



Brainstorming and Brainwriting as creativity techniques: a diagnosis in companies of the metallurgic sector

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Abstract

The objective of this article is to diagnosis the level of knowledge and the level of experience allied to the importance of the creativity, through the use of the techniques of Brainstorming and Brainwriting, as stimulation to the generation of ideas. The present study was developed in companies of the metallurgic sector in the City of Ponta Grossa. Here presented through a field research in eleven companies. Creativity for some authors is the process to become sensible the problems, deficiencies; gaps in knowledge, disharmony; to identify the difficulty, to search solutions, formulating hypotheses regarding the deficiencies; to test and to re-test these hypotheses; and finally, to communicate the results. Brainstorming, more than a technique of group dynamics, is a developed activity to explore the potentiality creativity of individual, placing them it service of their objectives, whereas Brainwriting is the quiet version of the Brainstorming. The results demonstrate that in relation to the knowledge level: Brainstorming: there are managers who do not know, others that know and still a third group that knows well; Brainwriting: many managers are unaware of, some know and few know well. With regard to the experience level: Brainstorming: a great number of managers does not use, few use occasionally and some use it regularly; Brainwriting: a totality of the researched managers practically do not use, a minority uses occasionally and none of the managers makes regular use of the technique. Through the analysis of the data it was possible to observe mainly that on the part of the managers there is a great lack of stimulation and motivation in relation to the knowledge and experience in creativity techniques, especially it these do not incur in costs for the organizations, only the participation of the collaborators, which are creative by nature.

Key-words: Creativity; Brainstorming; Brainwriting.

1. Introduction

It must be considered that creativity is not only an inherent talent, but a qualification. Although some people possess more creativity then others, all with some training can become creative. In any resume currently, creativity is an essential qualification. For organizations it is necessary to have creative people, however above all, it is necessary that the organizational culture is tuned to stimulate the creativity.

The use of techniques for the generation of ideas in groups assists the organizations in the creative process, teach people to use their capacities, to innovate products, services or processes. This method is a good start so that the organization promotes easily the changes necessary that are not simple to implant. In the case of the Brainstorming and Brainwriting, the ideas beyond instigating people to be creative, to generate new ideas, predispose people to changes, producing great results, at a low cost.

Brainstorming, in the conception of Araújo (2007), constitutes in a resource used for a group of people to quickly generate, to clarify and to evaluate a list of ideas, problems and points for discussion. He still emphasizes, that it is an excellent tool to catch the creative thought of a team, where at this moment; most important it is the amount and not it quality of the ideas.

Brainwriting is the quiet version of the Brainstorming. When removing the existing verbal interaction in the technique of Brainstorming, it eliminates the possibility of the leader of the group to favor definitive more active and extrovert participants.

The objective of this article is to diagnosis the level of knowledge and the level of experience allied to the importance of creativity, through the use of techniques as Brainstorming and Brainwriting, as a stimulation to the generation of ideas. Carried through, an applied and qualitative research. The technical procedure used was to the exploratory field research, and the collection of data was through questionnaires sent to the managers of the researched companies.

In this direction, the relevance of this work is justified in the contribution in leaving evident for the companies, its platform of knowledge and experience involving techniques of Creativity.

2. Creatvity

The word creativity, at a first moment is the manifestation of the capacity of individuals to create or express in a potential manner. In this context, for Sakamoto (2000), creativity is the expression of a human potential of accomplishment, that if manifest through human activities and generates products in the occurrence of its process.

Creativity for Alencar (1995) is related with thought processes that if associate with imagination, invention, intuition, inspiration, illumination and originality. Creative people are those that assimilate in a fast and efficient way, the problems that they need solution, comparing them with individuals that can not assimilate in this way.

For people to assimilate in an efficient form self-knowledge is important, Senge (2004) comments that one must live in an exactly a creative and not reactive perspective, implying in self- knowledge, what happens through personal domain, going very beyond the abilities and of competencies, although to be based on them. This implies in the continuous clarification of vision and of what is desired, generating the creative tension that is the force that has as an objective to join both, causing a natural tension in the search of the creative solution.

