Enhancing creative thinking within organisations

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Enhancing creative thinking within organisations

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Creative problem solving (CPS) and innovation are very important to companies who want to gain flexibility and competitive advantage. This article describes how an organisation can enhance its creativity by developing a creative culture within the company. In addition, the paper discusses group creative problem solving. A creativity continuum is presented which describes three different types of techniques – paradigm preserving, paradigm stretching and paradigm breaking. It is important to know which type of technique should be chosen for a particular type of situation. Paradigm preserving techniques are deemed to be more comfortable but less innovative whereas paradigm breaking techniques encourage participants to develop highly novel ideas. They can, however, be uncomfortable to use and should therefore not be utilised by the unwary. This article describes six different CPS techniques – two paradigm preserving, two paradigm stretching and two paradigm breaking techniques.

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Introduction

Many theorists and practitioners have talked about the need for organisations to change and adapt in order to remain competitive (Hall, 1996; Hammer and Champy, 1996; Higgins, 1996; Hinings and Greenwood, 1988; Hurst, 1995; McKenzie, 1996). Hall (1996) suggests that in order to re-engineer a company effectively, managers must depend on breaking paradigms rather than using conventional wisdom. According to Higgins (1996, p. 370) many corporate CEOs, consultants and academics proclaim that "innovation is the key to achieving competitive strategic advantage now and in the future".

Innovation – that of turning ideas into products, services and processes – comes directly from creative thinking (Couger, 1995). Changing from conventional thinking to producing paradigm breaking ideas can also be achieved by using creative problem solving (CPS) techniques (Hall, 1996; McFadzean, 1996a). Creativity can be defined using Newell *et al.*'s (1962, pp. 65-6) terminology:

> Problem solving is called creative to the extent that one or more of the following conditions are satisfied:
> 1 The product of thinking has novelty and value (either for the thinker or for his culture).
> 2 The thinking is unconventional, in the sense that it requires modification or rejection of previously accepted ideas.
> 3 The thinking requires high motivation and persistence, taking place either over a considerable span of time (continuously or intermittently) or at high intensity.
> 4 The problem as initially posed was vague and ill-defined so that part of the task was to formulate the problem itself.

Tannenbaum (1997) suggests that creativity is a useful process because it improves communication, promotes learning and the exploration of the problem, and helps to develop new ideas, solutions and/or alternatives. Group creative problem solving gives participants an opportunity to articulate their thoughts, perceptions and assumptions (Larson and Christensen, 1993; McFadzean, 1996b; Reynolds, 1994; Vennix, 1996). In addition, CPS techniques should be fun and should therefore create additional energy for the problem or topic (Jones and McFadzean, 1997; Tannenbaum, 1997) and they should help to produce "buy-in" for the solution from the participants (Reynolds, 1994). Creative problem solving sessions can also provide an opportunity for exploration and learning. Information can be communicated between participants and a shared understanding of the situation sought (Langfield-Smith, 1992; Larson and Christensen, 1993; McFadzean, 1996b). Moreover, CPS sessions encourage the development of new, innovative ideas that can be modified or built on to develop something useful and valuable (Couger, 1995; McFadzean, 1996b; Nagasundaram and Bostrom, 1993; VanGundy, 1988).

The aim of this paper is to explore methods and techniques that will improve creativity within organisations. The next section describes how managers can improve their organisation's creative climate. Creativity must be encouraged by senior managers and it is therefore important that management know how to change their organisation's culture so that their staff learn to think more creatively. The third section presents a number of different creative problem solving techniques that can be used with a variety of different types of groups. Finally, the paper concludes with a short summary.

Developing a creative climate

In order to run an effective creative problem solving session, the climate and culture within the organisation must be such that the company encourages innovation and creative thinking (Anderson *et al.*, 1992; Jones and McFadzean, 1997). This can be undertaken by:

- Ensuring participative safety (Anderson *et al.*, 1992). Employees can only be encouraged to think creatively if they are not afraid of criticism or punishment. For example, if a project fails and the champion is in fear of losing his job then he will never take the risk of thinking creatively again.
- Employees should be encouraged to challenge their assumptions and perceptions regarding procedures, products, services and processes (Jones and McFadzean, 1997;

McFadzean, 1996a). In particular, they should examine procedures that "have always been done that way".

