

THE 3 MINUTE THINK & SHOW-OFF METHOD FOR IDEA GENERATION

Yoshitami Yamaguchi, CVS
Sekisui Chemical Co., Ltd., Kyoto



Yoshitami Yamaguchi, CVS, is Head of the VE Center since 1989 of the Production System Division of Sekisui Chemical Co., Ltd. of Kyoto. His life-long career at Sekisui since 1947 has been in VE, IE and related management engineering areas. In 1973, he had Sekisui adopt VE company-wide. His notable contribution to VE promotion has been through the development of a unique VE training program for the company, through which many "VE-men" have been trained. He has served as a R&D Committee member and a Kansai Chapter officer of SJVE. So far, he has presented two award papers at SJVE conferences.

ABSTRACT

This paper introduces a method of generation of more practical ideas by applying "a planned unit cycle of a 3 minute session for idea-thinking combined with an idea show-off session," enabling each thinker to use both the right and left side of the brain. This method was conceived for better application of creative thinking to the VE Job Plan, as I studied many practiced creativity techniques such as Brainstorming, Synectics, Checklist, etc. that seemed less suitable for use in the VE Job Plan. This method is the result of my analytical study of the brain mechanism in which strong points of all available techniques for creativity have been incorporated. I have come up with a set of 10 basic rules to be observed in applying this method to practice. Actual application of has yielded many practicable ideas, some of which have helped the company acquiring valuable patents and other successes.

involved, and it is not always easy for each brainstorming session to get really innovative and implementable ideas. Often, there have been cases where they abandoned the Brainstorming and just relied on refining their technological expertise, rather than using VE creativity, to find solutions.

I want readers to understand this approach not as "a technique to finish a creativity session only in 3 minutes" but to visualized an idea-generation session with a repetitive cycle of a "think-&-showoff process in a flip-flop style." In other words, the proposed method incorporates some strong points of Brainstorming and other creativity techniques and redesign the process to better apply them to the VE Job Plan. The method was conceived from the necessity of perfecting practical VE application.

Various Creativity Methods and Their Possible Limitations

The following table is a ^{consummation} of the popularity, number and percentage of various creativity techniques being used in the leading 25 Japanese companies from the result of a brief survey of the use of several accepted creativity techniques.

INTRODUCTION

A variety of idea-generating techniques have been developed and are being used globally, with the Brainstorming method as the most popular approach. While this technique is excellent in stimulating creativity to produce good ideas, it requires some length of time and patience on the part of the people

Name of method	Well used	Used	Responses	Total
%				
Brainstorming	12	11	23	92
Synectics	3	1	4	16
Checklist method	6	2	8	32
Attributes seeking method	2		2	8
Morphological analysis	3		3	12
"NM" method	3		3	12
Wish-points listing method	7		7	28
<u>Other incompany techniques</u>	<u>10</u>	<u>1</u>	<u>11</u>	<u>44</u>
Total	46	15	61	*

* (multiple replies from 25 firms)

Evidently, most of the companies surveyed rely on Brainstorming, and a half of them found using "other in-company methods," followed by some 30% each of "Wish-points listing method" and "Checklist method."

Having examined the data, I believe that these existing methods seem to leave some problems left unsolved in the use of various creativity techniques and methods in VE:

1. Many VE teams are relying only on the Brainstorming method and they do not opt to using other known techniques.
2. While these creativity techniques are introduced in varied forms of creativity training sessions, most of them cannot be made to practically fit to the use in the VE Job Plan.
3. The fact that "Other self-designed in-house methods" was the second choice, next to Brainstorming, indicates that many companies have reasons for the preference of their own self-helping solutions to those existing popular techniques.
4. Even though "Wish-points listing method" and "Checklist method" are found to be used to some extent, these techniques do not offer value engineers any chance to use FAST diagrams (resulting from VE Job Plan application), thus leaving them to use their technological expertise rather than VE.

SPECIFIC HINTS GATHERED FROM VARIOUS CREATIVITY TECHNIQUES

With an eye on how the VE Job Plan can best benefit from creativity techniques and methods, I examined each technique and came up with constructive hints for formulating a new "think-&-showoff flip-flop creativity technique."

