Improving Virtual Teams through Creativity

Teres Torres-Coronas
Universitat Rovira i Virgili, Spain

Mila Gasco-Hernandez
Open University of Catalonia, Spain

INTRODUCTION

Many studies have already shown how a team can become more creative, and therefore more efficient, but only a few researchers have focused on how a virtual team can use creativity techniques to perform better. In this article, we study what differences there are (both in terms of processes and in terms of results) when creativity techniques are used in the management of traditional and virtual teams. To do this, we discuss three main elements: the definition of creativity and its relationships with team performance, the variables that enhance creativity in a virtual team, and the most suitable creativity techniques for a virtual environment.

BACKGROUND

Most researchers and practitioners believe that the key to organizational success lies in developing intellectual capital and acquiring a new set of thinking: the creativity to produce an idea and the innovation to translate the idea into a novel result (Roffe, 1999). Explaining the meaning of creativity is not straightforward; there are thousands of definitions of the term. So, for the purpose of this article, we will understand creativity as the shortest way to search for unconventional wisdom and to produce paradigm-breaking ideas and innovation. This unconventional wisdom through the generation and use of creative knowledge is the key to building sustainable competitive advantages (Carr, 1994).

In order to develop more innovative products, services, or processes, organizations must encourage their employees to become more creative. During the last few decades, several researchers (Andriopoulous, 2001; Nemiro & Runco, 2001; McFadzean, 1998; Amabile, Conti, Coon, Lazenby & Herron, 1996) tried to describe contextual factors largely under the control of managers that influence creativity, though as creativity is a multidimensional concept, there is not a universal theory yet (Walton, 2003). This section focus on how managers and/or team leaders can improve creative climate within virtual structures.

The literature review conducted by Andriopoulous (2001) highlights five major organizational factors that enhance creativity in a traditional work environment: 1) organizational climate, or designing a working atmosphere that fosters participation and freedom of expression; 2) a democratic and participative leadership style; 3) an organizational culture that nourishes innovative ways of solving problems; 4) new resources and skills through the development of human resources creative talent; and 5) a structure and systems that include building flat structures, and rewards, recognition, and career systems that emphasize people creative thinking. Scholars argue that these factors create conditions that enhance creativity both at the team and individual levels.

From a study of the social psychology of creativity, Amabile (1996) cites the three main origins of creative performance as: task motivation, domain-relevant skills, and creativity-relevant skills. She differentiates between intrinsic and extrinsic motivation, proposing that the intrinsic motivation enhances creativity. In Amabile's research, the work team environment is also considered to exert a powerful impact on creativity by influencing the employee's intrinsic motivation. Management practices indicate that performance can be fostered by allowing freedom and autonomy to conduct one's work, matching individuals to work assignments, and building effective work teams that represent a diversity of skills and are made up of individuals who trust and communicate well with each other, challenge each other's ideas, are mutually supportive, and are committed to the work they are doing (Amabile & Gryskiewicz, 1987). Creativity is best achieved in open climates (Feurer, Chaharbaghi & Wargin, 1996).

These studies have not specifically addressed dimensions that may be necessary when groups no longer interact in traditional structures (Nemiro, 2001). In fact, so far, the only research that has been seriously conducted about this issue is that by Nemiro (2001), who identifies several key elements that influence creativity in virtual teams and therefore result in effectiveness and high levels of performance. Table 1 summarizes some of these factors as described by Nemiro (2001, p. 94).

A creativity-based management aimed at fostering virtual team creativity and performance must manage the

above environmental variables in order to enhance employees' internal drive to perceive every project as a new creative challenge (Andriopoulos & Lowe, 2000).

A quick analysis of the variables shown in Table 1 gives rise to the conclusion that there are no meaningful differences between the factors that affect creativity in traditional environments and those that affect creativity in virtual contexts. On the other hand, most of the factors that influence creativity (such as work characteristics and situational constraints) are also considered as factors that impact team performance, as the conceptual model of Prasad and Akhilesh (2002) shows. Nevertheless, due to the particular way virtual teams work, there is a need to consider some elements related to the previous variables. Thus, communication and trust become very relevant issues.

In this sense, Henry and Hartzler (1998) find that keeping the synergy and creativity flowing, without frequent face-to-face interaction, is the greatest challenge a virtual team has. Virtual teams lose non-verbal communication and, as has been argued, electronic communication increases the level of social isolation. Schein (1993) points out that most communication workshops emphasize active listening, which means paying attention to the spoken words, the body language, the tone of voice, or the emotional content. Virtual teams that want to communicate successfully cannot actively listen in this sense. Other tools must therefore be explored¾for example, the use of multiple media or several communication technologies (Bal & Teo, 2001). However, as Van der Smagt (2000) showed, it is crucial to ensure that dialogue is the primary form of interaction between team members and that two-way monologues are avoided. Rich media—those that transmit nonverbal cues—are not the solution.

