



Creativity and the Practical Innovation Process, a Driver of Competitive Advantage

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Abstract:

The need for organisations to become more innovative in the way they develop products and services has never been more important. In competitive and challenging business environments the ability to find new products and better, quicker and smarter ways of working can make the difference between success and failure. Lying at the heart of the innovation process is creativity. Without creativity, innovation and entrepreneurship would not be possible. The problem is, creativity and the workplace often don't mix, so how do you develop an innovation process that truly harnesses and exploits creative thinking?

This article reviews the relationship between creativity and innovation. It includes practical behaviours and techniques which can support creativity in the workplace.

Keywords: Creativity, Innovation, Creativity techniques, Competitive advantage, Group exercise

1. Introduction and Objectives

As organisations adjust to ever challenging and turbulent environments and pressures, the need for innovation and creativity in the workplace is becoming increasingly more important and critical to long term success. Organisations are seeking new, smarter, quicker, cheaper and more effective ways of working, improved products, better services and enhanced experiences. Some are looking at the products, services and processes they already have and are asking how they can be improved. Others are looking for new openings, new features and new areas of competitive advantage.

All this takes creativity, innovation, risk-taking, fresh-thinking and empowerment – not traditional qualities associated with most large organisations. All too often, the larger the organisation the more likely that processes and behaviours have been established and entrenched over time, suppressing the diversity and culture needed to stimulate creativity. Many organisations find it hard to balance the need for consistent, well-established ways of working (good for efficient operation) with the principles of creativity (good for continuous improvement). Forward looking

organisations will always ensure that appropriate resources are available to build and maintain creativity skills (the business of tomorrow), whilst continuing to actively manage shorter term needs (the business of today).

This article explores creativity, its linkage with innovation, and how it might be stimulated in the work environment, particularly when generating ideas to solve business challenges or create new products or services.

The objectives of this article can be summarized as:

- A review of the importance of creativity to an organisation and its linkage with innovation
- Analysis of the potential drivers and blockers of creativity
- Overview of some simple behaviours and techniques which may be utilised to enhance creativity in the workplace

2. Understanding Creativity

Creativity is the first and most critical stage of the innovation process. When we think about creativity, we often imagine artists, musicians, actors, scientists and inventors. But creativity is in every one of us. It's in the way we communicate, the food we cook, the way we make choices, the way we live.

The words creativity and innovation are often used together, but they are not the same thing. Innovation starts with creative ideas but creativity only becomes innovation when those ideas become useful. So whilst creativity may add to the areas of innovation and entrepreneurship, its primary use is in idea generation (as illustrated in Figure 1).



Figure 1. The Primary Role of Creativity in the Innovation Process

Children are experts when it comes to creativity. That's because they are unhindered by conformity. But as we grow older, we're increasingly asked, and sometimes forced, to do things in certain ways. It may start with our parents, continue in school and get reinforced in the workplace. But creativity doesn't disappear with childhood. We can all be creative ... it's just that we often don't bring our creative skills to work. When we do, we can channel our creativity towards business challenges, problem solving and idea generation.

De Bono differentiated what he termed Idea Creativity and Artistic Creativity and focused his work on Idea Creativity and Lateral Thinking. Idea Creativity can be described as a skill that every one can learn, practice and use (De Bono, 1990 and 2008). His work supports the need for the use of tools and techniques to help people develop and fully utilise such skills in the workplace, as we shall explore later.

2.1 Definitions of Creativity

There is no universally accepted definition of creativity despite extensive publication and academic research over many years (Ackoff and Vergara, 1981, Cougar, 1990). Ackoff and Vergara (1981) believed creativity could generally be categorised into two broad categories:

- Origin Orientated - where creativity is seen to come from within the individual
- Process Orientated - or an information processing approach, where creativity is viewed as part of a thought process that can be improved by instruction and practice.

