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## Brain-Writing Vs. Brainstorming Case Study For Power Engineering Education

Marcela Litcanu<sup>a\*</sup>, Octavian Prostean<sup>a</sup>, Cosmin Oros<sup>a</sup>, Alin Vasile Mnerie<sup>b</sup>

<sup>a</sup> Politehnica University of Timisoara, Power Systems Department, 2 Bd. V. Parvan, 300223 Timisoara, Romania

<sup>b</sup> "Ioan Slavici" University of Timisoara, 144 Dr. Aurel Paunescu Podeanu, 300587, Timisoara, Romania

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### Abstract

Brain-writing is an alternative method to brainstorming. It is particularly useful with a group of people who are somewhat reticent and would be unlikely to offer many ideas in an open group session such as brainstorming. 6-3-5 Brain-writing (also known as the 6-3-5 method or Method 635) is a group creativity technique used in marketing, advertising, design, writing and product development. The technique involves 6 participants who sit in a group being supervised by a moderator. Each participant thinks up to 3 ideas every 5 minutes. The ideas are written down on a worksheet and passed on to the next participant. The participant reads the ideas and uses them as inspiration for more ideas. Participants are encouraged to draw on others' ideas for inspiration, thus stimulating the creative process. After 6 rounds in 30 minutes the group has thought up a total of 108 ideas. Brain-writing involves silently sharing written ideas in groups. Relative to brainstorming, brain-writing, potentially, minimizes the effect of status differentials, dysfunctional interpersonal conflicts, domination by one or two group members, pressure to conform to group norms, and digressions from the focal topic. It might also eliminate production blocking, reduce social loafing, and encourage careful processing of shared ideas. The authors think that this method would help in the energy sector, with fast resolution of small failures in the system. To study the effectiveness of this method, 30 students were divided into groups of six persons. The results will be presented in this paper.

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*Keywords:* brain-writing; brainstorming; group creativity technique; creative process.

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### 1. Introduction

*Brainstorming* is a group or individual creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its member(s). The term was popularized

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\* Marcela Litcanu. Tel.: +40-256-403-416  
E-mail address: [marcela.litcanu@upt.ro](mailto:marcela.litcanu@upt.ro)

by Faickney Osborn in the 1953 book *Applied Imagination*. Osborn claimed that brainstorming was more effective than individuals working alone in generating ideas, although more recent research has questioned this conclusion (Diehl & Stroebe, 1991). Today, the term is used as a catch all term for all group ideation sessions. The purpose of *brainstorming* is to create an environment in which a group as a whole makes decisions, not just individual decisions. It reduces the dominance of an individual faction and increases participation of the group, especially those who normally would not be involved for different reasons. Brainstorming encourages participants, in pairs or groups, to make large numbers of suggestions with no restrictions on the extent to which creativity and imagination can be applied. These suggestions can then be collated, combined, expanded, refined and prioritised as appropriate (Mullen, Johnson & Salas, 1991). Brainstorming is both a method of study and learning, and a method of scientific inquiry and creativity. Topics and complex issues of great practical or cognitive importance are chosen for learning needs or scientific investigation, which can be addressed and resolved through the brainstorming method, combined with other teaching and research methods, such as discovery, problem solving, modelling, case studies, simulation, cooperation, debate, etc. (Cerghit, 1980).

*The stages of the progress are:*

- a) the announcement of the theme addresses, the importance and its objectives;
- b) the issuance by the participants of ideas, formulas, solutions, etc. Problem-solving approach or topic, without any restrictions;
- c) the completion of a brainstorm session when experts believe the group has issued a relatively sufficient amount of data needed to solve the problem under discussion;
- d) the evaluation of the data and drawing conclusions to solve the theme.

The immediate goal of the brainstorming session is "creativity" itself. Naturally creative and innovative solutions are encouraged, but the session should not be considered lost if new ideas are not generated. During the prioritization process, the less useful feedback will be removed. The main purpose is to train participants who are shy (Rickards, 1999). There are four general brainstorming rules designed to reduce inhibitions that occur in groups and, therefore, stimulate the generation of new ideas. These are to: focus on quantity, do not criticize, that wacky ideas are welcome, and encouragement to combine and improve ideas is welcome (Dumitru & Ungureanu, 2005). The study will be achieved with the help of 60 students. They will be divided into 4 groups and they will try to solve problems by using the two methods proposed (Osborn, 1963). Leading a brainstorming session begins with a presentation of the problem to the team members. There must be a facilitator and a person to record, without judgment, or to filter all the ideas expressed by the participants (Macdonald, 2005). The optimal duration for a brainstorming session is 20-45 minutes. After completing this session to generate ideas, the students then go on to their analysis. Because brainstorming has a number of disadvantages, which are related to the open expression of all participants and blockages that occur, other options have been developed such as brain-writing (Nijstad, Stroebe & Lodewijks, 2003; Santanen, Briggs & de Vreede 2004).

## **2. Brain-writing vs. Brainstorming**

### *2.1. Brainstorming benefits:*

- quick and easy to obtain new ideas and solutions;
- reduced costs for making use of the method;
- wide applicability in almost all areas;
- stimulates active participation and creates the possibility of contagion of ideas;
- develops creativity, spontaneity, self-confidence through deferred assessment process;
- develops the ability to work in teams.

However, in brain-writing formulating ideas aloud is avoided so that participants can be more creative. Because it runs quietly, some participants can concentrate better, which leads to a greater flow of ideas. This time they are formed into groups of six students and each person writes 3 ideas in 5 minutes on a sheet of paper and transfers it 5 times between team members. Rules for writing ideas must be known to participants. For example: do not talk while writing ideas; you can use keywords; utterances are written clearly; make the ideas short enough. During brain-writing, 108 ideas can be produced in about 30 minutes (Csikszentmihalyi, 1996). The reaction of participants to the

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