- Managers should encourage "visioning" (VanGundy, 1988). Creative thinkers look into the future and visualise where they would like to be in five or ten years time. This can be applied to the company as a whole or to a department or section or to products, services, procedures and processes.
- Establish a climate of excellence (Anderson *et al.*, 1992). Creative ideas need to be implemented effectively in order to succeed. Managers should ensure that employees are committed to achieving a first-rate performance. This can be undertaken by developing achievable objectives (both as an organisation and as individuals) and by producing a strategy for fulfilling them.
- Employ people who do not seem to fit in (Jones and McFadzean, 1997). By upsetting the status quo, it encourages people to look at situations from different perspectives instead of a "corporate viewpoint". This may not necessarily be comfortable for management but it can help the company produce some excellent innovative ideas.
- Allow people to spend time on their pet projects so they can be researched and developed (McFadzean, 1996b). For example, the Post-It Note was developed by 3M because the company had allowed its inventor – Arthur Fry – to spend time working on the concept. 3M allows 15 percent of time to be spent on researching pet projects (Nayak and Ketteringham, 1991).
- There must be senior management support for creativity and innovation (Anderson *et al.*, 1992; Jones and McFadzean, 1997). Often, managers will articulate their support but will not enact it. They must provide sufficient resources and training, encouragement for developing new ideas, time to work on pet projects and/or financial support.
- Encourage an atmosphere of enjoyment and fun (Hall, 1996). Creative thought can be greatly enhanced if participants are enjoying themselves. An appropriate atmosphere may be created by reducing distractions and enhancing relaxation (Alder, 1993; Briggs and Nunamaker, 1996).
- Develop creative problem solving teams that can work together and develop trust for one another (McFadzean, 1996b). Problem solving teams will be more effective if the participants have the same goals and are supported by a trained facilitator (Briggs and Nunamaker, 1996; Nelson and McFadzean, in press). Group members who share goal congruence will work towards their objectives together rather than working with hidden agendas and conflicting interests, which will ultimately reduce the efficiency of the group. In addition, the group will work more effectively together if it is supported by a competent facilitator. The facilitator helps the group to reach its objectives and can help the group to look at the situation from different perspectives by using a variety of creative problem solving techniques (McFadzean and Nelson, 1998).

The next section describes some of these techniques and the situations in which they should be utilised.

Running creative problem solving sessions

VanGundy (1997) has suggested a framework for improving creative problem solving sessions. He calls this framework "IDEAS for ideal brainstorming" and includes the following:

1 Techn*I*ques – many theorists and practitioners advocate that a number of different techniques can be used to stimulate and encourage creative thinking (Couger, 1995; De Bono, 1992; McFadzean, 1996a; VanGundy, 1988; Von Oech, 1990). These can include assumption reversal, fantasy analogy, synectics, wishful thinking, object stimulation, brainwriting and so on (Couger, 1995; Hicks, 1991; LeBoeuf, 1980; McFadzean, 1996a; VanGundy, 1992).
2 *D*ivergence – this includes the deferment of judgement, using new ideas as solution stimuli and encouraging equal participation (VanGundy, 1997). Osborn (1957), the father of Brainstorming, advocated two essential guiding principles:
   - the idea generation phase must take place without any analysis or evaluation. This will occur after the idea generation phase has been concluded; and
   - the quantity of ideas will ultimately yield quality. In other words, the more ideas generated, the more likely it is that the participants will produce some good quality ideas.
3 P*E*ople – VanGundy (1997) suggests that the creative problem solving group should consist of divergent and fluid thinkers. In addition, the group should consist of heterogeneous people (Belbin, 1981; Watson *et al.*, 1993) and should incorporate about five to seven people (Hare, 1981; VanGundy, 1997) unless a group support system is utilised in which case larger groups will be more effective (Dennis and Valacich, 1993; Gallupe *et al.*, 1992).

4 L*A*ughs – it is important to have a relaxed and playful atmosphere. According to Von Oech (1990, p. 91), "Getting into a humorous frame of mind not only loosens you up, it enhances your creativity". Couger (1995, p. 238) also comments on the importance of humour for creative thinking:

> Arthur Koestler, one of the important writers on conceptualization, wrote an essay on the "Three Domains of Creativity". The first is artistic creativity, which he calls the "ah" reaction. The second is scientific creativity, which he calls the "aha!" reaction. The third is comic inspiration, which he calls the "haha" reaction. According to Koestler, humor is the only domain of creative activity where a stimulus on a high level of complexity produces a massive and sharply defined response on the level of physiological reflexes. Research at the University of Michigan shows that laughter causes the release of endorphins, which in turn provide a burst of energy and an impetus to creativity.