Alternatively, Amabile (1997) suggested creativity could be defined as:

"...the production of novel, appropriate ideas in any realm of human activity, from science, to the arts, to education, to business, to everyday life. The ideas must be novel – different from what's been done before – but they can't be simply bizarre; they must be appropriate to the problem or opportunity presented."

Amabile saw creativity as the first step in innovation which is the successful implementation of these novel, appropriate ideas. Many authors have used other terms to describe creativity which include 'productive thinking', 'divergent thinking', 'originality', 'imagination', 'bisociation' and 'lateral thinking'.

2.2 Creativity and the Brain

When children are being creative they feed the ultimate creative tool – the brain. This is why children are so good at being creative (witness the child who can discard the expensive gift in five minutes and spend the afternoon playing with the cardboard box it came in). Their brains are free of tradition, experience, fear, conformity and boundaries.

De Bono described the human brain as being designed to set up routine patterns and behaviours and to make sure that we don't deviate from them. This often means that we use judgement, which can prevent creativity. Creativity will be encouraged when we suspend, defer or delay judgement. His description of the brain as an active information handling system (De Bono, 1995) which changes its response to information over time explains why we sometimes overlook opportunities. The way we respond to information we receive is frequently shaped by our past experiences, determining how we perceive and act upon it. These natural processes can inhibit our creativity, particularly as we get older and begin to use judgement more.

The left side of the brain is the one we use the most. Typically, the left brain is far better at performing logical, analytical and mathematical tasks, particularly those involving linear and sequential processing. In contrast, the right brain is much better at non-verbal ideation, intuition, holistic and synthesizing activities, particularly those involving spatial, visual and simultaneous processing (Herrmann, 1981). Our creativity can be encouraged by accessing our right brain capacity more and trying to diminish the judgements being offered by our left brain.

3. Individual Creativity

Amabile (1997 & 1998) described a three component model of creativity within an individual (See Figure 2, below). The three key drivers were identified as:

- **Expertise** – this is about the individual's memory, experience and factual knowledge as well as their technical skill and talents
- **Motivation** – a passion from the individual to solve a problem or address an issue. Whilst extrinsic factors such as reward may help drive motivation, the intrinsic factors, such as interest or curiosity, are seen to be more conducive to creativity
- **Creative Thinking Skills** – a cognitive style favorable to taking new perspectives on problems, an application of techniques for the exploration of new cognitive pathways and a working style conducive to persistent energetic pursuit of one's work

Bringing these three components of creativity together enhances the ability of the individual to be creative. For instance, a subject matter expert with the motivation to come up with fresh ideas and the creative skills to develop those ideas is more likely to produce creative outputs than the individual lacking one or more of these components.

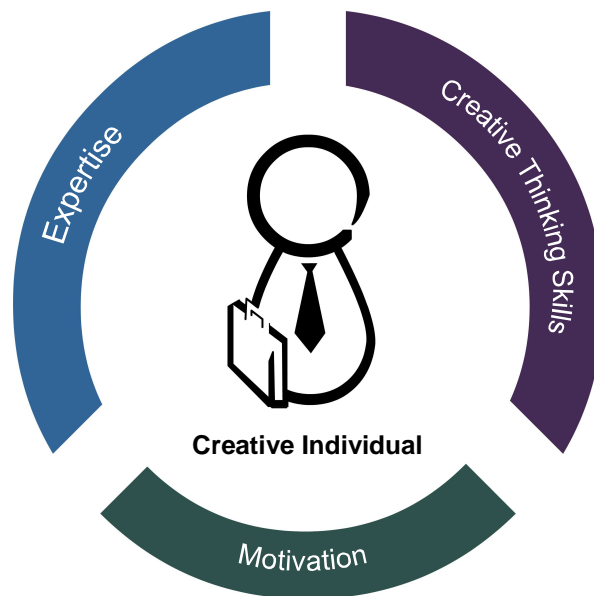


Figure 2. Three Components of Creativity in the Individual, Adapted from Amabile (1997 & 1998).

