



**CREATIVITY INFLUENCING INNOVATION**

**ASISTENTE DE INVESTIGACIÓN**

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**BOGOTÁ, COLOMBIA**

**2020**



**Universidad del Rosario**

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## **Creativity influencing innovation**

### **Introduction**

Throughout history, administrators, psychologists and many other professionals in different areas of expertise have been addressing the meaning of creativity, its characteristics and different types. The concept of being creative used to be strictly related to artistic performances since scientists and doctors discovered creativity developed more evidently in the right part of the brain, thus turning musicians, painters into the focal point of creative thinking.

However, now a day people have gathered enough data to understand the fact that creativity is not strictly and only attached to career options in humanities. Creativity is seen in every new product, writing or idea created. It is also a character trait that can be developed and improved over the years with the accurate educational skills to enhance creative thinking.

Creativity not only helps develop new things and improve old ones, but it also contributes to create an innovative personality where the individual implements all the ideas generated by the creative thinking process. The following article will describe opinions from different authors about how creativity is developed and the relationship it has with innovative skills.

The following paper explores different perspectives that help shape and understand the concept of creativity over time and the relationship it has with education and innovative skills a person develops over the years.

**Key words:** creativity, innovation, creative stimuli, creative process, creative thinking

*“Creativity is defined as the tendency to generate or recognize ideas, alternatives or possibilities that may be useful in solving problems, communicating with others and entertaining ourselves and others.” (Robert Franken, 1994)*

Creativity requires a deeper understanding of the situation, thinking outside the box to create something new whether it refers to problem solving, or something done in a different way, by developing the ability to understand the problem or system and their dynamics so that once people work on it, they’ll have a better and clearer idea of what could be done.

According to McFadzean (1998) there are 2 creativity techniques, (1) Analytical refers to the use of a structure to generate a logical pattern thought. For example, force-field analysis and progressive abstraction. (2) Intuitive technique allows the participant to make giant leaps, to observe images or symbols to arrive at a solution. For example, wishful thinking, metaphors. In the paper written by Barnard and Herbst in 2018, they stated 3 critical aspects of creativity developed by Swann and Birke in 2005:

*Bisociation* brings together different perspectives on the same issue. It consists of perceiving an idea or situation in two self-consistent but incompatible frames of reference.

*Autonomy* refers to the idea that the creative person needs to establish his own intellectual and creative independence

With *incubation*, creativity does not take the form of sudden flashes of inspiration out of the blue. Instead, it’s the culmination of long periods of sustained thought and effort

The creative behavior combines the four psychological processes: deliberate cognitive, deliberate emotional, spontaneous cognitive, spontaneous emotional (López-González, Limb and Abraham 2012 in Barnard and Herbst 2018). Various examples of creative thinkers through history point to the fact that Moses had to develop creative skills to figure out how to take through the desert 500 thousand Israelites, or when Plato referred to inspiration as generating

alternatives. The psychological processes are linked with the chronological flow of creativity suggested by Graham Wallas, which starts with preparation, incubation, illumination and end with verification (Antonites, 2003).

The four psychological processes mentioned before can be related to the 4P model of creativity developed by Couger in 1995. First the Creative Person, who has intelligence, cognitive style and personality. The interest a person shows over a specific matter added with the 3 factors mentioned before can enhance creative thinking. Secondly, the Process of creativity starting with a problem recognition, the solving stage and the solution phase.

These steps are also stated by Graham Wallas and mentioned earlier in this document. The third P stands for Press, which describes the context and place and where the creativity takes place. They include social, economic, physical and cultural environment. The fourth P, Product, represents the result or outcome seen as ideas of the creative thinking process (Antonites, 2003).

The product of creativity can be transformed into tangible results that serve as a business model later on, or as an innovation in any area of expertise that the person wants to focus on. The idea to start something new requires colorful thinking and viewing things in a different perspective. According to Barnard and Herbst, the process of being creative requires free thinking, lateral thinking, pattern making and dot connecting. These aspects help develop an idea one might have regarding a problem, system or game pending to solve in a specific period of time.

“The innovator is always looking for new ideas” (Barnard and Herbst 2018) When the innovator looks for new ideas, even though it’s related to creativity, it doesn’t mean the ideas can’t be developed in order and following constructive thought, synthesis and stimulation by being proactive and creating connections that lead to inspiration to recognize opportunities.