Humour can also help to stretch a participant's thinking and help to change his or her mind set. It can also force participants to combine ideas that were not associated together before. In addition, it helps relax group members and encourages them to take things less seriously thus reducing one of the blocks to creativity – that of feeling foolish or the fear of making a mistake (Couger, 1995; Von Oech, 1990).

5 Proces*S* – preparation and planning a creative problem solving session is critical to its success. Bad preparation, a poorly structured agenda and poor time keeping can greatly reduce the efficiency and effectiveness of meetings (McFadzean and Nelson, 1998).

Teams are an important part of organisational life. They are formed to solve problems, to realise opportunities and to undertake and supervise projects. A team that is creative can develop new and innovative ideas and thus add value to the organisation.

Although many teams use some form of creative technique – Brainstorming being the most common – research has shown that there are other techniques that encourage groups to produce a greater range of creative ideas (McFadzean, 1996a). McFadzean (1996a; 1996b) has classified creative problem solving (CPS) techniques into three categories – paradigm preserving, paradigm stretching and paradigm breaking. These are described as follows:

1 Paradigm preserving techniques do not tend to change a participant's perspective. In other words, no new elements or relationships are introduced into the problem space. For instance, if we developed paradigm preserving ideas for a new improved camera, then we may specify issues such as a better quality casing or a faster shutter speed (Nagasundaram and Bostrom, 1993). Examples of these techniques include Brainwriting and Brainstorming (McFadzean 1996b; Osborn, 1957; VanGundy, 1992).
2 Paradigm stretching techniques encourage users to stretch the boundaries of the problem space. This is achieved by either introducing new elements or new relationships so that group members can consider something new. For instance, we may develop paradigm stretching ideas by adding new elements to our camera (e.g. adding a motor to convert a hand-wound camera into an automatically-wound camera) or by changing the relationship between elements (e.g. using a Polaroid film instead of a traditional film). Examples of these techniques include Object Stimulation and Metaphors (VanGundy, 1988; 1992).
3 Paradigm breaking techniques encourage participants to completely break down the boundaries of the problem space and to look at something entirely new. This occurs when both new elements and new relationships are introduced. For instance, we may develop a completely new type of camera (e.g. a digital video camera) by adding new elements and relationships to our traditional photographic camera. Examples of these techniques include wishful thinking and rich pictures (Checkland and Scholes, 1990; Hicks, 1991; Morgan, 1997; VanGundy, 1988).

Problem solving techniques can therefore be placed in a creativity continuum ranging from paradigm preserving tendencies to paradigm breaking tendencies (see Figure 1). Paradigm preserving techniques are generally seen by participants to be "safe", that is they won't embarrass anybody or make them feel uncomfortable. No imagination is required although it would be a bonus if it were used. It is therefore not necessarily expressive or revealing. Free association or piggybacking is used to spark off other ideas and thus produce new solutions. Paradigm preserving techniques therefore do not require experienced groups to use them, no training is necessary and individuals will be quite happy to participate.

Paradigm breaking tools, on the other hand, sit at the opposite end of the spectrum (see Figure 1). Only an experienced group should use these techniques or a group that

has a great deal of trust in the facilitator. An inexperienced group may feel uncomfortable and unsafe in this environment. Imagination and expression is actively encouraged by the use of fantasies or other unrelated stimuli.

In the middle of the creativity continuum are the techniques that encourage participants to stretch their prevailing paradigm. These are safer and more comfortable to use than the paradigm breakers and may therefore be utilised by more inexperienced groups. Paradigm stretching techniques require less imagination and are certainly less expressive although they still use unrelated stimuli to spark off new ideas.

The remainder of this article will describe six creative problem solving techniques in more detail – two of which are paradigm preserving, two are paradigm stretching and two are paradigm breaking.

Using paradigm preserving techniques

Brainstorming

Brainstorming relies on the absence of evaluation in the idea generation phase. Moreover, free-wheeling is encouraged so that an extensive list of ideas can be generated. The group members must be allowed to communicate an idea, however mundane, strange or wild, to the rest of the group. An idea that may seem impractical may contain a germ of a great solution.

