Brainstorming

Authored by

mohammad looti

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Brainstorming is a group creativity technique by which a group tries to find a solution for a specific problem by gathering a list of ideas spontaneously contributed by its members. The term was popularized by Alex Faickney Osborn in 1953 through the book Applied Imagination. In the book, Osborn not only proposed the brainstorming method but also established effective rules for hosting brainstorming sessions.

Brainstorming Activity Conducting

Brainstorming has become a popular group technique and has aroused attention in academia. Multiple studies have been conducted to test Osborn's postulation that brainstorming is more effective than individuals working alone in generating ideas . Some researchers have concluded that the statement is false (brainstorming is not effective), while others uncovered flaws in the research and determined that the results are inconclusive. Furthermore, researchers have made modifications or proposed variations of brainstorming in an attempt to improve the productivity of brainstorming. However, there is no empirical evidence to indicate that any variation is more effective than the original technique.

Origin

The origin of brainstorming came from Osborn in 1939 as a method for creative problem solving. He was frustrated by employees' inability to develop creative ideas individually for ad campaigns. In response, he began hosting group-thinking sessions and discovered a significant improvement in the quality and quantity of ideas produced by employees. After organizing his discovery, Osborn then published Applied Imagination in 1953 in which he systematized his creative problem-solving methods. This book popularized the term brainstorming and received significant response in the industry.

Osborn's method

Osborn claimed that two principles contribute to "ideative efficacy," these being "1. Defer judgment," and "2. Reach for quantity." Following these principles were his four general rules of brainstorming, established with intention to reduce social inhibitions among group members, stimulate idea generation, and increase overall creativity of the group.

Focus on quantity: This rule is a means of enhancing divergent production, aiming to facilitate problem solving through the maxim quantity breeds quality. The assumption is that the greater the number of ideas generated, the greater the chance of producing a radical and effective solution.
Withhold criticism: In brainstorming, criticism of ideas generated should be put 'on hold'. Instead, participants should focus on extending or adding to ideas, reserving criticism for a later 'critical

stage' of the process. By suspending judgment, participants will feel free to generate unusual ideas.
Welcome unusual ideas: To get a good and long list of ideas, unusual ideas are welcomed. They can be generated by looking from new perspectives and suspending assumptions. These new ways of thinking may provide better solutions.
Combine and improve ideas: Good ideas may be combined to form a single better good idea, as suggested by the slogan "1+1=3". It is believed to stimulate the building of ideas by a process of association.

Applications

Osborn notes that brainstorming should address a specific question; he held that sessions addressing multiple questions were inefficient. Further, the problem must require the generation of ideas rather than judgment; he uses examples such as generating possible names for a product as proper brainstorming material, whereas analytical judgments such as whether or not to marry do not have any need for brainstorming.

Brainstorming groups

Osborn envisioned groups of around 12 participants,including both experts and novices. Participants are encouraged to provide wild and unexpected answers. Ideas receive no criticism or discussion. The group simply provides ideas that might lead to a solution and apply no analytical judgment as to the feasibility. The judgments are reserved for a later date.

Research

Criticism

Research has failed to support Osborn's claim that group brainstorming could produce double the creative output of a group of individuals' collected ideas. Indeed, research from Michael Diehl and Wolfgang Stroebe demonstrated the opposite effect. They found that, given equal time, "real" groups, those that brainstormed together, produced fewer ideas than "nominal" groups, those wherein individuals provided ideas independently of one another and only existed as a group insofar as their work was considered as a whole by researchers. Their conclusions were based on a review of 22 other studies, 18 of which corroborated their findings.

Sources of brainstorming inadequacy

Diehl and Stroebe identified three processes that derailed brainstorming efforts. These processes were free riding, evaluation apprehension, and blocking.

Free Riding: Individuals may feel that their ideas are less valuable when combined with the ideas of the group at large. Indeed, Diehl and Stroebe demonstrated that even when individuals worked alone, they produced fewer ideas if told that their output would be judged in a group with others than if told that their output would be judged on an individual basis. However, experimentation revealed free riding as only a marginal contributor to productivity loss, and type of session (i.e., real vs. nominal group) contributed much more.
Evaluation Apprehension: Evaluation Apprehension was determined to occur only in instances of personal evaluation. If the assumption of collective assessment was in place, real-time judgment of ideas, ostensibly an induction of evaluation apprehension, failed to induce significant variance.
Blocking: Blocking describes the reality that only one person may gainfully voice his or her ideas in a group at any given time. Diehl and Stroebe examined the question of whether this effect could reduce idea-generation, as ideas suppressed long enough to listen to another group-member's ideas might be forgotten. Their research confirmed this hypothesis.

This holds especial significance given that Osborn's central hypothesis was that listening to the ideas of others should spur the generation of new ideas. Rather, research indicates that the act of listening to others might stifle creativity.

Benefits

Under proper conditions, brainstorming can outperform nominal groups. The adoption of Group Support Systems, wherein individuals submit suggestions on a computer that become instantly (and anonymously) visible to the entire team, removes the effect of blocking as ideas can be communicated immediately upon generation. Using these technologies, brainstorming groups significantly outperformed nominal groups.

Incentives and brainstorming

Olivier Toubia's research gave strong indications that incentives can augment creative processes. Participants were divided into three conditions. In Condition I, a flat fee was paid to all participants. In the Condition II, participants were awarded points for every unique idea of their own, and subjects were paid for the points that they earned. In Condition III, subjects were paid based on the impact that their idea had on the group; this was measured by counting the number of group ideas derived from the specific subject's ideas. Condition III outperformed Condition II, and Condition II outperformed Condition I at a statistically significant level for most measures. The results demonstrated that participants were willing to work far longer to achieve unique results in the expectation of compensation.