4. Corporate Creativity

In 2008 IBM interviewed more than 1,000 Chief Executive Officers (CEOs) and public sector leaders from across the world to get an opinion of the characteristics of the enterprise of the future (IBM, 2008). The survey indicated that organisations are experiencing an accelerating pace of change and that many are struggling to keep up. Eight out of ten CEOs see significant

change ahead, and yet the gap between expected change and the ability to manage it has tripled since the last survey was conducted by IBM in 2006.

Ackoff and Vergara (1981) rightly conclude that an accelerating pace of change leads to a corresponding rate of obsolescence. The result being that an increasing number of the challenges that we face today have few or no precedents. This in turn decreases the number of opportunities to solve them effectively in familiar ways, requiring the application of more novel and creative approaches.

Boston Consulting Group have found a clear correlation with investment in innovation and stock market performance. A study of the most innovative companies (as identified by some 3,000 global executives) versus those of their industry peers for both three and ten year periods was performed. The innovative companies outperformed their peers by 0.44%, as measured by total shareholder return, over the ten year period (Andrew *et al*, 2008).

Creativity is important not just in terms of developing new products and services, but in addressing business challenges, solving problems, removing barriers and finding new ways of doing things. Whilst creativity techniques do not replace the traditional management judgements made in decision making, the application of creativity techniques do have the potential to improve the quality and quantity of ideas that are reviewed before a particular course of action is determined (Summers and White, 1976). This diversity of thought can have significant impact through the subsequent innovation and entrepreneurial stages of development of the idea.

Many managers underestimate the creative potential of their teams (Glassman, 1989) and they themselves can be responsible for establishing the culture and norms which can encourage or suppress creative behaviours. The factors affecting creativity in the workplace have been studied by Amabile (Amabile, *et al*, 2005)

As we've seen, creativity and the workplace do not always mix. Many organisations encourage (and insist upon) their staff following set procedures, processes and ways of working. Corporate hierarchies and cultures can often suppress creativity too. Individuals are not always encouraged and supported to come up with ideas and those who do often get frustrated by lack of action or are demotivated by cynicism and negativity.

Robinson and Stern (1998) suggested there were six essential elements necessary in promoting consistent corporate creativity:

- **Alignment** – employees must understand the organisation's goals so that their interests and actions are directed toward those goals and interests. The employees will then recognise and respond positively to a potentially useful idea, reducing the chances of resistance and accelerating its adoption
- **Self-Initiated Activity** – promoting or supporting employees to pursue creative solutions to problems. This results in self-motivation on the part of the employee and increasing the probability of success
- **Unofficial Activity** – the ability to nurture a fledgling idea to a sufficient level to overcome internal resistance and demonstrate its viability

- **Serendipity** – finding things when they are not sought! Accidental discoveries can occur particularly when in the presence of those individuals or groups with a keen insight
- **Diverse Stimuli** – these are often some form of communication such as a meeting, conference or discussion which provides some fresh insight into something which a person has set out to do
- **Within Company Communication** – communications, particularly within large companies, can be limited, often isolating pockets of creativity or skills. Connecting people and sharing information can facilitate creativity.

Many of the organisations perceived as ‘the world’s leading innovators’ demonstrate these elements through their cultures, behaviours and business practices. In practical terms, many of the most innovative companies have many common attributes:

- They credit their success to hiring and developing the right people – self motivated, professional, challenging people who passionately care about what they do
- They give their people the freedom to enjoy what they do best – for instance, Google and 3M encourage their staff to pursue pet projects, even if outside their normal responsibilities
- They have a compelling vision that is meaningful to everyone
- They have a clear sense of customer and product focus in all they do - Toyota’s approach to creativity is captured in one word “oobeya” - Japanese for “big open office”. Everyone is encouraged to network and share ideas. To change the way they create a product, they change when, how and with whom they share information
- They have leaders that show the way and who people will follow - Google directors hold regular ‘open office hours’, where employees can talk through their ideas
- They offer their people a framework to be creative within (a school yard) - Genentech uses minimal guidelines and procedures to give their employees freedom, within company goals, to apply their skills, knowledge and initiative
- They move fast when they see an idea that looks promising
- They know that some things will fail, but they are prepared to take a risk
- They recognise the power of communication and engagement – IBM shaped its corporate culture via a global online forum on their Intranet. Online brainstorming is now regularly used internally and externally. Microsoft holds “Technology Fair” events to give their product

teams a sense of what's happening on the research side. Through this collaborative culture, connections are made which often result in new products or features.

