

# Brainstorming

... what it is and how it works

*Expert knowledge means success*

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Note: This publication has not been updated since it was last published. Some of the hyperlinks may have changed and may need updating. In addition, some of the information in this publication may be out of date.

## Introduction

Brainstorming is a simple way to quickly gather ideas on a specific topic from members of a group. One of the most important features in an effective brainstorming session is that everyone is encouraged to speak up. There is no analysis, discussion, or criticism until all ideas from the group have been aired. In fact, there ought to be no criticism at all since the idea is to come up with new solutions to old problems without any inhibitions.

Brainstorming can be an effective way to generate several different ideas and then determine which ones best solve the problem facing the organisation. In brainstorming, the goal is to find ideas, not strive for order and coherence. It's most effective with groups of people and should be performed in a relaxed environment in which participants feel free to be silly and, as they do, they open their minds to new thinking and produce more creative ideas. It's generally believed that that groups larger than ten or smaller than six may be less productive of ideas.

## The History of Brainstorming

The notion of brainstorming as an idea-generating technique was pioneered by Alex Osborn, an advertising executive, as a way to think of as many ideas (good, bad, or both) as possible. In 1941, a team led by advertising executive Osborn coined the term "brainstorm." Finding that conventional business meetings were inhibiting the creation of new ideas, Osborn proposed some limited rules designed to help stimulate them - rules which would give people the freedom of mind and action to spark off and reveal new ideas. According to Osborn, *"Brainstorm means using the brain to storm a creative problem and to do so in commando fashion, each stormer audaciously attacking the same objective."* Brainstorming was presented in 1948, in a book called *"Your Creative Power"*. Osborn developed this technique to encourage original and spontaneous thinking among his employees and to produce the maximum number of new ideas. Brainstorming involves creating an atmosphere in which people feel uninhibited and free to propose the sort of wild and improbable solutions to problems that often point to the best course of action. The technique requires some practice and skill to use effectively but is not difficult if certain guidelines are followed.

Alex F. Osborn was born in New York City, USA on 24 May 1888. After graduating with a Ph.B. in 1909 and Ph.M. in 1921 at Hamilton College, he worked for a time as a reporter for the Buffalo (NY) Times and for the Buffalo Express and later entered the field of advertising as manager of the E. P. Remington Advertising Co. He was a founder in the advertising agency of Barton, Durstine and Osborn, which, in 1928, merged with George Batten Co. to form, Batten, Barton, Durstine & Osborn, Inc. He rose to executive vice-president and general manager in 1939, became vice-chairman of the board in 1946 and in 1957 became a member of the executive committee until his retirement in 1960.

Alex Osborn's book *"Applied Imagination: Principles and Procedures of Creative Thinking"*, published in 1953, has been translated into five foreign languages and has been used as a textbook in colleges. This book has probably had more influence than any other has in stimulating interest in idea production among professional people in business organisations.



Alex F Osborn, the "founder" of Brainstorming

Brainstorming is really a type of psychology technique adapted from the work of psychotherapist, Sigmund Freud, in the early part of the last century. As part of therapy, Freud had his clients lay on a couch to interact with him by "free association", which he would analyse later with them.

A related technique, called Synectics<sup>1</sup>, was developed by William J.J. Gordon in 1967, as a way to enhance the creativity of individuals. Originally Synectics was used as a problem-solving method of science and technology, but in subsequent work Gordon and others began to explore the usefulness of Synectics for education. Synectics differs from brainstorming in that it doesn't focus on a clearly specified problem but a discussion is stimulated around a general idea that is related to the ultimate specific problem. Gordon's basic approach was to use metaphoric-thinking as a means to solving problems. He believed that:

- Creativity could be enhanced (and even taught to an extent).
- Working in groups can serve to encourage creativity rather than inhibit it and by developing a set of metaphoric exercises, he attempted to make people more aware of the creative process and at the same time to refine and improve it.
- Most creative people use metaphoric thinking - although they may be unaware of the process going on within them.

## The Four Basic Rules of Brainstorming

For brainstorming to be effective, participants need to follow some firmly established, yet simple, rules and procedures. Osborn suggested four basic rules:

1. Criticism is ruled out. Negative judgments of ideas must be withheld until later. No evaluation or comments about other's ideas should take place. Creativity is encouraged by not allowing ideas to be evaluated or discussed until everyone has run dry. This rule implies that people will be less likely to be creative if they are constantly criticised.
2. Encourage wild ideas. The wackier the idea, the better since it is easier to tame down than to think up. All ideas are legitimate and often the most far-fetched offer the greatest opportunity. This rule means that all ideas should be welcomed at first, and then later, after

the brainstorming session is over, the ideas can be refined and made more practical and possible.

