Brainstorming

Brainstorming is a strategy used to generate a number of ideas to help solve a particular problem. The technique has been around for over 70 years and is still used today to engage students in solving a range of problems.

Brainstorming is a cooperative approach in which a number of people collectively agree upon a solution after all of their ideas are brought forth and discussed.

Techniques vary but there is a general structure to follow when developing brainstorming sessions. After the problem or issue is presented, students are organized into groups to brainstorm all possible ideas which could solve the problem. Discussion of these ideas takes place after the brainstorming session ends, usually after a defined period of time. Each idea will be discussed and considered, some ideas will be eliminated, and a final list will be ranked for possible use as a solution toward solving the problem.

It is important to plan the brainstorming session before implementing it in the classroom. As outlined below, you will need to consider the strengths, challenges and barriers when designing the session.

Planning a Brainstorming Session

1. State the problem or issue.
   a. Avoid preparing students by giving them the problem or issue—you don't want them to think about the topic beforehand. Brainstorming sessions are meant to be spontaneous and creative. Provide students with the problem/topic that is new to them and one that challenges their current level of knowledge on the issue.
   b. State the problem/topic as a question which is concise and to the point. State the problem/topic succinctly yet loose enough to encourage more idea generation. A stated problem which is too succinct may be difficult to understand and one which is too limiting may restrict creative ideas.
   c. Use sample question "stems"(adapted from Elkenberry, 2007):
      i. In what ways might we improve product X?
      ii. What are the characteristics of X?
      iii. What is it about X that sets it apart from other Xs?
      iv. How can we do A and B?

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2. Identify the roles of all students in the group.
   a. Often one student acts as the group facilitator who records all generated ideas, encourages participation, prevents negative remarks, and watches the time.
   b. All other group members are to be collaborative, respectful, and cooperative.

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3. Explain the guidelines of the brainstorming session (the DOs and DON'Ts).
   a. Stress that all ideas are welcome and even ideas which are perceived as "out there," "funny or silly," or "weird" can lead to creative solutions.

    b. During the session there is to be no criticism or evaluation of ideas which could inhibit contributions.

    c. Encourage the group to relax and be enthusiastic about the process.

    d. Encourage use of items such as squish balls, pipe cleaners, and other gadgets to create a relaxed environment.

    e. Everyone must participate, even those students who tend not to contribute in class discussions. All voices are to be heard and everyone must contribute ideas.

    f. No one student can dominate the brainstorming session by shouting over the others or contributing meaningless solutions.

    g. Encourage students to not delve on one idea for too long.

Ideally, more people in a group can lead to more ideas being generated.

4. Keep the group number group manageable (8-12 people works well).

    a. Generally, more people in a group can lead to more ideas being generated. However, it may be difficult manage large groups in a classroom setting. Experiment to see what works well in your own courses.

    b. Too many people could intimidate those who tend not to participate from offering their ideas.

5. Create a relaxed environment which is supplied with adequate workspace and materials and free from distractions.

    a. Provide necessary tables, chairs, paper and writing instruments, white board and markers, flip chart, or concept mapping software such as Inspiration® or SMART Ideas™.

    b. Provide background music (unless students find it distracting).

    c. Ask students to refrain from annoying mannerisms such as leg swinging, gum chewing, and pen twirling which can interfere with other students' concentration.

    d. Announce that all cell phones and electronic devices be turned off.

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6. Create heterogenic groups. Groups should consist of students who vary in experiences, backgrounds, knowledge and academic disciplines.

    a. A varied group of students will suggest more varied and unique ideas and suggestions.

7. Rank the generated ideas and suggestions. After the designated time frame is over, students should begin to evaluate and rank all of the ideas generated during the brainstorming session. Suggest that students create a list of criteria used to evaluate the ideas. They should work toward a final list of three to five highly possible solutions to the problem. Criteria should be given scores, with 5 being a perfect score to 0 which would indicate that the idea does not meet any of the criteria.

    a. Sticky notes are helpful and can be moved when chunking and categorizing ideas.

    b. Criteria also can be established before the actual brainstorming begins.