The concept of creativity for Wechsler (1998) is made in an ample boarding, telling that diverse types of interaction become necessary where individuals and society complete each other. He still adds that all possible combinations between the following elements must be considered:

- 1) cognitive abilities - intelligence, knowledge, technical abilities and special talents;
- 2) personality characteristics - internal motivation, confidence, non conformism, creativity trace; and
- 3) ambient elements - political-religious factors, cultural factors, social economic factors, educational factors.

The harmonic combination of the above cited variables is what self-accomplishment will allow oneself to reach, considering not only personal, professional and superior aspects of human development.

One perceives that the authors converge to a same idea, that creativity is directly related with the way for which people notices the world, receiving internal influences, of the ambient and personality.

In the vision of Alencar (1995) creativity is emphasized still as an adjusted tool for: a) ways to accomplish more with less; b) to reduce costs; c) to simplify processes and systems; d) to increase profitability; e) to find new uses for old products; f) to find new market segments; g) to differentiate ones resume; and h) to develop new products.

In this context, to exert creativity, it becomes necessary to stimulate creative thought in each person, since the same is inherent to each one.

For Wheller (2002), creative thought is the mental activity that uses thought abilities to establish new and useful relations or creative solutions from information that people already knew. The author strengthens that all people are creative, but in different ways, once recognized the creative potential, it can be applied for the production of new solutions for problems.

In this boarding, it becomes necessary that people are stimulated and why not taught, to be creative in practice through the use of creativity stimulation techniques, moreover, one must prevent defensive objective, and therefore, they discourage creativity and enthusiasm to create something new. In this work two of these techniques have been approached: the Brainstorming and the Brainwriting.

2.1 The *Brainstorming* technique

Brainstorming for Rodrigues (2004) is a technique used to assist a team to generate/create ideas in the lesser possible time frame.

Originally this technique is of authorship of Alex Osborn, it was proposed in a not very conventional manner for the generation of ideas, not being admitted any type of critic to the suggestions given by the participants.

From then on, organizations and consultation companies use Brainstorming as a motivational technique with the intention to stimulate creativity in its collaborators. It can be applied in any stage of the project development; even so that it can not solve all problems, as those that need immediate judgment or the ones that only possess two or three options.

Bateman and Snell (1998, p.103) approach the Brainstorming as being an environment free of verbalization of ideas ahead of a problem delimited by managers: When people deplete there ideas, a long list of alternatives will have been generated. Then the group will only pass to the period of evaluation. At this point, many different ideas can be considered, be modified or be combined in sized creative solution for the problem.

In the vision of Rodrigues (2004) there is the suggestion of stages for the accomplishment and application of Brainstorming: (1) Establish the objective to be treated; (2) Convoke the team; (3) Indicate a coordinator to direct the team; (4) Indicate a member of the team that will register the ideas and to manage the time; (5) Define the functioning rules, this stage is subdivided in four sub-items: a) to define the methodology, the form of participation or intervention of the members; b) all the registered ideas where they can be seen by all, c) no idea can be criticized or rejected e, d) other ideas can and must be created from the previous ideas.

The group can contain from 4 to 12 members, although the ideal number is six members, being able to be applied individually.

Fixed rules for the Classic Brainstorming technique do not exist, but, in accordance with Bonfim (1984), is recommendable that social differences do not exist, preventing blocking in the production of ideas. Other rivalries are pertinent and acceptable; therefore the competition acts as a stimulant factor. The team must have a facilitator and a recorded secretary or reporter so that the ideas are written down.

An ideal session of Brainstorming possesses better results if effected in 30 to 45 minutes. It is observed that the ideas launched at the end are the best ones, therefore are formulated after more evident answers and a deeper reasoning.

After the of the members of the team are selected, the facilitator must send twenty four hours before the meeting, the invitations and the problem in writing in a clear form, in order not to generate mistakes. In such a way, participants will be able to occupy there minds with the problem, keeping it in the subconscious, with a predetermined time, in search of a solution.

