is called a metaphor. And as we see in the example of "time is money", metaphors can create strong images that can be used to great effect in everyday communications and thinking. The manager who stands up in front of his team and says, "We need to finish this work quickly", creates considerably less impact that the manager who opens his comments using the metaphor: "As we all know, time is money."

The English language is littered with metaphors, and this is testimony to the their power.

So metaphors can be used to improve communications: They can add impact or can help you explain a difficult concept by association with a more familiar one. Metaphorical thinking can also be used to help solve problems: Use and extend metaphors to generate new ideas for solutions.

**Metaphor tips:**

The simple metaphor format is "A is B", as in "time is money". Metaphors can also be indirect or implicit: "That's a half-baked idea". This metaphor compares ideas with part-cooked food – without mentioning the food!

And, by the way, metaphors sometimes get mistaken for "similes". A simile makes a comparison too, but uses the word 'like', as in "time is like money"; "the idea is like half-baked food". Similes often sound more powerful than metaphors, even if the idea is the same.

Explaining Complex Ideas

By associating an unfamiliar idea with one that is commonplace, you can spark better understanding of complex ideas. Let's say you want to explain the concept of the business cycle. You could use lots of words, definitions, and drone on for five or ten minutes leaving the audience bored and confused. Then you could use graphs and diagrams, to help improve understanding and interest.

Or, you could explain using a metaphor: The business cycle is a pendulum, swinging back and forth from peaks of prosperity, down through economic troughs, and back up again.

The metaphor captures the essence of the business cycle – the listener immediately relates to the continuous back and forth movement. The vivid image helps people understand and also remember the idea. So, simply and in just a few words, everyone suddenly "gets it": To use another metaphor, the light bulb suddenly goes on.

Creating Impact

Metaphors are great for creating impact and making something memorable. So making use of them is a technique often used in marketing and advertising. But it's just as effective for making impact in your presentations, speeches and even in everyday discussions.

With metaphors, you help people get the idea quickly and efficiently. Here's a marketing example: In a pitch to sell a vacuum cleaner, you could go on and on about how great the new cleaner is and why people should buy it. But, see how much more impact can you create with metaphors: "This vacuum cleaner is so powerful, it can suck the light out of a black hole". The vivid image helps your product and pitch stand out, and so can help you make that sale.

**Tip:**

Make sure your metaphors are understandable to your audience. If there's any risk that your metaphors will sound like [**jargon**](http://www.mindtools.com/CommSkll/JargonBusting.htm) , think again. The secret is to use a metaphor that instantly rings true with your audience.

Communication

1. Identify what you are trying to communicate.
2. Determine the essence of the message.
3. Think of other instances in life where that same characteristic, idea, emotion, state, etc. applies.
4. There may be many metaphors for the situation you are describing – choose the one that will best relate to your audience.

Thinking Outside the Box

When you use a metaphor to link two ideas together, you are combining elements that have little or no logical connection. By breaking the rules of logic in this way, metaphors can open up the creative side of the brain – the part that is stimulated by images, ideas, and concepts. So metaphorical thinking can help you with creative problem solving: To use another famous metaphor, it helps you "think outside the box".

Take the problem of how to cut production costs. You could attack the problem logically, and research new technologies or analyze inefficiencies in the production process. You might come up with some cost saving, but will you hit the jackpot?

Problem solving often starts with [**brainstorming**](http://www.mindtools.com/brainstm.html) and bouncing ideas back and forth with your team. Brainstorming is great for getting the creative juices flowing; it can open up a floodgate of ideas (. more metaphors!) However, people may still be constrained by the images they have of the current problem, or by their preconceived notions about the potential solutions.

When using metaphors for solving problems, you link the problem to something seemingly unrelated. Doing this allows your brain to see the issue from a completely different perspective – one that you may not even have known existed. If the problem is how to cut production costs, you could use the metaphor of someone wanting to lose weight. The next step is to generate solution to the problem of losing weight rather than the problem of shedding production costs. As you identify various solutions to the metaphorical problem, you can then relate these back to the real problem. Chances are, you will come up with something creative ideas for solutions.

Here are the steps for using metaphorical problem solving, using our product costs example:

1. First identify the metaphor for your problem or challenge.

There's no "right metaphor" – the ideas can be as unrelated as you like. If the problem involves increasing something, make sure the metaphor relates to an increase as well, otherwise it can become too difficult to visualize.

**Increase sales > Build larger muscles
Decrease recruitment costs > Lower the price of bread
Attract more investors > Harvest more corn**

So here's the metaphor of our example:

**Problem:** Cut production costs
**Metaphor:** Lose weight

1. Now it's time to generate solution ideas for the metaphorical problem, in this case, losing weight. [**Brainstorming**](http://www.mindtools.com/brainstm.html) is a good way to facilitate this.
	* Count calories
	* Exercise
	* Monitor food intake
	* Limit intake of certain food categories
	* Fill up on low calorie foods
	* Drink lots of water
	* Join a slimming club
2. Then, the next step is to see how the solution ideas for the metaphorical problem might relate back to the real problem:

| Solution ideas for the metaphorical problem  | Solutions ideas relating back to the real problem  |
| --- | --- |
| Count calories | Control expenditure on inputs |
| Exercise to burn calories | Use up all of their inputs (recycle, remanufacture, etc.) |
| Monitor food intake | Control inputs |
| Limit intake of certain food categories | Save costs by carefully choosing certain suppliers |
| Fill up on low calorie food | Find low cost substitutes |
| Drink lots of water | Flush out duplicate processes |
| Join a slimming club | Share ideas and support with other similar departments |

**Tip:**

Don't get too hung up on how well the metaphorical solution ideas map back. Metaphors that map too well can stifle the creativity you are trying to generate! The whole idea is to generate solutions ideas that you may not have otherwise thought of, so just let the ideas flow without too much scrutiny.

1. Use the solution ideas you have generated for the metaphorical problem to find a workable solution to the real problem.

Key Points

Metaphors are powerful shortcuts to instant and memorable understanding. They evoke vivid images and allow us to "see" things from a new perspective, and so are useful tools for creative problem solving. Use metaphorical thinking to help explain complex ideas, create impact in your presentations, and think outside the box.