Brainstorming It is widely known that Brainstorming is an excellent technique to produce many ideas by overcoming three mental blocks (emotional/perceptual/cultural) and it can stimulate improvement actions by people.

This technique, however, has inherently some practical difficulty in achieving a high yield ratio of really practicable quality ideas consistent with the length of time spent in conducting the session. (3) Few ideas may be considered workable.

In a typical Brainstorming session, each member is required to keep thinking as they look at the "ideas" as being written on the wall chart paper, trying to associate their thinking with the ideas they see on the chart.

Man's mentality, however, is by nature liable to be distracted by others' voices and any moving eye-catchers in view even while thinking hard. Thus, the brainstorming members can be easily disturbed by others' shouting his or her ideas while in the middle of one's own idea being half born. As shown in Figure 1, ideas may come out in such a way as you pull out potatoes hanging to one stem. Many "ridiculous" ideas may keep coming out but little efforts are being made to more realistically pursue ideas in a deep-thinking process.

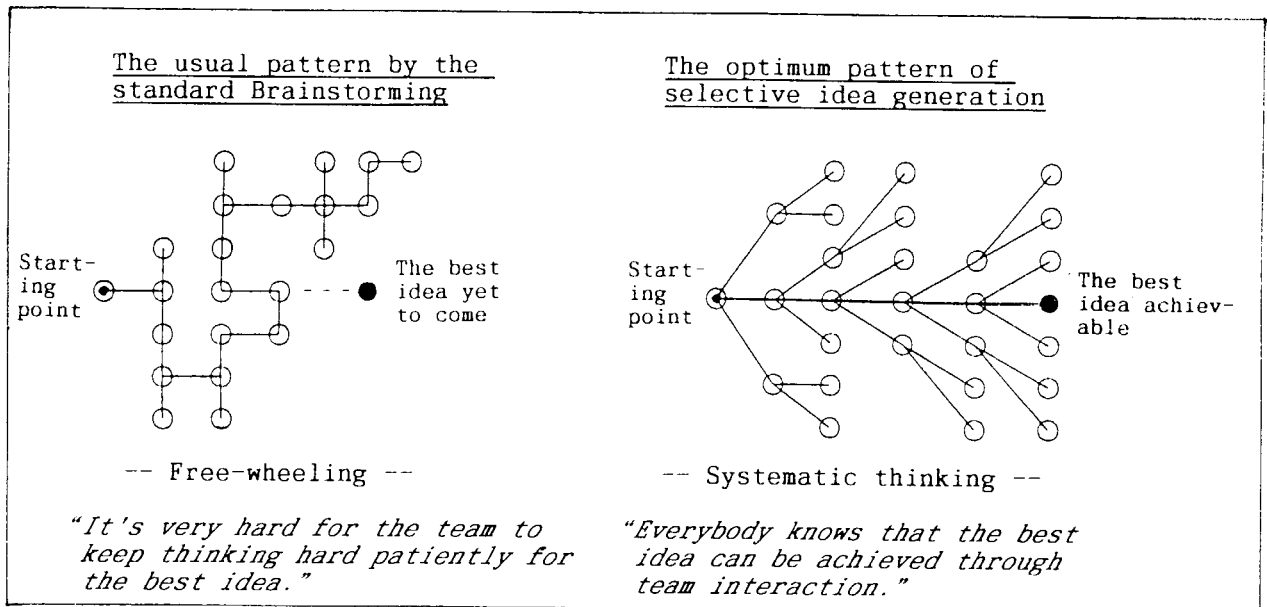


Figure 1: The Incremental patterns of Idea Association

By analogy, the real idea-generation can be done by "throwing a big fishing net" rather than "pulling out potato roots," as also illustrated in Figure 1. In doing so, and if you don't miss the target, you can catch one best idea by repeatedly throwing nets by always setting the focus on your critical targets.

The proposed method, benefitting from the Brainstorming technique, functions as a series of "short solitary thinking sessions." It is not so "free-wheeling" as in Brainstorming but rather serves as systematized and concurrent practice amount the participating members.

Synectics

Synectics is a creativity technique to find analogies from Nature, fairy tales, and any other worldly matter, and/or to make the thinker impersonalize himself/herself as the object of improvement effort. It enables you to generate ideas in a free atmosphere unleashed from established concepts or facts.