Amabile *et al.*, (1996) described the use of an instrument called KEYS: Assessing the Climate for Creativity, to assess the work environment for stimulants (in green, Figure 3) and obstacles (in red, Figure 3) to creativity (formerly known as the Work Environment Inventory). The factors assessed are shown in Figure 3 below:

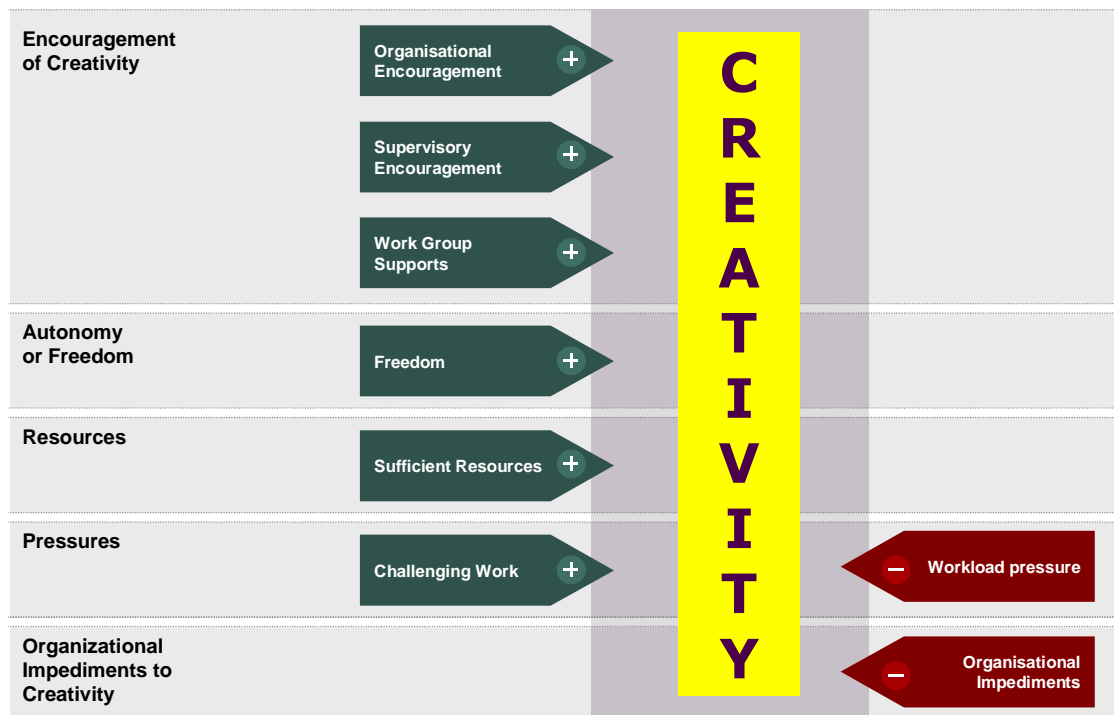


Figure 3. Assessment of Creativity in the Work Environment, Adapted from Amabile *et al.*, (1996).

This assessment shows how the work environment does make a difference to the level of creativity in an organisation. The key message for managers is that they have a key part to play in establishing a creative environment beyond simply the recruitment of creative individuals.

Particularly important is the role of leadership in establishing and maintaining a culture which supports creativity and encourages the processes and practices that encourage and nurture it. A number of companies are actively exploring and utilising Open Innovation techniques to enhance the number of ideas generated in addition to collecting diverse views and opinions in solving real business challenges (Reid, 2009). Such activities frequently necessitate leadership support and appropriate resources to filter and act upon suggestions and feedback.