8. Review the brainstorming session. It is important to provide some form of follow-up to the brainstorming session as a sort of follow-through to support

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student effort. Even if their suggested solutions are not used, it's good practice to provide feedback. Thanking the students for their efforts will prove to them that their work is valued, and encourage them to participate in a future brainstorming activity. The final report should include the following elements (adapted from Baumgartner, 2005):

   a. Statement of the original problem or issue
   b. Criteria and scale used to evaluate the brainstorming ideas
   c. All ideas generated during the brainstorming session
   d. Criteria and rating scales used to evaluate the generated ideas
   e. Final rated items and their scores
   f. Relevant comments and further ideas provided by students during the rating process
   g. How final rated items are used (provide feedback with explanation if the final rated items are not used)

Strengths of Brainstorming

- *Provides a quick and easy class activity.* Brainstorming sessions can be effectively used in the classroom. However, they do require meaningful planning time for ultimate success.

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- *Contributes to classroom collective power.* Brainstorming sessions allow individual students' voices to become one with the group's voice. The final ideas are generally identified through consensus.
- *Creates a student-centered activity.* Students direct the group in which they generate their own ideas, develop rating criteria, and are responsible for group dynamics.
- *Supports learning in a relaxed environmen*t. Students are able to collaborate in a relaxed, informal learning environment.
- *Strengthens problem-based learning.* Brainstorming is a problem-solving activity where students build on or develop higher order thinking skills.
- *Encourages creative thought.* Brainstorming encourages students to think creatively (out of the box), encouraging all students to share their ideas, no matter how far "out there" they may seem.

Challenges of Brainstorming

- *Keeping the session from being just a chat session.* The moderator should direct the session to keep students on task.
- *Ensuring students collaborate rather than compete with one another when generating ideas.* Walk around the room and listen for inappropriate group behavior.
- *Encouraging students to build on each other's ideas to help them build their critical thinking skills.*
- *Getting "buy-in" or acceptance from those who have participated in brainstorming who have never seen their ideas brought forth and acted upon.* Work forward from this point with any student who may be in this category and remark on their contribution both to them personally, their group and to the whole class.

Explain that as part of this course all students are expected to bend a little which may have them participating in activities which might make them uncomfortable.

- *Getting quiet or independent students to actively participate.* Explain that as part of this course all students are expected to bend a little which may have them participating in activities which might make them uncomfortable. Never force someone who is adamant about a particular situation. Instead,

coax those who are hesitant at first by creating a trusting and caring classroom environment *from the beginning of the semester.* This approach can help students be more accepting of change and those who tend to feel uncomfortable working with others.

– *Helping groups to move forward if they are "stuck" and not able to generate ideas.* Reconvene the group to review the problem or issue or provide an example of a possible solution.

– *Reaching consensus.* Getting students to reach consensus becomes less of a problem if all students are given equal time to provide input, feel comfortable as a valued member of the group and are respected for their points-of-view.

Summary

Brainstorming sessions can be a useful strategy to encourage genuine collaboration and interaction in the classroom. Putting together a well-stated problem and careful planning strategies can lead to meaningful idea generation and idea building which can be used in solving problems or addressing specific course-related issues.

Resources

Baumgartner, J. (2005). *Key factors to successful brainstorming.* http://www.jpb.com/creative/keyfactors.php

Elkenberry, K. (2007). *Brainstorming strategies: Seven questions that spur better solutions.* http://www.sideroad.com/Meetings/brainstorming-strategies.html

Suggested Resources

Baumgartner, J. (n.d.). *The complete guide to managing traditional brainstorming events.* http://www.jpb.com/creative/brainstorming.pdf

Maricopa Community Colleges (2001). *Brainstorming.* http://www.mcli.dist.maricopa.edu/authoring/studio/guidebook/brain.html

Storm, J. (2004). *10 deadly brainstorming ruts that kill innovation.* http://www.brainstormnetwork.org/articles/10-BrainStorming-Ruts.pdf