VE improvement efforts should go by the principle that the best source of ideas should be specific functions so as to insure that drastic improvements can be realized. I have designed that the most suitable analogies can be found from the function-based idea-generation a la Synectics.

The Checklist method

The A.F. Osborne's Checklist and other similar listing methods are excellent for picking up all thinkable ideas. Human capabilities are usually limited in maintaining a wide perspective and thinking in depth simultaneously. When a checklist has really covered the whole with the detail well arranged for analytical purposes, you can start engaging yourself to each specific idea for deeper thinking.

Applying a checklist method to the VE Job Plan, however, questions checklist items that need not be too minute, but maybe a little more specific than those questions asked by Larry Miles, such as "is that function really necessary?," "Can that function be deleted?," "Can that functional requirements be alleviated?," "Isn't there any other method?," et cetera. Excessively minute questions tend to tamper with minor physical aspects, which has nothing to do with VE thinking.

By absorbing the merit of the Checklist method, the "think-&-showoff flip-flop method" adopts as on-

the-spot procedure to prepare a checklist of "all potential objects for idea generation based on the collected ideas."

Attributes-seeking technique

The thinking mechanism of human being is capable of efficiently generating needed ideas in a short time by minutely segregating all elements of the problem.

The attributes-seeking technique seeks its object in terms of its noun-, adjective- and verb- attributes for generating ideas, a method developed from a good study of the brain mechanism.

My flip-flop approach, after the step to generate function-oriented ideas (as in the Checklist method), adopted this attributes-seeking method in analyzing those collected ideas by their noun- and adjective-attributes so that more specific ideas can be generated.

The N.M. Method

The N.M. Method (advocated by Masakazu Nakayama) is a Japanese creativity method to help create ideas by collecting analytical hints from the wonders of Nature's mechanism and structure as created by the Almighty. (4) The "Type H technique" of the N.M. Method, designed to seek for analogical objects that would trigger new ideas to generate, was my particular interest. My method first derives ideas from the functional process and treats such ideas through this analogy-seeking process.

THE TEN BASIC RULES

As has been discussed, My creativity approach has examined the advantage of the Brainstorming and other currently practiced techniques and methods and integrated the selected concepts and/or processes to come up with better and quicker process for idea creation. The following 10 rules should be observed to facilitate the whole process.

Rule 1: Limit the group size to 6 or 7.

The optimum size of the idea-creating team or group members seems to be six or seven. A larger group tends to induce "mass mentality" among the group members, making each individual "less distinctive." This makes the people less feel their sense of duty and allow some of them to become "idle" or inactive in team-work. Thus, the group size

of 6 or 7 is most appropriate in keeping people's sense of duty as serious "thinkers" and making them concentrate their mental effort on the given subjects only.

Rule 2: Be faithful to the four basic Brainstorming rules.

The four basic rules of Brainstorming are considered important also in the my method, as described below. Its procedure for idea generation has been modified to fit the purpose.

Free-wheeling is encouraged.

In a free-wheeling atmosphere, any person can make his or her cerebral cortex so vitalized that ideas can keep coming out of the brain since such an atmosphere helps in getting rid of those emotional, perceptual and cultural barriers.

Quantity is wanted.

Number of ideas to be collected is critical for competing each other in any Brainstorming session. In a competitive situation, the frontal lobe of the brain which governs one's sense of dignity becomes active in issuing commands for thinking up and writing down new ideas. With an ever-growing pool of ideas, the member can take advantage of getting more hints for generating associated and/or combined ideas.

Association and combination of ideas is welcome.

In many cases, "epoch-making ideas" happened to be just a set of existing details being uniquely combined. Thus, the act of such combination and/or association should be considered as an important rule to follow. As "hitchhiking on others' ideas" is encouraged in any idea-producing session, the mental function of man's right brain become wide awake to be capable to issue more commands to the other side of the brain, which can retrieve relevant knowledge and rearrange such knowledge pieces to fit the purpose. Thus, team creativity makes each member to think in a wider perspective than does individual work of creativity.

Criticism is ruled out.

