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OPERATIONAL RESEARCH DIVISION

DIRECTORATE OF LOGSTICIS AND ANALYSIS

D LOG A RESEARCH NOTE RN 9603

**AN EXTENSION TO STRUCTURED
BRAINSTORMING USING THE
SIX THINKING HATS**

by

Ivan Taylor

APRIL 1996

OTTAWA, CANADA

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OTTAWA, ONTARIO

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ABSTRACT

The Directorate of Logistics Analysis (D Log A) has been developing a structured brainstorming technique for rapid problem solving which is more efficient and can be more effective than normal free-format brainstorming meetings. This paper presents an extension of this structured brainstorming methodology which uses Edward de Bono's Six Thinking Hats to help sustain the Idea Writing activity five times as long as normal. This results in significantly increased productivity by the group and depth of the idea development. Work conducted with the Directorate of Cataloging and Initial Provisioning (DCIP) is used as an example.

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AN EXTENSION TO STRUCTURED BRAINSTORMING USING THE SIX THINKING HATS

BACKGROUND

1. The Directorate of Logistics Analysis (D Log A) has been working with a structured brainstorming technique for creativity enhancement in group problem solving (Ref. 1). The Directorate of Cataloguing and Initial Provisioning (DCIP) asked to use this methodology in its development of a continuous improvement and performance measurement program. D Log A had previously conducted a survey of customer satisfaction for DCIP (Ref. 2) and briefed the staff on the results in November 1995. One of the recommendations of the study was that focus groups be assembled and attempt to resolve some of the issues concerning customer satisfaction that were noted in the survey results. The first of these focus groups was conducted on 27 Feb 96 and involved eight members at the working level of DCIP. The meeting was conducted in two parts. In the morning session, the Nominal Group Technique (NGT) was used to generate ideas. Then these ideas were grouped around concepts at the end of the 90 minute session. The team broke for lunch as a group and on reassembling conducted an Idea Writing session using the Six Thinking Hats (Ref 3) construct to sustain the creative impetus for a second two and a half hour period.

THE QUESTION

2. In the NGT, it is important to establish a specific question that needs to be resolved by the group. This question focuses the group on the problem at hand. The question that DCIP asked us to address was:

“How can DCIP provide more cost-effective service?”

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I believe DCIP was looking to obtain specific recommendations about methods, procedures and processes that could be implemented to reduce costs or improve effectiveness.

3. The first step in our brainstorming session was to discuss the question so that we had some common understanding of the issue at hand. After we agreed that this question was understood, we began the idea generation process.

IDEA GENERATION

4. After seven minutes of silent idea generation, we were able to record 63 ideas contributed by the members of the focus group. These ideas were collected in a round-robin fashion. The contributors were asked to provide a short description of the idea and further discussion of the idea was limited. For example, the pros or cons of the idea were not discussed at this time. It was explained that this type of discussion would be saved until the Idea Writing stage. The focus group members were quite impressed at the number and quality of the ideas in our list. For the full detailed list, the interested reader can see Reference 4. The next step was to group the ideas around concepts.

IDEA GROUPING

5. These 63 ideas were grouped under eight concepts:

- a. Education of Others;
- b. Communication;
- c. Training Ourselves;
- d. Computing Issues;

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- e. Operating Processes;
- f. Marketing;
- g. Ultimate Goal/Leadership; and
- h. New Initiatives.

It should be noted that one idea could be placed in more than one concept. But it was important to have at least as many idea concepts as group members for the next stage of the process.

6. We did not feel that there was any need to vote on these idea concepts at this time. We would save the voting until the end of the brainstorming session.

IDEA WRITING

7. We conducted an idea writing session in which each of the concept names were written on a pad of paper and then the group members wrote on each pad of paper their perspective on the idea. In this way, each idea and each individual was given equal opportunity for expression. Furthermore, because the group members were writing at the same time, this process is equivalent to everyone talking simultaneously which saves time yet provides a written record of the comments.

8. To facilitate the objective of looking at these ideas from multiple perspectives and thereby extending the idea writing process, we used Edward de Bono's "Six Thinking Hats" metaphor (see Ref. 3):

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- a. the Blue Hat represents control of the process, that is, a view from the sky above;
- b. the White Hat represents a desire to determine information requirements;
- c. the Green Hat represents growth of the idea through creative thinking;
- d. the Yellow Hat represents sunny, positive optimistic thinking about benefits;
- e. the Black Hat represents dark, pessimistic, negative thinking about the problems; and
- f. the Red Hat represents emotions and gut feelings about the idea, will it work.

9. The idea pads were placed in the middle of the table and the group members were told to begin with the White Hat. Each member grabbed a pad and wrote White Hat (Information Needs) comments on their pad. Then they returned the pads to the middle of the table and pulled another pad, read what was written by other group members and continued writing on the new idea concept. After twenty minutes, each of the members had written something on each idea and we moved to the next Hat. What follows is a direct transcript of the Idea Writing session for the Communication idea.

