

Application of a Modified Brainstorming Technique

Abstract

Our modified brainstorming technique is an assessment tool Extension professionals can use to generate new ideas. The modified brainstorming technique capitalizes on creativity at the individual level and helps maximize the contribution of the whole group. The technique leads to generation of useful ideas in a mutually supportive setting for a minimal time investment. This tool is effective for relatively small groups within Extension and may be applicable to other outreach and nonprofit organizations.

Keywords: [traditional brainstorming technique](#), [modified brainstorming technique](#), [assessment tool](#)

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Introduction

Penn State Extension administration directed several major changes in organizational structure and operations through a recent reorganization that created 32 new program teams (Calvin, 2018; J. Hyde, personal communication, October 30, 2018). These changes present Extension educators with organizational and program leadership opportunities that require new leadership competencies and skill sets (J. Hyde, personal communication, October 30, 2018).

We devised a modified brainstorming technique and hosted a session in which we used the technique to assess Extension administrators' perceptions of opportunities, barriers, and needs related to leadership development for Extension educators. We believe our modified brainstorming technique maximizes the individual's contributions toward idea generation and can be used as an assessment tool in many contexts.

Herein we introduce our modified brainstorming technique. We also present an example of a practical application that illustrates its usefulness as a general assessment tool.

Why Did We Modify the Traditional Brainstorming Technique?

Brainstorming is arguably the most commonly used idea generation technique within businesses, government, and organizations (Nijstad, Stroebe, & Lodewijkx, 2003; Rawlinson, 2017). Brainstorming involves group members collectively generating ideas that might not arise solely via individual thought by

building off one another's expressed ideas (Gallupe, Bastianutti, & Cooper, 1991). Traditional brainstorming is a technique for generating as many ideas as possible to solve a problem and includes two phases: idea generation and idea evaluation (DeVito, 1982; Putman & Paulus, 2009).

Traditional brainstorming

- increases learning, creativity, and productivity (Al-Samarraie & Hurmuzan, 2018),
- helps participants more easily contribute in a less formal environment (Brahm & Kleiner, 1996), and
- is low in cost (Brahm & Kleiner, 1996).

However, brainstorming is also roundly criticized by scholars. According to previous research, traditional brainstorming has productivity problems due to "social loafing, evaluation apprehension, and production blocking" (Gallupe et al., 1991, p. 137). Gallupe et al. (1991) elaborated thusly:

Social loafing means that members of groups do not work as hard as when they work alone . . . Evaluation apprehension is created in interacting groups when group members are concerned about how their comembers will react to their ideas. Production blocking may reduce the effectiveness of interacting groups . . . Production blocking has intuitive appeal as an explanation for productivity loss in brainstorming groups. Members of conventional face-to-face brainstorming groups may be prevented from expressing an idea, thinking of a new one, and immediately expressing it because another member of the group is talking. As a result, group members may forget their ideas while waiting, fail to develop new ones while rehearsing the ones they're holding in short-term memory, or lose interest. (pp. 137–138.)

Nijstad et al. (2003) also described production blocking as a cause of productivity loss in a brainstorming activity when group members must take turns expressing their ideas. To address these and other issues identified in the literature, Wilson and Hanna (1990) suggested using a nominal group technique, also called "brainwriting," where participants write down ideas independently before sharing them with the group. However, the brainwriting approach has a limitation as well because participants often excessively advocate for their own ideas, rather than consider all perspectives, during the idea evaluation phase (Brahm & Kleiner, 1996). Further, previous research has confirmed that individuals outperform groups because during traditional brainstorming, the group can reduce the number of ideas contributed by individuals (Diehl & Stroebe, 1987; Nijstad et al., 2003).

Our modified brainstorming technique capitalizes on creativity at the individual level and helps maximize the contributions of the whole group. We created the technique to eliminate challenges identified in the literature.

What Is Our Modified Brainstorming Technique?