In order for creativity to influence the innovator, there are certain traits the person has to have the correct attitude because it determines how much the person is learning from experience to develop creative attributes. The idea is to avoid boundaries at all costs because a closed-minded person can fully reach his or her potential and at the same time deal with ambiguity and curiosity.

The patterns that reveal someone's creativity are characterized by the way the person talks, walks, dresses and uses hand gestures. Creativity is viewed by people as a skill or as an intuitive factor. For it to be a skill, it has to be properly learned through education. A study carried out by Lisa Gundry, Laurel Ofstein and Jill Kickul in 2014 investigates the impact of creativity skills acquired by 137 students of an MBA program and how it impacts innovative behavior.

The principal attribute given to creativity is that it allows innovators to discover and exploit opportunities that enable firms to be more competitive (Gundry, Ofstein, Kickul, 2014). The creative skill can be acquired in a course dedicated to developing entrepreneurial behavior among participants.

Divergence and convergence are described as two behaviors that shape creativity. Divergence involves forming and communicating connections to start the thinking process of many possibilities and alternatives from different perspectives, while convergence judges and decides among the ideas suggested, it refines ideas to be selected. (Isaksen, Dorval, Treffinger, 2000 in Gundry, Ofstein, Kickul, 2014). The innovative behavior appears when students are taught appropriate tools and methods to generate ideas. Those methods can be systematic or based on creative thinking techniques.

Among the creative techniques, there is a creative tool that combines and shapes old ideas, brainstorming. Also, the SCAMPER technique, which is a set of questions that stimulate creativity: "Substitute something? Combine it with something else? Adapted it from somewhere

else? Modified it? Put it to other uses? Eliminated something from it? Reversed or Rearranged it? (Michalko, 2006 in Gundry, Ofstein, Kickul, 2014)

Used in a classroom, these techniques can help innovators generate new ideas. Mind-mapping brought to reality by Tony Buzan allows the innovator to explore ideas and record them. Challenging assumptions technique, where innovators examine assumptions to develop solution and evaluating creative ideas to identify the possibilities of problem-solving. (Gundry, Ofstein, Kickul, 2014).

The brain is a key contributor to creativity and by exercising it becomes conditioned and shaped to endure better creative thinking, encourage self-confidence and practice constantly. Opening the doors to this type of behavior and environment helps the person and even the community focus, control and use their creative side and develop effective ideas.

However, the human being has always been identified as a natural receptor of different stimuli. According to Barnard and Herbst, in order to achieve a creative state of mind, there are a number of stimulants that involve seeking to understand things, collecting knowledge, mental stimulation like music, emotions, experiences, visualizing, feeling of desperation, being passionate about something, enjoying the challenge.

Another aspect that drives creativity is the desire to find solutions by problem solving mechanisms. When facing a problem, the person has the desire to find a solution. And the thinking process to solve problems requires concentration, no interruptions and as less stress as possible, even though some people are faced with a situation to work under pressure and switch to survival mode. When the brain is constantly put up to the task of performing creative thinking, creativity can become systematic like a routine in the right environment. However, the fact that creativity can be practiced improving, it doesn't mean the routine becomes an ordinary habit of mechanizing thoughts and only doing what they are told to do.

Another key stimulant is the interaction with the right people to boost creativity. Freedom, spontaneity, passion and the ability to exchange and integrate ideas and knowledge. According to Barnard and Herbst 2018, inputs and events identified and gathered from the changing environment can trigger the sub-conscious and intuition of the innovator.

A deeper approach into creative stimuli in the brain relays on the fact that generating creative ideas requires connecting unrelated concepts by generating original associations and bi associations. This idea of bringing conceptual expansion and conceptual combination into the discussion of creative thinking was put together in the work of Thomas Ward and other authors, called *Creative Thought: an investigation of conceptual structures and processes* in 1997.

Initially the idea is to generate original associations to one concept, hence the first concept has to be first studied to evaluate the possible semantic relationship it might develop to the other concept. Usually, companies tend to evaluate the creativity of a person through various activities, but they involve a creative skill that has to be shown in the development of the activity. For example, an activity that combines two unrelated words like “pants” and “yogurt” in order to develop the creative potential in the activity of selling something in order to evaluate how innovative and creative a person can be for a certain job position. Benedek et al. 2012 and Nusbaum et al. 2017 in Benedek et al. 2020 suggest that unrelated concepts can be more related because they are very sensitive different types of links.