Instructions

1 *Preparation* – the facilitator meets the problem champion to develop a statement of the problem, to select the participants and to set up the meeting
2 *Orientation* – the facilitator reiterates the problem statement to the group, sets out the ground rules, instructs the group on the purpose and process of brainstorming and conducts a warm-up exercise, if necessary.
3 *Idea generation* – the facilitator asks the participants to generate possible solutions, without criticism, for about 30 to 45 minutes. The ideas are recorded on a flipchart by the facilitator who must also encourage the group members to continue generating ideas.
4 *Evaluation* – the facilitator leads the group back through the list of ideas encouraging them to combine statements and identify valuable ideas.
5 *Post-session follow-up* – the facilitator designates one person to receive any additional ideas that may occur to members after the meeting.

Brainwriting

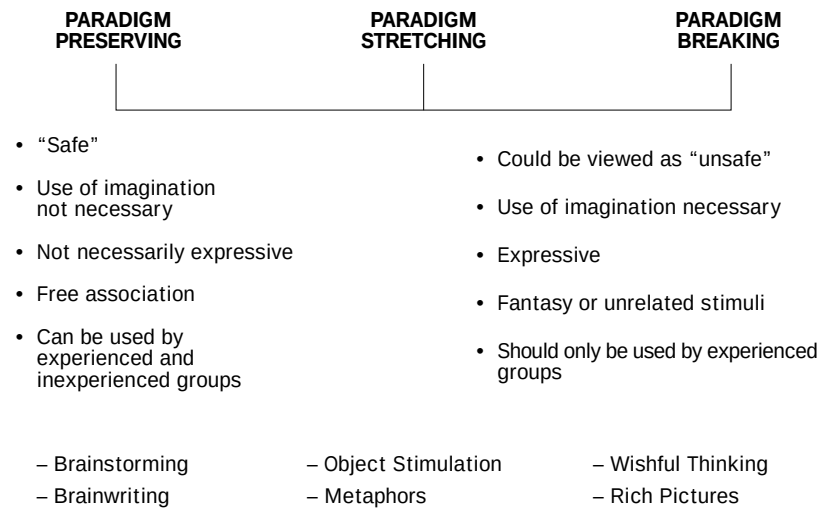
This technique does not require a lot of imagination and can therefore be utilised by groups that are newly formed or inexperienced. Moreover, there is little skill required by the facilitator as it is very easy to set up and implement.

Instructions

1 The group members are asked to write their ideas on separate sheets of paper and then to deposit them onto the centre of the table (the pool).
2 When an individual needs stimulation or wants to piggyback ideas he or she can exchange their sheet of paper with another from the pool.
3 The process of writing ideas and gaining stimulation from other people's ideas should continue for about 10 to 15 minutes.

This technique not only maintains a form of anonymity thus reducing inhibitions but it also allows parallel communication which negates domination by one or more individuals.

Figure 1
The creativity continuum



Source: McFadzean (1996a)

Using paradigm stretching techniques

Object stimulation

Object stimulation is an idea generation technique that can be used to explore the problem space as well as to enhance solution development. The technique encourages participants to view the situation from a different perspective by using unrelated stimuli.

Instructions

1 The group members are asked to develop a list of objects that are completely unrelated to the problem.
2 Each individual then needs to select one object and describe it in detail. The group should use each description as a stimulus to generate new and novel ideas.
3 The facilitator should write each idea down.
4 This process should continue until each group member has described an object or until each object has been described.

The objects that are chosen can range from garden tools to animals to organisations to pictures. This technique requires much more imagination than the paradigm preserving techniques and may therefore cause some discomfort to some team members who feel that it may be "a waste of time". In fact, research has shown that Object Stimulation is a more powerful tool in terms of creativity than the paradigm preserving techniques such as brainwriting (McFadzean, 1996b).

In order to make both paradigm stretching and paradigm breaking techniques effective, the group must be experienced in the use of creative problem solving techniques, they must trust their fellow participants and their facilitator and must have a vested interest in the outcome of the session (McFadzean, 1996b; McFadzean *et al.*, 1996).

Metaphors

Metaphors can be used to create a fantasy situation so that a new perspective of the problem can be gained. There are a number of different types of metaphors that can be useful for problem solving and opportunity finding. These include metaphors of nature, vehicle metaphors, creational metaphors, the journey metaphor and so on.

Instructions

1 The group members are asked to write a brief statement of the problem.
2 The facilitator asks the group to select a metaphor category or he or she can stipulate the category to the group e.g. using the journey metaphor.
3 Each individual then needs to describe the situation using the metaphor category. The facilitator needs to stipulate whether the description should be of the present situation or the ideal situation.
4 Using the descriptions developed by each team member, the participants can generate new ideas.