The modified brainstorming technique we propose is a structured four-phase methodology that capitalizes on an individual participant's contribution in generating as many ideas as possible to solve a problem. In the first phase, participants reflect on prompts and generate ideas at the individual level. During the second phase, participants work individually in silence reviewing the first-phase responses of two other participants

and generating new ideas inspired by those responses. During the third phase, the facilitator independently evaluates participants' responses. This approach helps eliminate negative criticism that can occur if peers excessively advocate for their own ideas. In the fourth phase, the facilitator asks participants to rate results by sharing the list of generated ideas using an online survey platform. The modified brainstorming technique steps are further described in Table 1.

Including the introduction, the first two phases of the session can be completed in 30 min. We recommend no more than three prompts per session during the 30-min session. We also recommend using the technique with groups of nine to 12 participants. A facilitator guide and a participant worksheet are presented in Appendixes A and B.

Table 1.
Steps in Conducting the Modified Brainstorming Technique

Step	Time allotted
Face-to-face session—30 min	
Introduction	
Review the facilitator guide. (See Appendix A.)	Prior to the session
Establish and provide a comfortable meeting environment.	5 min
Describe the purpose of the session.	2 min
Present the prompt(s).	2 min
Introduce the audience to the technique, and provide the participant worksheet. (See Appendix B.)	3 min
Phase 1—Individual contribution	
Give participants 5 min to address each prompt. Have them write their answers on the participant worksheet.	15 min (for 3 prompts/problems)
Phase 2—Individual contribution based on review of peers' responses	
Give participants an additional 3 min to review two other participants' worksheets in order to generate new ideas. Have them write these ideas on their peers' worksheets.	3 min
After session	
Phase 3—Response evaluation	
After the session, evaluate participants' responses.	
Phase 4—Rating of results	
Ask participants to rate results by sharing with participants the list of generated ideas via an online survey.	

What Were Results of Using the Modified Brainstorming Technique?

In January 2019, we applied the modified brainstorming technique with nine Penn State Extension

administrators. Participants brainstormed on three prompts:

1. What leadership opportunities are available to Extension educators?
2. What limitations and barriers are associated with the leadership development of Extension educators?
3. What leader and leadership knowledge and skills do Extension educators need to improve to strengthen their work with Extension program teams, local communities, and individuals?

We used narrative analysis methods (Clandinin & Connelly, 2000) and software (NVIVO 12) to analyze data from the nine participants. Six major themes emerged from the participants' brainstorming activity as reflected in their comments (see Table 2).

Table 2.
Modified Brainstorming Technique Results

Prompt	Theme	Excerpted language from participant comments
1. What leadership opportunities are available to Extension educators?	Intraorganizational leadership opportunity at multiple levels	"program leader," "team leader," "project leader"
	External leadership opportunities	"officer positions in state chapter of national professional associations," "officer position in regional professional associations," "officer position in national professional associations"
2. What limitations and barriers are associated with the leadership development of Extension educators?	Individual-level barriers	"lack of motivation," "work-life balance," "time management"
	Organization-level barriers	"promotion policy," "availability of financial resources," "lack of mentoring"
3. What leader and leadership knowledge and skills do Extension educators need to improve to strengthen their work with Extension program teams, local communities, and individuals?	Intrapersonal skills	"self-awareness," "self-motivation," "self-regulation"
	Interpersonal skills	"social awareness," "social skills," "visioning," "communication"

What Are Benefits and Challenges of Using the Modified Brainstorming Technique?

In our experience, we have found that the modified brainstorming technique has the following benefits:

- It capitalizes on individuals' creativity and insights and optimizes contributions by the whole group.
- It mitigates negative criticism from participants, allowing all ideas to be viewed as equally important in problem solving.
- It results in useful ideas generated in a mutually supportive setting for minimal time investment—it is very efficient.
- It is effective, especially for relatively small groups.

We have found that implementing the technique has two key challenges:

- Preparation for effectively using the technique and analysis of participant data are time consuming.
- Failing to set a minimum requirement for the number of ideas generated by each participant can restrict the active involvement and contributions of some participants.