Variations

Nominal group technique

The nominal group technique is a type of brainstorming that encourages all participants to have an equal say in the process. It is also used to generate a ranked list of ideas.

Participants are asked to write their ideas anonymously. Then the moderator collects the ideas and each is voted on by the group. The vote can be as simple as a show of hands in favor of a given idea. This process is called distillation.

After distillation, the top ranked ideas may be sent back to the group or to subgroups for further brainstorming. For example, one group may work on the color required in a product. Another group may work on the size, and so forth. Each group will come back to the whole group for ranking the listed ideas. Sometimes ideas that were previously dropped may be brought forward again once the group has re-evaluated the ideas.

It is important that the facilitator be trained in this process before attempting to facilitate this technique. The group should be primed and encouraged to embrace the process. Like all team efforts, it may take a few practice sessions to train the team in the method before tackling the important ideas.

Group passing technique

Each person in a circular group writes down one idea, and then passes the piece of paper to the next person in a clockwise direction, who adds some thoughts. This continues until everybody gets his or her original piece of paper back. By this time, it is likely that the group will have extensively elaborated on each idea.

The group may also create an "Idea Book" and post a distribution list or routing slip to the front of the book. On the first page is a description of the problem. The first person to receive the book lists his or her ideas and then routes the book to the next person on the distribution list. The second person can log new ideas or add to the ideas of the previous person. This continues until the distribution list is exhausted. A follow-up "read out" meeting is then held to discuss the ideas logged in the book. This technique takes longer, but it allows individuals time to think deeply about the problem.

Team idea mapping method

This method of brainstorming works by the method of association. It may improve collaboration and increase the quantity of ideas, and is designed so that all attendees participate and no ideas are rejected.

The process begins with a well-defined topic. Each participant brainstorms individually, then all the ideas are merged onto one large idea map. During this consolidation phase, participants may discover a common understanding of the issues as they share the meanings behind their ideas. During this sharing, new ideas may arise by the association, and they are added to the map as well. Once all the ideas are captured, the group can prioritize and/or take action.

Electronic brainstorming

Electronic brainstorming outperforms both regular brainstorming and nominal group brainstorming. It is a computerized version of the manual brainstorming technique typically supported by an electronic meeting system (EMS) but simpler forms can also be done via email and may be browser based, or use peer-to-peer software.

With an electronic meeting system, participants share a list of ideas over the Internet. Ideas are entered independently. Contributions become immediately visible to all and are typically anonymized to encourage openness and reduce personal prejudice. Modern EMS also support asynchronous brainstorming sessions over extended periods of time as well as typical follow-up activities in the creative-problem-solving process such as categorization of ideas, elimination of duplicates, assessment and discussion of prioritized or controversial ideas.

Proponents such as Gallupe, et al. argue that electronic brainstorming eliminates many of the problems of standard brainstorming, including production blocking and evaluation apprehension. A perceived advantage of this format is that all ideas can be archived electronically in their original form, and then retrieved later for further thought and discussion. Electronic brainstorming also enables much larger groups to brainstorm on a topic than would normally be productive in a traditional brainstorming session.

Some web based brainstorming techniques allow contributors to post their comments anonymously through the use of avatars. This technique also allows users to log on over an extended time period, typically one or two weeks, to allow participants some "soak time" before posting their ideas and feedback. This technique has been used particularly in the field of new product development, but can be applied in any number of areas requiring collection and evaluation of ideas.

Directed brainstorming

Directed brainstorming is a variation of electronic brainstorming (described above). It can be done manually or with computers. Directed brainstorming works when the solution space (that is, the criteria for evaluating a good idea) is known prior to the session. If known, that criteria can be used to intentionally constrain the ideation process.

In directed brainstorming, each participant is given one sheet of paper (or electronic form) and told the brainstorming question. They are asked to produce one response and stop, then all of the papers (or forms) are randomly swapped among the participants. The participants are asked to look at the idea they received and to create a new idea that improves on that idea based on the initial criteria. The forms are then swapped again and respondents are asked to improve upon the ideas, and the process is repeated for three or more rounds.

In the laboratory, directed brainstorming has been found to almost triple the productivity of groups over electronic brainstorming.

Individual brainstorming

"Individual Brainstorming" is the use of brainstorming on a solitary basis. It typically includes such techniques as free writing, free speaking, word association, and drawing a mind map, which is a visual note taking technique in which people diagram their thoughts. Individual brainstorming is a useful method in creative writing and has been shown to be superior to traditional group brainstorming.

Research has shown individual brainstorming to be more effective in idea-generation than group brainstorming.

Question brainstorming

This process involves brainstorming the questions, rather than trying to come up with immediate answers and short term solutions. Theoretically, this technique should not inhibit participation as there is no need to provide solutions. The answers to the questions form the framework for constructing future action plans. Once the list of questions is set, it may be necessary to prioritize them to reach to the best solution in an orderly way.

"Questorming" is another phrase for this mode of inquiry.

Conclusion

Brainstorming is a popular method of group interaction in both educational and business settings. Even though there has been arguments about its productivity, brainstorming is still a widely used method for coming up with creative solutions. It's still an area under research and improvements or variations are still developing in progress. Many of these methods claimed to be more efficient than the original brainstorming however, there are too many factors that can alter the outcome of brainstorming. Therefore, how well these methods work, and whether or not they should be classified as being more effective than brainstorming, are questions that require further research.