Again, this method requires some imagination by the group. The development of metaphors, however, may be difficult for some people and will require practice. Nevertheless, once it has been mastered the results produced can be very creative.

Using paradigm breaking techniques

Problems that are ill-structured and open-ended may require more creative thinking. VanGundy (1988, p. 127) suggests that, "When a problem is open-ended, some degree of fantasy can provide the degree of loosening needed to produce many unique ideas". Paradigm breaking techniques can help participants to develop fantasies that may aid in novel idea generation.

Wishful thinking

Wishful thinking forces participants to look at a "perfect future". By using this method it allows group members to develop a goal that can be attained. Moreover, it can increase their motivation and help to change their perspective.

Instructions

1 The group members are asked to write a brief statement of the problem.
2 The facilitator tells the group to assume that everything is possible. Each individual then needs to develop some fantasy statements about the future using terms such as: In the future, it would be nice if the organisation did… What really needs to happen to be a great company is… If I were in charge of this situation I would do…
3 The group members need to examine each fantasy statement and develop ideas on how these can be achieved.
4 The new ideas that have been developed need to be explored and linked back to the present problem situation. This can be achieved by using statements such as: Although this is difficult to achieve, we can… It might be possible to do that if we…

This is not an easy technique to facilitate because some of the fantasies can be difficult to develop into practical solutions. The group, therefore, must be very patient and enthusiastic about the process. Again, in order to be effective in using the technique both the group and the facilitator should be experienced at using this type of CPS method. Moreover, the participants and the facilitator should have worked together before and have developed a high degree of trust. If the technique is used properly, a number of different perspectives can be produced that would not have been developed through using paradigm preserving techniques.

Rich pictures

Rich pictures is another technique that can help participants look at problems from a totally different perspective. It can change the patterns of thinking within the group.

Instructions

1 The group members are asked to write a brief statement of the problem.
2 The facilitator then asks each individual to draw two pictures. The pictures may be a metaphor of the situation e.g. a vehicle or an animal. The first drawing would be a picture of how each participant would like to see the situation in the future. The second picture would be a drawing of how the participants see the present situation.
3 Each participant is asked to describe the picture of the present first. Not only should he or she describe the picture but a description should also be given of the properties of the objects drawn and why they have been drawn that way. Next, a description of the picture of the future should be given. Again, the properties and the relationships of the objects should be described.
4 From the descriptions given by the participants new ideas can then be generated.

Rich pictures is a useful technique because the group can very quickly see what each member's perception is of the problem and how he or she would like to see the future. Moreover, a picture can show a vast amount of information such as patterns, relationships and properties very effectively. It can be easily shared with the other group members and it allows all the participants to see the problem in its entirety at a single glance. This method can also be used as a quick icebreaker at the beginning of a session. The group, however, needs to be aware of its effectiveness before participating as many people feel inhibited and embarrassed about their lack of drawing skills. The facilitator needs to explain to the group that the picture does not have to be a work-of-art as long as it makes sense to its creator and can be easily described to the group. The facilitator needs to be skilled at teasing information out of the participants while they describe their picture. There are times when information is not communicated because the facilitator has failed to ask the correct questions.

Summary

Creative problem solving techniques help to structure the group process so that novel ideas can be generated and developed into practical solutions. Many groups will feel more comfortable using paradigm preserving techniques and/or paradigm stretching techniques because they do not require the use of fantasies, dreams or other skills that they may feel inhibiting such as drawing. Nevertheless, used effectively, paradigm breaking techniques will produce novel and creative ideas and will allow participants to explore the problem from different perspectives. It is very important, however, that the facilitator is sensitive and trustworthy and allows each group member to communicate his or her views.

The use of group creative problem solving will only be effective, however, if the organisation, itself, has a creative culture. Senior management must therefore encourage a climate of excellence within the company and must allow people to spend time working on their own ideas. In addition, they must ensure participative safety and encourage staff to challenge their perceptions and visualise the future in order to bolster their creative thinking. In this way, organisations can really use their most valuable assets – people – effectively and ensure that they can produce new ideas that are both innovative and powerful.

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Application questions

1 Where does the creative energy in your organization come from? Is it dependent on having naturally creative people or can it be nurtured through careful organizational design?

2 Do organizations need creativity more than, say, efficiency?