Once a person is subjected to criticism, the front half of his or her brain becomes more self defensive, and this mentality reinforces carefulness in watching

one's own language. With criticism ruled out in a Brainstorming session, such self defensiveness is relieved and the metabolism of the new frontal lobe is activated. Thus, free-wheeling mental activity for idea generation becomes possible.

Rule 3: Focus sharply on the subject.

In emergency, hesitation and/or flurry in thinking can turn out to be harmful. (5) In doing something in case of an emergency, you can often find yourself getting things done far beyond your normal capability. Likewise, unusual display of creativity can be expected when all thinking efforts are made to be focused on a single object or target (this being a left-brain power), and the creativity process does not require one to "think broadly" (this being a right-brain capability). Thus, I have combined the strong points of the both approaches: while the members of the creativity team are made to keep using their "right brains" or to think hard about generating new ideas, the team leader himself tries to use his left brain or to assume the role of adjusting the focus or team activities toward a pre-set target of the session by broadly checking if there is any "missing or blind areas" in what the members have covered or are covering in the on-going session. Briefly, the roles of the leader and the members could be divided as follows:

Right Brain

Leader Find the door for the members to look for ideas

Members Find clues for ideas through the door

Left Brain

Leader Organize the collected data

Members Search for associated knowledge from one's memory

RULE 4. Limit every cycle of brainstorming session to 3 minutes

We have learned from our experience in the normal Brainstorming process that the per-minute number of ideas being "voiced" in any Brainstorming session will notably drop by the time everybody kept thinking hard for about 10 minutes. In 20 minutes, the activity will almost come to a stop. In some 30 minutes, even when the selected theme of Brainstorming sounds exciting, people being to feel uneasy if they are not yet satisfied with their collected ideas.

I believe that many brainstormers have experienced such a painful passage before they can feel satisfied with their generated ideas. However, we can say that, since even novel ideas are something derived from one's own memory storage, a slowdown in the pace of idea generation naturally occurs as his or her power of memory keeps searching in terms of ideas and the power will begin to weaken under the mental strain of concentration if its too long. It is said that the cerebral cortex can endure such strain only 3 minutes.

Thus, the proposed method limits the concentration to a unit of 3 minutes in that the 3-minute idea generating session is followed by a much relaxed session in which everybody is allowed to show off or "brag" about the ideas that he or she has just come up with. The leader, in the meantime, is reviewing the ideas for re-grouping to be pinpointed according to the main object of the on-going session.

These steps of idea generation, explaining and reviewing are repeated in an alternate cycle of mental strain and relaxation. This keeps the thinker's brains always fresh and helps producing more ideas.

Rule 5: Draw a picture to express your ideas.

The principle of ZEN requires you to bring your own mentality to a state of "no thinking" or "blank thinking" by shutting out all words so as to attain spiritual enlightenment. Scientifically defined, this principle seems to aim at restricting the functioning of human's left brain governing reason and maximizing the use of the pattern-cognitive right brain. Apparently, ZEN priests had known that brain control can make you reach the truth of the universe.

Likewise, the use of letters in idea generation tends to restrict the function of the right brain. Then, the use of picture, sketch or cartoon expressions seems to be better than that of letters. Also, one word can express different thoughts or meanings by different people, which can be specified by pictures.

Using a picture in idea generation offers a decisive merit when the team gets to the stage of evaluation the collected ideas. For instance, the expression "to sharpen its tip" cannot by itself prove to be a good idea or not. Even after the idea has been accepted, it needs another more specific idea-generating session as to "how the tip can be most efficiently sharpened."

Thus, by drawing sketches as shown in Figure 2,

the idea can be more smoothly elaborated in more specific forms so that an improvement proposal can be more readily written as the collected ideas can be more easily evaluated, and also these ideas can be more freely considered for combination in working out a design concept from what the sketches tell you.

Further, pictures are advantageous as they by nature contains dominantly more information than words and such information can be more quickly expressed or visualized.