The facilitator must act in the following way, according to Bonfim (1984): a) he will supply instructions regarding the rules and principles of Brainstorming, in case the members are not familiar to the technique; b) after the formularization of the problem, the facilitator will initiate the session. It is the responsibility of the facilitator to organize the ideas, as well as the sequence where they will be displayed, they will be many, and at the same time. It is not allowed to bring already prepared lists; c) the secretary or the reporter must take notes of all the ideas in a clear and concise form or then to record them; d) when there is a reduction in the flow of ideas, the facilitator must get involved with his proper ideas in order to stimulate the creativity of the members of the group; e) it can happen that the members of the group to get so involved with the ideas of the others, forgetting there own. The facilitator must ask them to write down there ideas and expose them when there turn arrive; f) when the facilitator perceives that the session is next to the end, he can stimulate the sprouting of the last ideas; g) is advisable to the approaching of the end of the meeting to read all the ideas, therefore many times some members may have new suggestions; h) the ideas must be typed in list manner, the facilitator can effect a revision classifying them in logical categories, selecting most promising, or, to request to the group of the Brainstorming session, that is the most common procedure. The list can be analyzed by a group that is not involved in the problem. What is really necessary is to inform to the group of the Brainstorming session the destination given to the work.

The importance of the process of ideas generation through the use of the technique of Brainstorming is evident as a management tool. Sudden changes are not believe, this is a slow work, where a few sessions will occur before some reasonable results are reached.

2.1 The Brainwriting technique

Brainwriting is similar to Brainstorming, however, instead of using the verbal way, people display there ideas on paper. Later, a member of the team reads all the papers, that are not identified, out loud, then, the idea is debated. The advantage is that shy people can participate in an active way, contrary Brainstorming.

According to Reis (2007) in Brainwriting, all the participants can have ideas in simultaneous way and are stimulated develop more ideas generated by other participants.

According to the author the main phases of this technique are: a) The facilitator clearly indicates to all the participants which is the problem that will have to be decided; b) The participants seated in a room and armed of paper and pens to write individually, during about five minutes, there ideas for the solution of the problem; c) Finished the time, each participant passes his sheet of paper to the person seated to his side. He then will add to the paper his

proper ideas, during five more minutes. This process can happen again diverse times, however, generally, three turns is enough; d) The facilitator of the session collects the papers and writes the ideas on a board or the use of posters, which could be displayed on the walls of the room; e) Finally the participants discuss the ideas and evaluate them, congregating the best ones and eliminating those that consider absurd or impracticable.

As well as the Brainstorming, Brainwriting is also a simple form and without costs for any organization to adopt, however as the use of techniques that stimulate creativity is a form rarely used, if is necessary that managers perceive, stimulate and motivate the teams to develop the creative potential to each collaborator.

3. Methodology

The technical procedure of the field research is exploratory, that for, Lakatos & Marconi (2007, p.190) that are empirical inquiries with objective of formularization of questions or a problems to describe an intervention in the context where the fact occurs.

Regarding the research, the research is qualitative and quantitative; in relation to the objectives it is descriptive and the nature is an applied research, involving the generation of knowledge that have practical applications, directed to the solution of specific problems. (SILVA; MENEZES, 2005, pg.20).

In relation to the method of data collection, extensive direct comment was used, through questionnaires sent to the managers of 19 (nineteen) companies, however 11 (eleven) companies responded, which has been analyzed.

The companies, object of this study are of the metallurgic sector, being 01 (one) micro company; 07 (seven) of small size and 03 (three) of average size. All the researched companies are situated in the city of Ponta Grossa - Paraná.

Diverse classifications exist that can define the size of the companies and between them still a great diversity of variables exists. Due to this fact, it was opted to present only the classification of the SEBRAE (Brazilian Service of Support to the Micro and Small Companies), regarding the number of employees as demonstrated in table 1:

Regarding the number of employees:

Size	Employees
Micro company	In commerce and services up to 9 workers In industry up to 19 workers
Small size company	In commerce and services from 10 to 49 workers. In industry from 20 to 99 workers
Medium size company	In commerce and services from 50 to 99 workers. In industry from 100 to 499 workers
Large size company	In commerce and services more then 99 workers. In industry more then 499 workers

Source: Sebrae (classification used by the research area of Sebrae)

Table 1: Classification of the companies regarding the number of employees

After the questionnaire were answered, the transcriptions of the data, the analysis of the question regarding the of the companies were made, in the boarding that involved the research, the use of the Brainstorming and Brainwriting as a creativity technique, was effected as follow, and compiled the analysis of the results and final considerations.