Overall, we find that the advantages of the modified brainstorming technique lead to more efficient, engaged, and effective collaboration in identifying and assessing new ideas and initiatives. On the basis of our experience, we believe this modified brainstorming approach is applicable in many contexts.

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Appendix A

Modified Brainstorming Technique Session Facilitator Guide

Only one facilitator is needed to facilitate a modified brainstorming technique session.

1. Establish and provide a comfortable meeting environment. (5 min)

- Welcome participants.
- Inform participants that the writing activities should be completed in silence.

2. Describe the purpose of the session. (2 min)

- Describe the modified brainstorming technique to participants (see Table A1)

Table A1.
Steps in Conducting the Modified Brainstorming Technique

Step	Time allotted
Face-to-face session—30 min	
Introduction	
Review the facilitator guide. (See Appendix A.)	Prior to the session
Establish and provide a comfortable meeting environment.	5 min
Describe the purpose of the session.	2 min
Present the prompt(s).	2 min
Introduce the audience to the technique, and provide the participant worksheet. (See Appendix B.)	3 min
Phase 1—Individual contribution	
Give participants 5 min to address each prompt. Have them write their answers on the participant worksheet.	15 min (for 3 prompts/problems)
Phase 2—Individual contribution based on review of peers' responses	
Give participants an additional 3 min to review two other participants' worksheets in order to generate new ideas. Have them write these ideas on their peers' worksheets.	3 min
After session	
Phase 3—Response evaluation	
After the session, evaluate participants' responses.	
Phase 4—Rating of results	
Ask participants to rate results by sharing with participants the list of generated ideas via an online survey.	

- Explain the purpose of the session to participants (i.e., to generate as many ideas as possible in the time allotted to address the prompt[s]).

3. Present the prompt(s) (2 min)

- Present no more than three per session to keep the session at 30 min in length.

4. Introduce the audience to the technique and provide the participant worksheet (3 min)

- Explain the protocol for phases 1 and 2.

- Phase 1: Creative individual ideas
 - § Ask participants to silently brainstorm and write down a short phrase or key words related to their ideas about each prompt/problem.
 - § Remind participants to complete the activity individually.
 - § Give participants 5 min to answer each question.
 - § Have participants write their answers to each question by the numbers provided on the worksheet in the "Your Answer" boxes.
 - § Give participants a reminder when 1 min remains.

- Phase 2: Individual contribution based on review of peers' responses
 - § Ask participants to exchange worksheets with two other participants, and explain that they will write any additional ideas on the peers' worksheets.
 - § Explain that participants cannot reuse their own previously generated ideas—the purpose of this activity is to generate more new ideas.
 - § Give participants 3 min to review two peers' responses and write down their new ideas.
 - § Give participants a reminder when 1 min remains.

Appendix B

Modified Brainstorming Technique Session Participant Worksheet

Directions:

Phase 1: Creative Individual Ideas

Individually brainstorm and write down a short phrase or key words related to your ideas about each question. Please write answers to each question next to each number provided in the "Your Answer" boxes below. You will have 5 minutes for each question.

Phase 2: Individual Contribution Based on Peer Review Results

Please review your peers' responses. Write any new additional ideas in the "Review for New Ideas" box. Use "Review #1" if you are the first reviewer and "Review #2" if you are the second reviewer. Do not reuse your own previously indicated ideas. The purpose of this activity is to generate more new ideas. You will have 3 minutes to review responses and write down your new ideas in the appropriate boxes on your peers' worksheets.

Prompt #1 here

Your Answer	Peer Review for New Ideas	
	Review #1	Review #2
1.		
2.		
3.		
4.		
5.		

Prompt #2 here

Your Answer	Review for New Ideas	
	Review #1	Review #2
1.		
2.		
3.		
4.		
5.		

Prompt #3 here

Your Answer	Review for New Ideas	
	Review #1	Review #2
1.		
2.		
3.		
4.		
5.		

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