3. Strive for Quantity. The greater the number of ideas, the more likely that some of those ideas will be interesting and usable.
4. Build on the Ideas of Others. Combination and improvement are sought. In addition to contributing ideas of their own, participants should suggest how ideas of others can be turned into better ideas; or how two or more ideas can be joined into still another idea. The final rule encourages participants to extend their creative energies beyond thinking up wholly new ideas to forge links between or to refine or modify existing ideas.

Although the discipline of brainstorming is maintained by these four basic rules, the informality of the process generates an atmosphere of freedom.

## Leading a Brainstorming Session

A brainstorming session leader should present the problem for which ideas are sought. The wording should encourage specific, tangible ideas, not abstract ideas or opinions. The leader makes sure that the members understand the problem, the objective of the brainstorming session, and the process to be followed.

The leader of a brainstorming session should take the group through these stages:

1. Defining the problem - making sure everyone understands and is satisfied with the central question before opening up for ideas, but doing so without writing it on a flipchart or whiteboard
2. Restating the problem - asking for suggestions as to how the problem may be restated and writing these up in front of the group (each restatement should be prefaced by the words "How to"). By restating the problem in different words a number of times, the group will begin to see different perspectives on the problem.
3. Brainstorming on one or more of the restatements.
4. Recording exactly what is said.
5. Clarifying what was said (but only when new ideas have dried up).
6. Eliminating duplicate ideas and ideas that aren't relevant to the topic.

*"The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and then starting on the first one."*  
Mark Twain

*"Putting your ideas on paper is the best way of thinking them through."*  
Lee Iacocca

*"Imagination is more important than knowledge. For while knowledge defines all we currently know and understand, imagination points to all we might yet discover and create."*  
Albert Einstein

*"No idea is so outlandish that it should not be considered with a searching but at the same time steady eye."*  
Winston Churchill

*"The best way to get a good idea is to get a lot of ideas."*  
Linus Pauling,  
Chemist

*"Creative thinking is not a talent. It is a skill that can be learnt. It empowers people by adding strength to their natural abilities which improves teamwork, productivity and where appropriate profits."*  
Edward de Bono

## The Stages in Brainstorming

Stage	Problem Solving Task
Orientation	Setting the stage for creative thinking
Preparation and analysis	Gathering data and determining relationships among facts
Brainstorming	Generating possible solutions
Incubation	Taking a break to encourage illumination
Synthesis and verification	Combining ideas and testing the solution verification

Alex Osborn made the following suggestions for running a brainstorming session:

- If you are not already in a meeting in which the problem has arisen, make arrangements for a meeting to take place.
- If you are forming a new group, try to involve all those people who have a vested interest in solving the problem, and those who have specialised knowledge and are willing to participate.
- Have the following equipment on hand; one or two flipcharts and a good stock of paper for them; plenty of marking pens to write on the flipcharts (you will be the only one writing, but a good stock of pens will avoid interruptions if pens run dry); a good supply of sticky tape to attach the sheets of paper around the walls; and a whiteboard will be useful but is not absolutely necessary.
- Have a meeting room that is sufficiently large for people to feel comfortable in, and make the seating arrangements as informal as possible (a horseshoe shaped arrangement of desks with the flipcharts facing the open end of the U is usually best).
- Ensure that there will be no interruptions. Nothing spoils the free flow of ideas more quickly than a telephone call or someone being called out of the room.

## The Scientific Explanation

We've all heard about people being "left brain" or "right brain" dominant. The brain is involved in everything we do. How we think, how we feel, how we act, and even how we get on with and interact with other people. It also affects the kind of person we are. Years ago, scientists concluded that the left hemisphere of the brain is the seat of most logical thought, and the right side of the brain is where most creativity occurs. Brainstorming requires both divergent and convergent thinking - functions that are controlled by the frontal lobes.

The goal of divergent thinking is to generate many different ideas about a topic in a short period of time. It involves breaking a topic down into its various component parts in order to gain insight about the various aspects of the topic. Generating new and varied ideas is a product of divergent thinking, while reducing a field of options down to the most salient ones or a single solution is a product of convergent thinking. The divergent thinker lives in a natural state of "brainstorm" and sees life through a kaleidoscope that is set in perpetual motion.