5. Building Creative Capability

So how do you build creative capability? The key, according to De Bono (1995), lies in employing techniques that cut across the normal behaviour of the brain. These techniques can be learned, practiced and used deliberately. Creative thinking skills can be developed by individuals and encouraged by others (eg. managers and leaders).

A number of methods, tools and frameworks have been developed to build creativity and enhance creative techniques and behaviours. Several of these are described below.

Brainstorming

This technique was developed in the 1940s by advertising executive Alex Osborn. Many variations of the technique (Rickards, 1999) have been developed over time, including nominal brainstorming (which is carried out individually) and electronic brainstorming (jams). Nominal brainstorming has been shown to generate more ideas but without building on the thoughts of others which is a very positive attribute of the technique.

Participants in an effective brainstorm are asked to suspend judgement on the ideas being presented. They are encouraged to understand and nurture them, building on the suggestions of others. Evaluation should be avoided at the session and handled separately to maximise the number and quality of ideas generated.

SCAMPER

This technique is useful when facing a creative block, allowing you to manipulate data and ideas to generate new ideas. Osborne suggested the original questions and Eberle (1997) reorganized them into a mnemonic:

- S** – Substitute - materials, people or components
- C** – Combine - mix, with other assemblies or services
- A** – Adapt – alter, change, use part of something else
- M** – Modify – increase or reduce in scale, change shape, modify attributes
- P** – Put – to another use
- E** – Eliminate – remove elements, simplify, reduce to core functionality
- R** – Reverse – turn inside out or upside down, also use reversal

Random Words

This technique described by De Bono (1995, 2008) is one of the simplest techniques. He suggests when you have a need for a new idea you simply introduce a random word. The random word is unconnected to any subject and so any word would work for any subject. In a passive information system, this would make no sense. However, in an active patterning system, such as the human brain, the random word provides a new entry point and we increase the chance of using patterns we would never have used if we had worked outward from the subject area.

Systematic Inventive Thinking (SIT)

This novel approach to idea creation and innovation has been developed from earlier work on TRIZ (a Russian theory for inventive problem solving) and subsequently refined by wide spread use across a number of companies and sectors. The systematic process is based on five creativity patterns or 'templates for innovation' (Goldenberg *et al.*, 2003, Stern *et al.*, 2006):

- **Subtraction** – the taking away of a component or function from a product to stimulate new ideas
- **Multiplication** – adding existing elements of the product but changing the role of the copied elements
- **Division** – breaking down an existing product or function into component parts
- **Task Unification** – making one component serve two or more functions
- **Attribute Dependence Change** – looking for dependencies between elements or attributes of a product and its environment.

The 4Rs

Allan *et al.*, (2002) recommend the use of four basic techniques to challenge thinking, see different perspectives and stimulate ideation sessions. These techniques operate on the simple premise that the mind is more productive when being asked to deal with new or unusual situations and they are particularly useful when considering specific business challenges. They give teams the chance to pause, gather diverse views and then move forward.

The techniques are sometimes referred to as the 4R's and are detailed as follows:

- **Random Links**
To use this technique you select a random stimulus which is not connected with the business challenge. The stimulus provides surprise and freshness. You must then find a connection between the stimulus and the challenge. The harder this process is the more likely the link is to be unique.
- **Re-expression**
This is about looking at a challenge or problem from different perspectives and considering if the insights gained offer an alternative approach. Even using a new way to describe an existing issue might lead to different thoughts and solutions, not previously considered.
- **Revolution**
Identify the constraints or rules that operate in a given setting and then take each one in turn and ask yourself or others what would happen if you broke it.
- **Related Worlds**
Ask the group, or yourself, who else has faced a challenge similar to the one you have and review how they have solved it. Consider how different industries have tackled the same problem.