In the study carried out by Benedek et al. 2020, investigating the cognitive and neural correlated of association and bi-association processes, they found that

“explicit instructions to find original associations consistently increased response originality, indicating that people can effectively tune response behavior towards creativity (Acar et al., 2020; Said-Metwaly et al., 2020; Wein-berger et al., 2016). Together, these findings corroborate the notion that basic association processes capture valid elementary cognitive aspects of creative cognition” (Benedek et al. 2020).



Even though the process of bi-association of concepts intends to empower creativity, there is not a formally structured, straight-forward process to creativity, according to Barnard and Herbst 2018. For Barnard and Herbst, the thinking process of a creative innovator becomes a progressive routine where the person first contextualizes the problem and works to define the solution. In order to continue the process, the innovator needs tools, models to guide him through the possible solutions. Since he might have some experience prior to the situation, he'll use what he's learned before to shape the solution ideas. In order to involve the environment surrounding him, the next step involves speaking to people close to the situation and to his network as well as evaluating the surroundings of said problem.

The association of concepts as well as the ideas and thoughts occur in the sub-conscious (Barnard and Herbst, 2018). With original thought and hard work comes creativity. However, the creative process is not a fast one. The problem evolves as well as the solution to it, the initial train of thought the innovator has might change a lot through time. The innovator starts associating concepts to build the idea, learn from it, and then proceed to create a possible solution, also working towards market feedback.

The feedback given by people constitutes the process of collecting information, and it is a source of knowledge vital for the innovator. Other sources involve reading, internet research, people, friends, experts, customers (Barnard and Herbst, 2018). Innovators need to have perspective, but sometimes they might get stuck with the problem and the solution. To overcome this situation, they can use metaphors, rethink the problem, ask different questions, use triggers to change the perspective, changing the context and avoiding the preconceptions to have a clear view of the matter. Instead of over-engaging the mind on a problem, the idea is to switch to intuition to discover new ways of solving the problem and generating ideas.

“Creativity can not be defined, but only unleashed” (Barnard and Herbst, 2018). According to these authors, when solving a problem, the process of defining it should not be

too explicit because the direction to the solution might get slightly lost in time. To solve the problem, innovators can work in teams or choose to work on their own. Working in teams is another key factor that can enhance the creative side of the team members.

Generating new ideas from the perspective of others can trigger new solution proposals. Groups permit out-of-the-box thinking, freedom, questions, divergent thinking. However, the creation of teams is not an easy task because the innovator can not be distracted or confused. Therefore, team members have to be carefully chosen to bring motivation and inspiration to the idea creation process.

There are a number of factors that can demonstrate a person's level of creativity, including how intuitive they are, the amount of foresight, proactivity, initiative, the openness to suggestion, willingness to explore, level of thinking, behavior, cope with ambiguity and level of originality. And these qualities can be developed through practice and with the help of stimulants that can trigger an impact in the sub-conscious and the intuition to enhance creative thinking and ultimately guide the innovator towards a solution by understanding the problem as deeply as possible (Barnard and Herbst, 2018).

Other authors place the concept of innovation in between creativity and opportunity identification, and Gilmartin in 1999 identifies creativity as the foundation for innovative behavior (Antonites, A and van Vuuren, 2005). Especially these terms put together help build entrepreneurial skills since the entrepreneur is expected to design new ideas and implement them or turn them into tangible actions that generate better outcomes by finding new opportunities.

The CIO training suggests that the educational training approach should be addressed from the enterprising point of view. This model was designed by Antonites and van Vuuren in 2005, they developed the CIO model after they found there was no concrete information that integrated the three concepts in a professional level. In their statistical experiment, they found

that a demographic significance explains the difference between the groups who received the CIO training specifically in matters related to entrepreneurial skills.

The creative process results in the development of ideas to find new opportunities and contribute to the improvement of innovative skills. Creativity can be a character trait that people are more susceptible to improve over the years or it can be a skill that an individual can learn through proper creative thinking training programs that cultivate creative abilities in a classroom to boost innovative personalities in the future.

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