4. Results and Analyses: The case of the companies of the metallurgic sector

For accomplishment of the study, a structuralized questionnaire was applied approaching 02 (two) relative questions to the techniques Brainstorming and Brainwriting.

The scoring proposal possesses the scope of 03 (three) levels of evaluation for the diagnosis of knowledge level and 03 (three) levels for the evaluation for experience diagnosis, in the order that it is presented: for level of knowledge “1” - Do not know, “2” - Know and “3” - Know well; for experience level “1” - We do not use, “2” - Occasional Use and “3” - Regular Use. The related questionnaire was done with the managers of the companies. Veracity in the information was requested; therefore the research alone will have value if the answers reflect true practice and the performance obtained in the company.

In relation to the knowledge level, the result can be visualized in table 2.

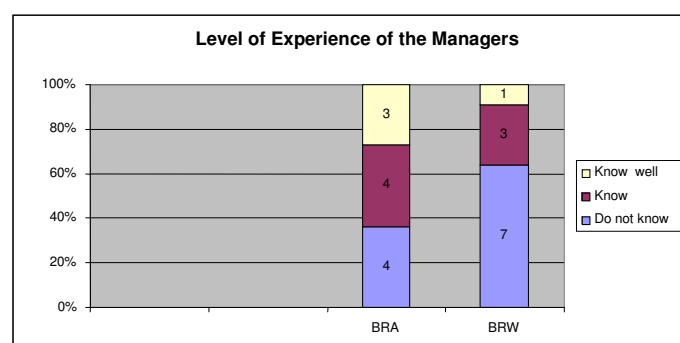
DIAGNOSIS THE LEVEL OF EXPERIENCE OF THE MANAGERS				
Related Items	Items	Don't Know	Know	Well Known
<i>BRAINSTORMING</i>	BRA	4	4	3
<i>BRAINWRITING</i>	BRW	7	3	1

Source: Author

Table 2: Tabulation of the Level of Knowledge on the Techniques of Creativity: *Brainstorming e Brainwriting*.

In table 2, a diagnosis between the 11 (eleven) researched companies are done, on the knowledge level that each manager has in relation to the creativity techniques of Brainstorming and Brainwriting.

In graph 1 the value in percentage is demonstrated of how much the researched companies, do not know, know or know well the two techniques boarded.



Source: Author

Graph 1: Level of Knowledge of the Managers on the Techniques: Brainstorming and Brainwriting.

It can be observed in graph 1, that of the managers of the researched companies, with regards to the level of knowledge of the technique of Brainstorming: 36.36% do not know; 36.36% know and 27.27% know well.

In relation to the technique of Brainwriting, the results obtained regarding the knowledge level was: 63.64% do not know; 27.27% know and 9.09% know well.

In relation to the experience level, the result can be visualized in table 3:

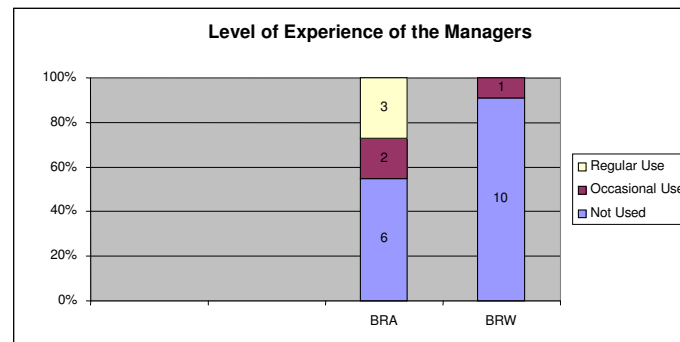
DIAGNOSIS OF THE LEVEL OF EXPERIENCE OF THE MANAGERS				
Related Items	Items	Do not use	Ocasional use	Regular use
<i>BRAINSTORMING</i>	BRA	6	2	3
<i>BRAINWRITING</i>	BRW	10	1	

Source: Author

Table 3: Tabulation of the Level of Experience on the Creativity Techniques of: Brainstorming and Brainwriting.

In table 3, a diagnosis between the 11 (eleven) researched companies is done, on the experience level that each manager has regarding the creativity techniques of Brainstorming and Brainwriting.