"In a dialogue, the difficult part is to make one's own assumptions manifest, not the exchange of insights with others. The attitude in relation to other actors is one of openness, which makes it relatively easy to get behind the position and possibilities of actors." (Van der Smagt, 2000, p. 155)

Collaborative work also requires a level of personal familiarity and trust. Without trust, building a true team is almost impossible (Duarte & Snyder, 1999). For most newly forming virtual teams, achieving an effective level of trust is not an easy task. Increasingly, virtual teams will form without the advantage of prior face-to-face team building opportunities, but with the added challenges of geographic isolation, time zone differentials, and cultural diversity (Holton, 2001). With virtual team heterogeneity there is a high probability that team members are confronted with mistrust (Prasad & Akhilesh, 2002), though such diversity within a team has the potential to increase opportunities to be innovative and creative (Lipnack & Stamps, 1997), if trust can be established (Dyer, 1995). But how can trust be built? The qualitative research project of Holton (2001) concludes that standard team-building tools

Table 1. A summary of factors that can foster creativity in a team context

Autonomy and Freedom. Allowing individuals responsibility for initiating new ideas and making decisions; a sense of control over one's work.
Challenge. Work that is stimulating, engaging, and meaningful; a sense of having to work hard on challenging and important tasks.
Clear Direction. Goals that facilitate creativity are clear, negotiated, attainable, shared, and valued.
Diversity/Flexibility/Tension. Diversity, both in terms of the work assignments offered and the people one interacts with, and a tolerance of differences. In order to be tolerant of differences, flexibility is needed. Both diversity and flexibility can lead to creative tension.
Support for Creativity. An organizational focus on support for or encouragement of creativity.
Trust and Participative Safety. Especially crucial for group creativity is trust and participative safety. The emphasis is on encouraging participation in a non-threatening, non-evaluative environment.

can be used to enhance collaboration and trust in a virtual team. The book of Simon Priest (2001) is full of examples for virtual team building. But, as with all team building, there is no quick fix for virtual teams.

These difficulties related to communication and trust are only an example that illustrates the need to conduct in-depth studies on the rest of environmental factors that, in non-virtual contexts, have been proven to directly impact teamwork creativity.

TOOLS AND TECHNIQUES TO IMPROVE CREATIVE PERFORMANCE

How can team creativity be encouraged? Until now no serious research has been conducted into which creativity techniques are the most suitable in a virtual environment. In traditional environments, one method of achieving this is to encourage teams to utilize creative problem-solving (CPS) techniques such as synectics, brainwriting, or wishful thinking.

In this context, McFadzean (2000, 1999, 1998) explores creative problem solving and presents a model that helps facilitators and team members choose appropriate techniques. McFadzean (1996a, 1996b) classifies creative problem solving (CPS) techniques into three categories: paradigm preserving, paradigm stretching, and paradigm breaking. Paradigm preserving techniques do not tend to change a participant's perspective. Paradigm stretching techniques encourage users to stretch the boundaries of the problem space. Paradigm breaking techniques allow participants to completely break down the boundaries of the problem space and to look at something entirely new.

In a virtual environment, three variables must also be considered when selecting a technique (Gascó-Hernández & Torres-Coronas, 2004): 1) the effectiveness of the method in finding innovative solutions, considering that quality solutions require the right balance between knowledge of the business issue and novelty (Kim, 1990); 2) the technological context or support system through which the technique can be implemented; and 3) the level of interaction that the technique requires. It is also important that the virtual facilitator has experience in running virtual creative sessions. Team members must also be taught about the dynamics of virtual interactions and about the use of technological tools, such as chats, e-mail, video conferencing, or interactive whiteboards.

Next, McFadzean's creativity continuum (1996a, 2000) will be used to summarize how virtual teams can choose among different techniques, which will be briefly described, to generate ideas. To make valuation accessible, the techniques will be classified according to the above three criteria. They will be rated as well (low, medium, and high). Finally, common technological tools by which each technique can be used will be shown.

It is a fact that there is a remaining need for in-depth research studies that help clarify which is the best creative problem-solving tool in terms of virtual team creative performance. Table 2 intends to be the basis to start evaluating the creativity continuum in a virtual context.

The use of these techniques will only be effective if the organization has a creative culture (McFadzean, 1998). Environmental factors that help managers to build a creative climate within virtual communities and creative problem-solving tools are two sides of the same coin.

