The Principles of Brainstorming

Extract from the Mechanical Design Handbook

Brainstorming typically involves a multi-disciplinary group meeting together to propose and generate ideas to solve a stated problem. Certain forms of brainstorming can be performed individually, with other people at the same time or with a time lapse between communications. The emphasis within brainstorming is on quantity rather than quality of ideas, and criticism of another person's idea is strictly forbidden during phases of the process. Following a brainstorming session, a review should be undertaken to identify ideas or aspects of the concepts generated that have merit for further consideration. A typical outcome is that aspects of a few of the concepts generated can be combined to form a solution to the problem that gives a better overall solution than any one of the individual concepts from the original session. Brainstorming is a familiar concept within industry and widely used within stagegate, waterfall and agile management processes.

Osborn (1963) observed that results of generative activity improved if there was deferment of judgement and also that quantity breeds quality. These principles have been embedded in a series of rules for brainstorming activities. During a brainstorming session, criticism, evaluation or judging an idea is forbidden. This encourages people to come up with and offer ideas without fear of criticism, ridicule or judgment. When sharing an idea, it needs to be recognised that a person is sharing something intimate - a set of thoughts. Respect for this is important. In a critical environment people are less likely to offer ideas, or may limit the ideas they offer to ones that they have evaluated and think reasonable. There have been many ideas that at first airing may seem un-viable but with the benefit of attention from the collective mind of a group can be built on, improving the viability of the thought. If the original idea is not shared this is not possible. It should be noted that individuals will develop coping strategies within a critical environment. Many offices and organisations stumble forward in the midst of a cut-and-thrust, competitive and often highly critical working environment. In such cases it is common to hear comments along the lines of:

'*Why should I share an idea when all that will happen is …*'

'*This has been done before*'; '*Been there, done that*'

'*This just won't work*'

'*Someone else will take or claim the idea and all the credit for it;*'

'*The idea will be ignored because it was not suggested by the people in charge (or who matter);*' (Not-invented-here syndrome)

'*Managers won't like it*'

These scenarios are common-place, and strategies to avoid them include:

1) Explaining the rationale and rules of brainstorming prior to the session. This can

be achieved by a pre-meeting to define these for the participants.

2) Using a system to document the originator of an idea such as associating an idea with an individual by including their initials alongside it.

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3) Using a quasi-quantitative technique to evaluate the ideas generated, such as an evaluation matrix.

4) Explaining to managers the benefits of brainstorming and that ideas will occur under the manager's direction and therefore will reflect positively on the manager.

The principal rules commonly associated with brainstorming are:

- brainstorming should be a group activity undertaken by an interdisciplinary team;

- there should be no more than ten people present;

- no criticism or mockery of any idea, statement or individual is allowed;

- flip charts, post-its, cards, marker pens, pencils and paper should be provided;

- the design brief should be clearly stated;

- a set period of time should be allocated;

- an individual should be identified to introduce the brief.

Tom Kelley of IDEO (2001) suggests that effective brainstorming sessions should not take longer than 60 to 90 minutes. The IDEO organisation uses brainstorming regularly with each person involved several times a month. Brainstorming is the idea engine for many industries and over 70% of business leaders use it in their organisations (Arthur Anderson (2004)). There is a substantial body of evidence providing convincing data showing the effectiveness of brainstorming and creative tools based on divergence and convergence when appropriately implemented. Evidence for the effectiveness of brainstorming and associated tools for problem solving, techniques for using them and strategies for their selection and implementation are reviewed by Treffinger et al. (1994), Isaksen and DeSchryver (2000), Torrence (1972) and Rose and Lin (1984).