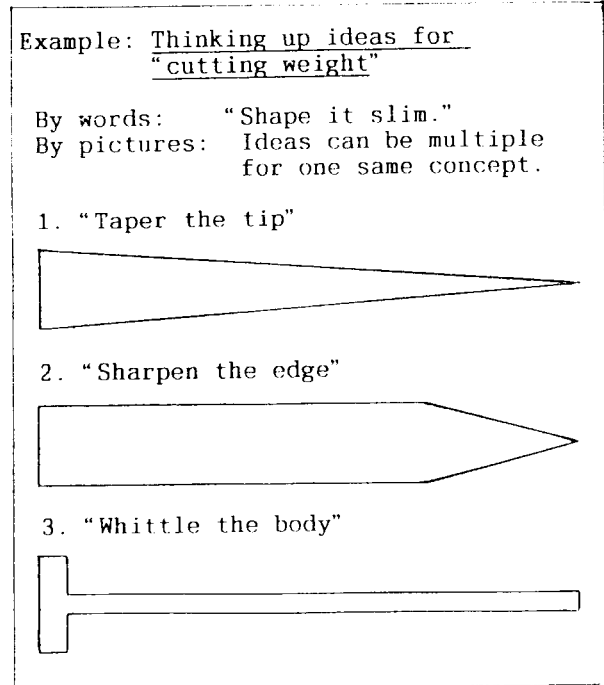


Figure 2: Idea expressions by
words and pictures

Rule 6: Do not voice in the idea-producing session.

Human brains function by responding to external stimuli. The strongest stimuli are from sound, particularly human voices, and also from any moving objects. (5) Such reactions reflect human instincts, as in all animals, for self-defense and preservation of species. Therefore, the practice of talking and/or gestures, motions and body language as such will certainly distract members' attention or deep thinking. Then, team interactions by, say, six members would have to be dominated by only one "strongly voiced idea," if not two or three. This will notably bring down the quantitative efficiency per time-unit of idea generation.

My approach requires team members to keep

quiet and concentrate on silently thinking up new ideas. Thus, the team productivity of idea generation can be multiplied several times more than that of a standard Brainstorming session.

Rule 7: Show off your own ideas.

Brainstorming has two primary aims: 1) to stimulate creation and association of innovative ideas through a free-wheeling process of thinking; 2) to produce a comfortable atmosphere or team activities by helping them enjoy many ideas flowing in, that in turn stimulate and activate the function of the right brain and keep the brain open.

In the previous step of this new technique, team members are not allowed to voice so that the thinking tension of the brain can be maintained and further motivated. That quiet period, however, is to be followed by a period of mental relaxation. Each member takes turns in introducing his or her own ideas and showing off their strong points, uniqueness of ideas and/or innovative features. Here, the leader keeps positively appraising the value of these expressed ideas so as to help activate the brains of all members. This facilitates fulfilling of "social needs" and "self-actualization needs" a la A. Maslow, which in turn accelerates a flexible and idea-inducing atmosphere. The leader, in the meantime, remains alert for any voice of criticizing the collected ideas on hand (beginners are allured to doing so). Members who brought up such critiques, if any, should be mildly reminded by the leader of the "no-criticism rule" to let them set aside such a negative mind-frame.

Rule 8: Keep shifting the object of thinking.

The leader of the creative session assumes an important role in that more ideas of a wide perspective can be collected only when the object of creative thinking is shifted one by one by keeping the focus of thinking always sharp.

Thus, the leader, while letting the team members concentrate on creative thinking, is required to have selected a good object of thinking that can be taken up in the next 3-minute session.

While listening to what the team members describe to him about their ideas generated in the 3-minute session just closed, the leader must concentrate his thinking to the need for selecting the next object for creativity by discovering, in his mind, new clues for ideas.

With an object for the next creativity session in his own mind-frame, the leader tries to find "what aspects have not been looked at yet by the members," and "what other aspects can be associated with the object," and to find some "analogical objects." And the final step is to come up with an "object for idea generation" by analyzing those ideas in terms of their noun-, adjective- and verb- characteristics. Also, it is very effective if all team members work together to compile a checklist of all ideas so far brought forth.

Rule 9: Leader's function is nothing but navigation.

Often, Brainstorming session leaders are seen trying to contribute their own ideas in the session. In the proposed approach, however, this practice makes the productivity level of the session only equal to a standard brainstorming session. Instead, the leader should always be on the alert for any missing object for the sake of the comprehensiveness of idea generation, and at the same time keep encouraging and hinting the members as they are working on idea generation.