FUTURE TRENDS

Virtual teams can use creativity in order to perform better. Nevertheless, there is a need to adapt those tools and techniques to a virtual environment. In this article, we have approached some of the issues that must be considered when studying the relationship between teams that work online and creativity. Nevertheless, several questions still remain unanswered and, in this sense, further research is required. In particular, three important issues need further development. First, the relationship between creativity and virtual team performance needs to be thoroughly explored. Successful studies will determine how structural and environmental factors influence team creativity. Second, although virtual teams are already using idea-generation techniques, their strengths and weaknesses need to be carefully and academically explored. Finally, it is also important to consider the effects of technology on both individual and team creativity. Technology has risks that can sometimes outweigh its benefits. When applying creativity techniques, people need to focus on the creative process, not on the technology being used. Technology must be easy to use, it must be effortless and unsophisticated¾the simpler the technology, the better.

CONCLUSION

The emergence of tools based on the new information and communication technologies is currently affecting team creative processes. Nowadays, achieving high levels of creative performance is still an unresolved problem within virtual teams. Only a few researchers have focused on how a virtual team can use creativity techniques to perform better or how to build a creative virtual environment to foster creativity. The critical issues discussed in this article summarize many challenges to implement creative

Table 2. Valuing the creativity continuum in a virtual context

PRESERVING PARADIGM TECHNIQUES	**STRETCHING PARADIGM TECHNIQUES**	**BREAKING PARADIGM TECHNIQUES**
• Problem boundaries: unchanged • Creative stimulation: low • Stimuli: related • Expression: verbal/written • Can be used by experienced and inexperienced groups	• Problem boundaries: stretched • Creative stimulation: medium • Stimuli: unrelated • Expression: verbal/written	• Problem boundaries: broken • Creative stimulation: high • Stimuli: unrelated • Expression: unlimited • Should only be used by experienced groups
TECHNIQUES WITHIN EACH GROUP		
BRAINSTORMING	**OBJECT STIMULATION**	**WISHFUL THINKING**
Generation of ideas without criticism	Group members generate ideas using objects unrelated to the problem.	Participants are asked to look at a perfect future, examine each fantasy statement, and look for ideas on how these ideas can be achieved.
Effectiveness: Medium	Effectiveness: Medium	Effectiveness: Medium

management within both virtual teams and organizations. With greater emphasis being placed on creative thinking and processes, team creative performance will increase day by day, allowing organizations to succeed and to become more innovative and adaptable.

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KEY TERMS

Autonomy and Freedom. Allowing individuals responsibility for initiating new ideas and making decisions; a sense of control over one's work.

Challenge. Work that is stimulating, engaging, and meaningful; a sense of having to work hard on challenging and important tasks.

Clear Direction. Goals that facilitate creativity are clear, negotiated, attainable, shared, and valued.

Converging Thinking Techniques: Tools used during the convergent phases of the CPS to improve the evaluation and selection of the most relevant ideas, thoughts, or data. Pluses, potentials, and concerns (PPC); highlighting; and the evaluation matrix are some of the most common converging thinking techniques.

Creative Performance: High level of capability in an idea or solution, applied to solve a problem in an imaginative way, resulting in effective action. Environmental factors such as autonomy and freedom, challenge, clear direction, diversity/flexibility/tension, support for creativity, trust, and participative safety directly affect the creative performance within work teams.

Creative Problem Solving (CPS): A systematic process model to solve problems and to harness creativity. Its six steps include objective-finding, data-finding, problem-finding, idea-finding, solution-finding, and acceptance-finding. Each step has a divergent and convergent phase. During the divergent phase, a free flow of ideas is elicited. Convergent phases involve the evaluation and selection of the ideas with the greatest potential or relevancy. The defer-judgment rule separates idea generation from idea evaluation.

Creativity: The production of something new or original that is useful; the act of creating recombining ideas or seeing new relationships among them. Creativity is usually defined in terms of either a process or a product and at times has also been defined in terms of a kind of personality or environmental press. These are four Ps of creativity: process, product, person, and press.

Divergent Thinking Techniques: Tools used during the divergent phases of the CPS to improve the generation of ideas, thoughts, or data without evaluation. These tools are classified according to their primary use of related or unrelated problem stimuli. Brainstorming, brainwriting, forced connections, analogies, and metaphors are some of the most used divergent thinking techniques.

Diversity/Flexibility/Tension. Diversity, both in terms of the work assignments offered and the people one interacts with, and a tolerance of differences. In order to be tolerant of differences, flexibility is needed. Both diversity and flexibility can lead to creative tension.

Support for Creativity. An organizational focus on support for or encouragement of creativity.

Trust and Participative Safety. Especially crucial for group creativity is trust and participative safety. The emphasis is on encouraging participation in a non-threatening, non-evaluative environment.

Virtual Team: A group of people who are geographically separated and who work across boundaries of space and time by utilizing computer-driven technologies such as desktop video conferencing, collaborative software, and Internet/intranet systems. How these teams interact defines them as "virtual."