Brainstorming

Generate a maximum number of ideas, without criticism or discussion, related to a specified topic

Introduction

Much of HCI concentrates on how to critique existing designs. What is more difficult is figuring out how to generate successful new designs, especially designs that are grounded in the real-world needs of the users. While it may be tempting to simply start building prototypes, it is almost always better to start by generating a collection of ideas. Ideas, even impractical or silly, help to create an active design space in which to work. Generating a wide variety of ideas gives designers more options and different problem-solving strategies. In our experience, prototypes are almost always richer and more creative when the designers have started with some form of idea generation exercise.

One of the most popular techniques for generating ideas is called brainstorming. Osborn (1957) introduced brainstorming to create synergy with-in the members of a group: ideas suggested by one participant would spark ideas in other participants. Brainstorming can take several forms:

Say it: A traditional brainstorming exercise, in which participants describe in words (verbally or on cards) as many ideas as they can, each of which is written on the whiteboard for later analysis. This approach generates the largest quantity of ideas, but they are often poorly formulated or too vague to be of much use to anyone else.

Show it: Participants draw on the whiteboard to illustrate their ideas. This results in somewhat fewer ideas, which, although usually better formulated, are still often abstract or "static". They rarely provide much insight into the details of the interaction.

Act it: Participants use simple prototyping materials and "act out" each interaction idea. This results in fewer ideas, but each is better thought out and is more likely to capture the dynamic nature of the interaction. Acting it out also facilitates communication within the design team. This is sometimes called 'bodystorming'.

Video it: Participants use the same prototyping materials as above but act out each idea in front of the video camera. Once participants are familiar with the technique, they generate ideas almost as quickly as in the "Act it" style. Although this brainstorming technique produces the fewest number of ideas, they are usually the most detailed and programmers can use the resulting video clips to create software prototypes. Participation is also high: it is difficult to sit quietly when everyone else is preparing for a new "take".

The simplest form of brainstorming involves a group of three to seven people. The goal is to generate as many ideas as possible on a pre-specified topic: quantity not quality, is important. Brainstorming ses-

sions have two phases: the first for generating ideas and the second for reflecting upon them.

Prior to the session, the members of the group must agree on the topic and the time limit. Phase 1 of a brainstorming session usually lasts from 20-40 minutes, depending on the topic and the group. Sessions longer than an hour are not recommended. Even if ideas are still flowing, the group should stop when time is up. It is better that everyone leaves feeling energized and excited by the ideas rather than tired and bored.

The group must also chose a moderator and a scribe. The moderator's role is very important: he or she is responsible for keeping the tone positive and ensuring that participants do not interrupt or criticize each other. The moderator encourages everyone to contribute ideas and ensures that the session finishes on time. The scribe is responsible for recording the ideas. Note that every idea, no matter how small or controversial, must be recorded. Usually, ideas are displayed so that everyone can see them, on a whiteboard, flipchart or on transparencies projected onto a wall. (The scribe is usually responsible for preparing and distributing the list of ideas after the brainstorming session.)

In phase 1, everyone suggests ideas, no matter how impractical or silly they seem at the time. The most important rule is: DO NOT EVALUATE THE IDEAS. Other group members are allowed to ask clarification questions, but must avoid discussing the merits of the idea. Statements such as "that's stupid" or "someone already did that" are forbidden. What makes brainstorming sessions interesting and fun is the way in which ideas spark other ideas, which is why this rule is so important. To help make people more comfortable and to encourage people to offer unfinished ideas, insist that everyone put in at least one "stupid" idea (without identifying which one is!). The moderator should keep track of who is contributing and encourage quieter group members to participate. If some people do not speak the same native language, or come from a different cultural or technical background, it is important to give them more time to talk.

When the time is up, or if the group appears to be getting tired, the moderator should stop the session. Everyone should take a short, five-minute break before moving to phase two.