Convergent thinking is a necessary and satisfying brain function. It is essential for accomplishing goals and there is satisfaction in doing it well. The person who is convergent-thinking is particularly good at finding mistakes that need to be corrected. Numbers, details and good order matter a lot.

Brainstorming tends to be effective because group members can say what pops into their mind without fear of criticism. The process encourages new and wild ideas, piggybacking on the ideas of others, and the generation of varied suggestions, which are ultimately cut down and decided upon after discussion and feedback. The quick, free exchange of ideas actually stimulates the left hemisphere of the prefrontal cortex (PFC), which encourages the acceptance of new emotional stimuli (as opposed to the right hemisphere of the PFC which encourages avoidance).

*"There is no doubt that creativity is the most important human resource of all. Without creativity, there would be no progress, and we would be forever repeating the same patterns."*

*"Intelligence is something we are born with. Thinking is a skill that must be learned."*

*"It is better to have enough ideas for some of them to be wrong, than to be always right by having no ideas at all."*

*Quotes from Edward de Bono*

## Recommended Reading



The following books offer further insight into brainstorming. Most books are available from good booksellers.

- Applied Imagination: Principles and Procedures of Creative Thinking, by Alex F Osborn, published by Creative Education Foundation, ISBN: 0930222933.
- Lateral Thinking, by Edward de Bono, published by Penguin Books, ISBN: 0140137793.
- Five Star Mind: Games and Exercises to Stimulate Your Creativity and Imagination, by Tom Wujec, published by Doubleday Books, ISBN: 0385414625.
- Imagination Engineering, by Paul Birch and Brian Clegg, published by Financial Times/Prentice Hall, ISBN: 0273649299.
- Thinkpak: A Brainstorming Card Deck, by Michael Michalko, published by Ten Speed Press, ISBN: 0898156076.
- The Living Company, by Arie De Geus, published by Nicholas Brealey Publishing Ltd, ISBN: 1857881850.
- Brainstorming, by Solomon H Snyder, published by Harvard University Press, ISBN: 0674080483.
- Creative Thinking and Brainstorming, by J. Rawlinson, published by Gower Publishing Limited, ISBN: 0704505436
- Aha!: 10 Ways to Free Your Creative Spirit and Find Your Great Ideas, by Jordan Ayan, published by Crown Publishing Group, Inc. (NY), ISBN: 0517884003.
- Managing Creativity, by Howard Davis, Richard Scase, published by Open University Press, ISBN: 033520693X.
- Creativity in Business, by Michael L. Ray, Rochelle Myersl, published by Doubleday Books, ISBN: 0385248512.
- Best Practice Creativity, by Peter Cook, published by Gower Publishing Limited, ISBN: 0566080273.
- Creativity, Innovation and Quality, by Paul Plsek, published by ASQ Quality Press, ISBN: 0873894049.
- Creativity Games for Trainers: A Handbook of Group Activities for Jumpstarting Workplace Creativity, by Robert Epstein, published by McGraw-Hill Companies, Inc, ISBN: 0070213631.
- What a Great Idea!: the Key Steps Creative People Take, by Charles Thompson, published by Harper Perennial, ISBN: 0060969016.
- Collaborative Creativity, by Jack Ricchiuto, published by Oakhill Press, ISBN: 1886939128.
- 99% Inspiration: Tips, Tales & Techniques for Liberating Your Business Creativity, by Bryan W. Mattimore, published by AMACOM, ISBN: 0814477887.

*"Vision without action is merely a dream. Action without vision just passes the time. Vision with action can change the world!"*  
Joel Arthur Barker

*"Great discoveries and improvements invariably involve the co-operation of many minds"*  
Alexander Graham Bell



For more information on the human brain, visit [www.brainplace.com](http://www.brainplace.com)

An excellent source of information and products on brainstorming is Infinite Innovations Ltd, a Sheffield UK company dedicated to creative thinking and brainstorming.  
Web:  
<http://www.infinn.com/>

## Further Information

This guide is for general interest - it is always essential to take advice on specific issues. We believe that the facts are correct as at the date of publication, but there may be certain errors and omissions for which we cannot be responsible.

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### References:

<sup>1</sup> Synectics is a word derived from a Greek term for a kind of metaphor.

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Publication issued or updated on:  
19 January 2012

Ref: 478