The use of techniques such as those described above help to provide the brain with a new starting point for a challenge, enabling it to use a different route or pattern to solve or analyze the challenge.

6. Creative Characteristics in the Individual

Tools and techniques such as those described in the previous section are helpful in developing creativity in individuals and groups. However, creativity also depends on personal traits, many of which can be learned and practiced over time. Mitch Ditkoff (2004), President of Idea Champions identifies these as:

- **Challenges status quo**

This is about being dissatisfied with the current reality. Creative people question authority and routine and they confront assumptions

- **Curious**

They actively explore their environment, investigate new possibilities and honor their sense of awe and wonder

- **Self-motivated**

They respond to deep inner needs. They proactively initiate new projects and are intrinsically rewarded for efforts

- **Visionary**

They are highly imaginative and maintain a future orientation. They tend to think in mental pictures

- **Entertains the fantastic**

They conjure outrageous scenarios, see possibilities which are seemingly impossible and honor their dreams

- **Takes risk**

They go beyond their comfort zone. They are experimental and non conforming, courageously willing to 'fail' (but they learn from feedback)

- **Peripatetic**

They change their work environments as needed. They wander, walk or travel to inspire fresh thinking and are given to movement and interaction

- **Playful and humorous**

They appreciate incongruities and surprise. They are able to appear foolish and childlike. They laugh easily and often.

- **Self accepting**

They withhold compulsive criticism of their own ideas. They understand “perfection is the enemy of the good” and they are unattached to looking good in the eyes of others.

- **Makes new connections**

They see relationships between seemingly disconnected elements. They synthesize new combinations and distill odd ideas down to their underlying principles

- **Reflective**

They incubate on problems and challenges and seek out states of immersion. They are prone to ponder, muse and contemplate

- **Recognizes patterns**

They are perceptive and discriminating. They see (and challenge) the Big Picture

- **Tolerates ambiguity**

They are comfortable with chaos, able to entertain paradox and they do not settle for the first “right idea”

- **Committed to learning**

They continually seek knowledge, synthesize new input quickly and balance information gathering and action

- **Balances intuition and analysis**

They alternate between divergent and convergent thinking. They entertain hunches before analyzing them. Trust their gut and use their head

- **Situationally collaborative**

They balance rugged individualism with political savvy. They are open to coaching and input, rallying support as needed

- **Formally articulate**

They communicate ideas effectively and can translate abstract concepts into meaningful language. They create prototypes with ease

- **Resilient**

They bounce back from disappointment, learn quickly from feedback and are willing to “try, try again”

- **Persevering**

They are hardworking and persistent. They champion new ideas with tenacity and are committed to follow through to bottom line results

- **Flexible / adaptive**

They are open to serendipity and change, able to adjust their game plan as needed. They entertain multiple ideas and solutions.

7. Recommendations

Creativity is clearly an essential driver of value for many organisations and should be more widely recognised as a skill which can be nurtured with the right interventions at the individual, team and corporate level. Achieving the appropriate conditions to boost creativity requires a multi factorial approach and interventions across a number of levels within an organisation. Sustainable creativity requires effort to build and reinforce capability with allocation of resources and support from senior management.

A number of behaviours and techniques have been presented which may be used by individuals or groups to enhance their creative thinking skills and subsequent ability to innovate. Leaders and managers should be familiar with the deployment of such methods and should actively seek to employ and potentially embed these in their working environment if appropriate business value can be found from their use. The selection of a particular technique may depend on the situation, availability of time and cultural fit. Employees should be empowered to explore the methods described with real business challenges and be comfortable with challenging their own perceptions and methodologies.

Leaders, managers and individuals must consider the importance of these skills in their business area and consider how they may be nurtured for the creation of business value and lasting competitive advantage. The implementation of these tools and behaviours may well facilitate the creation of new ideas, processes and services which have a lasting impact on an organisation and its longer term competitiveness.

8. Disclaimer

The views contained within this article are those of the authors, and may not represent the views or policies of any institution, company or organisation associated to the authors.

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