Communication

White Hat Thinking - Just the Facts Please

- identify areas where communication is good and assess reasons
- identify areas of poor communication and assess reasons
- identify who we need to communicate with and for what purpose

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- are we using the right medium for the message?
- identify what message we need to communicate and the best means to do so
- does the message vary with the type of customer?
- identify time/cost constraints
- identify scope of problem/solution
- do the users understand what is required?
- define who we communicate with
- where are we communicating to and where are we not
- who are the users
- do we inform customers on our needs so we can better serve them - this includes OGD's, contractors, management, etc.

Green Hat Thinking - Looking for Creative Solutions

- train all staff in communications skills
- make sure everyone giving info is giving the same message to individuals
- informal get together to communicate ideas, what's happening, feel good sessions for recognition
- communicate to projects ways we do business and our requirements "We can help" "This is what we need" - involvement in planning
- create feeling of equality - what management knows - we know
- supply proper tools to workers such as education, new product development and accessibility
- promote in-house solutions
- ask employees if they understand the concept that is to be developed
- create a better directory of who the supply managers and LCMM's are. At present it is very difficult to identify the proper LCMM or Supply Manager to the EAC or commodity
- send out notices to our customers to ensure they know who and where we are

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- develop a "quick update" method of getting info to everyone
- monthly DCIP coffee break to give director opportunity (and gentle persuasion) to share his knowledge on new developments, CUP, etc.
- encourage sections/subsections to meet informally to share ideas and info
- formally recognize good ideas
- encourage exchange of info among sections
- try to present dry subjects in new ways
- make it fun to participate
- do not complicate any process
- always be up-front about new developments and changes
- judge different levels in the organization and explain what is happening
- do not underestimate your employees

Yellow Hat Thinking - The Good Points

- better communication will improve morale
- be able to provide more accurate info to our customers
- communication will facilitate continuous improvement
- will eliminate uncertainty
- increase productivity, reduce error rate
- will enable managers to make better decisions
- may result in more business for us
- better ideas are generated with more people talking
- let people know what's going on - good or bad
- no surprises
- creates feedback for everyone

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Black Hat - Why It Won't Work

- poor morale is a road block
- no tangible plan to improve communication
- lack of resources assigned to promote communication with PMO's, OGD's
- lack of dollars
- consequences of incorrect info being communicated
- time
- mis-communication
- misunderstanding
- over communication
- we are in a time of constant change we can't communicate everything because circumstances are not always the same
- no one's listening

Red Hat Thinking - Will it Work, What Do You Feel?

- has to work and it will. Communication has to be friendly
- better communication with our customers is essential
- yes
- yes, less errors - everyone will be on the same track - less confusion - less time lost - higher productivity
- yes, people like to be informed - good or bad - less anxiety - more assured if someone speaks
- yes! Always leave the door open to new ideas, then decide whether they are appropriate or not
- yes, necessary at the least for feedback so that we can improve our services/products to our customers

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Comments on This Idea Writing Session

10. The Six Thinking Hats metaphor provides a vehicle to obtain different perspectives on these idea concepts. We have found that Idea Writing is a tiring process and most groups get "burned out" after about twenty minutes. However, with the Six Thinking Hats to gain perspective, the Idea Writing process could be extended for two hours with a significant increase in the productivity of the group and depth of the comments. In Reference 4, the complete transcript for all of the ideas is provided.

OBTAINING CLOSURE

11. To conclude our brainstorming session, we took an anonymous vote on these idea concepts which may be useful in determining the next step in the process. The participants were asked to rank the concepts from one to eight. The results were as follows:

- a. Education of Others - 2,5,1,3,4,4,5,5;
- b. Communication - 1,1,2,2,2,6,1,2;
- c. Training Ourselves - 7,4,3,5,3,4,6,3;
- d. Computing Issues - 8,7,5,7,5,8,7,6;
- e. Operating Procedures - 6,2,6,6,6,2,8,4;
- f. Marketing - 4,6,8,8,7,7,3,7;
- g. Ultimate Goal/Leadership - 3,3,4,1,1,1,2,1; and

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h. New Initiatives - 5,8,7,4,8,3,4,8.

12. This vote was important to the process because it allows the group to close the meeting with a feeling they have reached a consensus and gives the members a sense of closure. The ultimate meaning of the vote may be less important.

CONCLUDING REMARKS

13. On the whole, this brainstorming session was a great success. The participants apparently enjoyed themselves and felt they were very productive. The extension of the Idea Writing process with the Six Thinking Hats metaphor worked to provide multiple perspectives which enhanced the group's productivity. Using the Six Thinking Hats, we were able to sustain the Idea Writing process for two and one half hours when on other occasions we have found that groups usually get "burned out" of ideas in about twenty minutes.

REFERENCES

1. Taylor, I.W.; The Nominal Group and Idea Writing Techniques for Structured Brainstorming; D Log A Research Note 95/3; May 1995.
2. Taylor, I.W. and Major T.M. O'Shea; Towards Continuous Improvement in Cataloguing and Initial Provisioning: A Customer Satisfaction Survey; Operational Research and Analysis Project Report PR-9520; October 1995.
3. de Bono, Edward; Six Thinking Hats; Penguin Books; Toronto; 1985.
4. Email Taylor, I.W. (D Log A) to Fleming M. (DCIP) - dated 1 Mar 1996.

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