In graph 2 the values demonstrated in percentage of how much the researched companies, do not use, use occasionally or use the two boarded techniques regularly.



Source: Author

Graph 2: Level of Experience of the Managers it the Creativity Techniques of: Brainstorming and Brainwriting.

It can be observed in graph 2, that of the managers of the researched companies, in regard to the level of experience of the technique of Brainstorming: 54.55% do not use; 18.18% use it occasionally and 27.27% use it regularly.

In relation to the technique of Brainwriting, the result obtained for the experience level was: 90.91% do not use; 9.09% use occasionally and none of the researched companies makes regular use of the technique.

5. Final considerations

The present research presented the importance of the known techniques of creativity, Brainstorming and Brainwriting, which in simplified way means generation of ideas.

However, so that the techniques are used in efficient way and produce efficient results, they need to be stimulated and to be motivated by the management of the companies, being able to change it into the competitive differential between an organization and another.

In this context creativity, that is inherent of each individual, however with passing of the time, people judge them self with lesser capacity “to create”, in this condition inserts the role of the manager. He must serve as a link, in the creation of a system and implantation of techniques that lead and stimulate the creative potential of each collaborator in the work environment.

At last, it can be diagnosed that an equality of the opinions between managers who do not know and that they possess knowledge of the Brainstorming and a smaller number, however representative, that know well the technique. Already in the results for the Brainwriting the refined diagnosis was that a greater number of managers do not know the technique, and only a reduced number demonstrated to possess knowledge of it.

Concluding the diagnosis in relation to the level of experience of the technique of Brainstorming according to respondents, it is demonstrated that the managers may know it, however do not possess experience in its use, few use occasionally, and a little number of representation uses regularly. The use of the Brainwriting evidenced that the managers do not use the technique in a high number, that in a sufficiently reduced number uses it occasionally and that none of the companies uses it regularly.

References

- ALENCAR, E. M. L.S. **Criatividade**. 2. ed. Brasília. Editora Universidade de Brasília, 1995.
- ARAÚJO, L.C.G. **Organização, sistemas e métodos e as tecnologias de gestão organizacional**. 3. ed. São Paulo: Atlas, 2007.
- BATEMAN, T. S., SNELL, S. A. **Administração: construindo vantagem competitiva**. São Paulo: Atlas, 1998.
- BONFIM G. A. **Metodologia para desenvolvimento de projeto**. Campina Grande: Editora Gráfica Rodier Ltda, 1984.
- LAKATOS, E. M.; MARCONI, M. A. **Metodologia do Trabalho Científico**. São Paulo: Atlas, 2007.
- REIS, D. R. **Gestão da Inovação para a competitividade: criatividade e inovação**. Curso: Gestão da Inovação para a competitividade. 2007.
- RODRIGUES, M.V.C. **Ações para a qualidade: GEIQ, gestão integrada para a qualidade: padrão seis sigma, classe mundial**. Rio de Janeiro: Qualitymark, 2004.
- SAKAMOTO, C. K. **A criatividade sob a luz da experiência: a busca de uma visão integradora do fenômeno criativo**. São Paulo, 1999. 296p. Tese de doutorado – Instituto de Psicologia, Universidade de São Paulo.
- SEBRAE. **Classificação das micro e pequenas empresas**. Disponível em <<http://www.sebrae.com.br>> Acesso em 08 jun 2008.
- SENGE, Peter M. **A Quinta disciplina: arte e prática da organização que aprende**. 16 ed. (Tradução: OP Traduções). São Paulo: Editora Nova Cultural, 2004.
- SILVA. E.L.; MENEZES. E.M. **Metodologia da Pesquisa e Elaboração de dissertação**. 4ª ed. rev.atual. Florianópolis: Laboratório de Ensino à Distância da UFSC, 2005. p.138.
- WECHSLER, S. M. **Avaliação multidimensional da criatividade: uma realidade necessária**. Psicol. esc. educ. [online]. 1998, vol.2, n.2 [citado em 14 junho 2008], p.89-99. Disponível em [www.<http://pepsic.bvc-psi.org.br/scielo.php?](http://pepsic.bvc-psi.org.br/scielo.php?)
- WHELLER, J. **Como ter idéias inovadoras**. São Paulo: Market Books, 2002.