The "no speak up" rule (#6) does not apply to the session leader. As the members who are struggling to produce ideas will jump up at any new clues for "juggling up" new ideas, the leader tries to find such clues from members' ideas as well as his own and provide them to the thinking team to further stimulate their creativity.

Rule 10: Announce a break every two hours.

By repeating the cycle of three-minute concentration and relaxation of the brain, people begin to feel exhausted in two hours or so. T. Kobayashi (1992) named this phenomenon as "The Rule of Max II" in his approach to higher office productivity entitled DIPS ("Double IP" or a "system for intellectual people to increase productivity"). (6) With all attempts to "change the mood" or refresh mental conditions, the maximum time-length for people to maintain a sound level of mental tensions or alertness is two hours at the most. Thus, I placed a 5-minute intermission or break in every two hours of the activity.

BENEFITS FROM THE APPLICATION OF THE 3-MINUTE FLIP-FLOP APPROACH TO CREATIVITY

As has been described, the conventional process of idea generation tends to slow down in half an hour

and to come to almost a stop in one hour, but real good ideas would come only after going through such a painful slow-down period. My approach does not demand the members to go through such a painful process and yet can make them produce many good ideas.

My method can realistically make you enjoy the feeling that ideas are unlimited. Whereas the standard brainstorming method can be named a free-wheeling "navigator-less" session with everybody not knowing where they are going, this method can maintain an "inductive idea-generating session" under the monitorship of the tensely thinking session leader. The session can be "navigated" to whichever the "best" direction the leader selects. Experienced leaders can make his session produce many practicably feasible good ideas.

Sekisui, where the I work as Head of its VE Center, has enumerated the advantages of this flip-flop creativity method as follows:

1. Good ideas can be produced in a shorter time. *
One cycle of idea-thinking and show-off can be done in 10 minutes, enabling them to write some 20 idea-cards.

* A session of one hour could come up with some 120 idea-cards, thus producing some 800 cards a day or 1,500 cards in two days of the session, many of which can be practical ideas.
2. People enjoy participating in the flip-flop thing-&-showoff process.
* Not only ideas but also each member's personality can be "liberated" in the session.

* The ego-boosting opportunity in the session can make everybody look forward to the next session.

* Experiencing the interactions of the session generates individual sense of responsibility and a team spirit, and everybody can be expected to grow as highly potential human resources.
3. Patent applications have increased.
* A patent staff of the company, having reviewed a total of 2,400 idea-cards, appraised that 300 of them are realistic and can be qualified for patent applications.

CONCLUSION

The 3-minute idea think-&-showoff method, as discussed above, can be easily practiced by anybody who has brainstorming knowledge and experience and understands the ten rules set forth in this paper. The only other important requirement is for the session leader to be a person of qualifiable aptitudes. VE practitioners, who accumulate experiences in this method by repeating the process, can be expected to upgrade their own VE skills.

It is important for the leader of this technique to be well versed in as many creativity techniques as can be known and to fully appreciate and understand the strong points and basic principles of each of the techniques, many of which can be combined toward thinking new ideas.

Finally, I hope to see this method adopted by many readers in their practice of daily VE implementation. Advice and comments from readers are quite welcome.

REFERENCES

1. SANNO Management Research Center, *VE-NO-KIHON* (Fundamentals of VE), SANNO Publications, 1986 (in Japanese)
2. Yoshitami Yamaguchi, *A VE Utilization Survey*, *Value Engineering*, SJVE Journal, 1992.1 (in Japanese)
3. Mitsuo Ochiai, *DOKUSORYOKU KAIHATU-NO SUSUME* (Promoting creativity development), SANNO Publishing, 1963.3 (in Japanese)
4. Masakazu Nakayama, *NAKAYAMA SOZO KOGAKU* (Nakayama's creativity engineering), SANNO Publications, 1968.6 (in Japanese)
5. Yutaka Takeda, *SHIGOTO-NI IKASU DAINO-SEIRIGAKU* (Cerebral biology for business), Mikasa Publishing, 1991.2 (in Japanese)
6. Tadatsugu Kobayashi, *DIPS*, Diamond Publishing, 1992.3 (in Japanese)