In phase two, the group is given the opportunity to reflect on the ideas. The moderator re-reads each idea in turn. Group members can ask clarifying questions, but still avoid critical remarks. If it is important to select a small set of ideas that will become the basis for further work, the group can vote on the ideas. Each person goes up to the whiteboard or the flipchart sheets and puts a check mark next to the three "best" ideas. After everyone has voted, it is easy to see which ideas have clusters of votes. The ideas with the highest scores can be discussed, and the most promising ones pursued in later design activities. (Note that this is not a true evaluation, since the ideas produced vary greatly in scope. A small idea that nobody voted for may still be an important contribution to a later design. The purpose of the vote is to expose everyone to all the ideas, so that everyone has a chance to reflect on and be inspired by them.)

What to do

Brainstorming involves imagining different situations in which users might interact with technology in a new way that meets a need or helps

Time   20-40 minutes
Difficulty beginner
Team size   team
Supplies   – large sheet
            – stickies
Techniques – sketching (optional)

Goals
– Expand the set of design possibilities
– Give everyone a chance to contribute

Workflow
Resources needed
design brief
Complementary techniques
solo brainstorming, creativity techniques
Useful for
video brainstorming, design concept, design alternatives

Contributors (who does it?)
– designers
– users

Audience (who is it for?)
– design team
– users

Roles
– Moderator   Moderate the design session, ensure everyone contributes, stop criticism and discussion, keep to the time limit
– Scribe   Write every idea, reread ideas at the end of the session
– Participant   Contribute ideas, including at least one 'stupid' idea

Paths / step

Tutorial	1/14
Introduction	1/29
Advanced	1/45
Small Project	1/36
Product	1/57

Credits
not applicable

Trade-offs
Pro   Expands the set of possible ideas on a specific topic
Con   Does not ensure the quality of the ideas

Coaching
– State each idea, without discussing or justifying it
– Avoid criticizing or discussing others' ideas

users do something new. Focus on interaction in context not just a list of functions. The goal is for a design team (or possibly an individual designer) to generate a maximum number of ideas in a limited period of time. Everyone should contribute and every idea should be recorded. Never criticize (it inhibits participants) or discuss ideas (it slows you down). Give yourselves a goal, such as at least 30 ideas in 15 minutes. Everyone should contribute at least one idea that they think is stupid ... just don't say which one it is.

Preparation (before)

Choose as focused a topic as possible. Consider collecting 'opposites' cards or objects that can help spark ideas.

Procedure (during)

Sit at a table where you have access a whiteboard or flipchart.

Phase I: Generate as many ideas as possible.

Phase II: Each person votes for their three favorite ideas.

Create a Design Resource (after)

The scribe should re-read all of the ideas out loud. Group members should mark their three favorite ideas (take a few minutes). Count the votes and rank the ideas accordingly. Discuss the most popular ideas with respect to the design concept. Also, if someone feels very strongly about a particular idea, keep

Keep in mind that ideas have different levels of granularity, so some ideas can be considered subsets of other ideas.

Variations

Individual brainstorming: Researchers have suggested several alternative brainstorming strategies to address some problems in group dynamics. For example, although the goal of face-to-face brainstorming is to ensure that everyone has a voice, some people may still dominate the conversation. In situations in which there are differences in power relationships, language skills or technical backgrounds, some participants may feel inhibited from speaking.

One solution for face-to-face groups is to ask participants to write their ideas on individual cards or post-it notes. After a pre-specified period of time in which everyone writes, the moderator reads each idea out loud to the whole group. Authors are encouraged to elaborate (but not justify) their ideas, which are then posted on a whitefboard or flipchart. While the moderator is reviewing each of the ideas, group members may continue to generate new ideas, inspired by the others they hear. As with standard brainstorming session, participants should take a break and then vote on their favorite ideas.

Post-it Notes version: The classic version of brainstorming involves giving everyone a pad of post-it notes and letting everyone post their ideas on the board (or having color-coded post-it notes and categorizing ideas by color as they are generated). I don't use this technique in class because I find that it makes participants less likely to pay attention to each other's ideas, but this can work well in a setting where everyone knows each other. It has the advantage of being somewhat faster, since people work more in parallel, and if one person reads the ideas out loud at the end of the session, and if everyone listens, it can work well.

Opposites technique: Many techniques have been developed to help you when you run out of ideas. One popular approach is to create a list of opposites and then create multiple versions of each idea accordingly. For example, for any given idea, create a simple and a complex version of it. Other possibilities include: short/long, direct/indirect, funny/serious, process/object, start/end, positive/negative, single/multiple.