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## **Applying the Creativity in Order to Generate Innovation Projects: the Practical Case Study of a Didactic Strategy**

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### **ABSTRACT**

A current challenge in teaching practice is to transform classrooms into laboratories to exchange experiences in courses whose goal is to enhance the professional skills in a practical and meaningful way. The search for improvement demonstrates that, increasingly, professionals become aware that organizations coexist in highly competitive environments, seeking to conquer more markets based on sustainable competitive advantages demanding fast responses of its employees. Considering that the process of creativity can be stimulated through the establishment of a suitable environment, this study aims to discuss the application of a didactic strategy developed for this purpose. Using the single case study methodology, it was used the technique of unstructured observation (informal or single) to carry out the collection and the recording of events that occurred during the strategy application. It discusses elements such as identifying opportunities, creativity, innovation and entrepreneurship, seeking their relationships to understand how it is possible to motivate the generation of proposals for innovative projects in educational environments. As a result, it is presented the perceptions of teachers on the didactic strategy applied, emphasizing that a suitable environment for the development of ideas encourages the student to propose solutions for the improbabilities, creating innovative alternatives to the identified needs.

**KEY-WORDS:** Innovation. Didactic Strategy. Creativity. Entrepreneurship.

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## **Aplicação da Criatividade para Gerar Projetos de Inovação: O Caso Prático de uma Estratégia Didática**

### **RESUMO**

Um desafio atual na prática docente está em transformar salas de aula em laboratórios para troca de experiências em cursos cujo objetivo é aprimorar as habilidades profissionais de maneira prática e significativa. A busca por aperfeiçoamento demonstra que, cada vez mais, os profissionais tomam consciência de que as organizações coexistem em ambientes extremamente competitivos, buscando conquistar mais mercados a partir de vantagens competitivas sustentáveis, exigindo respostas rápidas de seus colaboradores. Considerando que o processo de criatividade pode ser estimulado pela criação de um ambiente propício, neste estudo visa-se discutir a aplicação de uma estratégia didática desenvolvida para esse fim. Utilizando a metodologia do estudo de caso único, empregou-se a técnica da observação não estruturada (informal ou simples) para realizar o recolhimento e o registro dos fatos ocorridos durante a aplicação da estratégia. Discutem-se elementos como identificação de oportunidades, criatividade, inovação e empreendedorismo, buscando sua inter-relação para compreender como é possível motivar a geração de propostas de projetos inovadores em ambientes de ensino. Como resultado, apresentam-se as percepções do professor sobre a estratégia didática aplicada, enfatizando que um ambiente propício ao desenvolvimento de ideias estimula o aluno a propor soluções às improbabilidades, criando alternativas inovadoras para as necessidades identificadas.

**PALAVRAS-CHAVE:** Inovação. Estratégia Didática. Criatividade. Empreendedorismo.

## 1 INTRODUCTION

The advancement of competitiveness, worldwide, has caused the company to be increasingly worried with the search for new market opportunities. Organizations coexist in extremely competitive environments and are constantly seeking to conquer a growing number of markets based on sustainable competitive advantages (Fernandes, 2012). On the other hand, more and more professionals are becoming aware of this new scenario and have been looking for upgrading their educational background (*lato sensu* courses and MBAs – *Master of Business Administration*) that can provide them with capabilities so that they are better prepared for this new reality. The most common grounds which justify the choice for this type of capacity building are: expansion of job opportunities, the desire for change in professional profile, obtaining business overall knowledge, stimulus to intellectual experience and increase in gains or self confidence in the execution of their work (Frezatti & Kassai, 2003).

Accordingly, identifying opportunities appears as a relevant factor not only for organizations, having in view that they are in continuous process of innovation, but also for their professionals who are in continuous improvement of their functions, considering their professional weaknesses and uncertainties facing the market diverse transformations.

There are still those people who seek to develop their skills in order to apply them in their own businesses, becoming their own bosses. This is in accordance with Stevenson and Gumper (1985), who emphasize that identifying and selecting the best opportunities for new businesses are among the most important skills for a successful entrepreneur.

The opportunities are, in general, sought by creative individuals with the ability and opportunity to generate innovations. Creativity, in turn, is a human being characteristic which is able to differ them from other living creatures on the Earth, as creativity enables them to shape the world around them.

For Kotler, Kartajaya and Setiawan (2010), creative people have always been trying to improve themselves and the world around them. With the right incentives, creativity can afford the break of paradigms and the generation of new ideas (Gill & Fields, 2012). Following this line of thought, reflection proposed in this paper aims to answer the following research question: How to motivate proposals generation of innovative projects in an educational environment?

Such a research question becomes relevant if it is considered that creativity has been pointed as the survival skill for the coming decades, due to the uncertainty about the future, due to the characteristics of the moment in the history we are living, marked by deep, intense and fast changes and due to the new needs and problems that arise every time, demanding for creative solutions (Alencar, 1995).

Understanding innovation as the application of creativity (thinking about new things) in the invention (the action) that culminates in innovation (make the product commercially viable), in this article, the aim is to present a didactic strategy implemented in a University's MBA course of Vale do Itajaí, which seeks to encourage the creation of proposals for innovation projects in the classroom by establishing a suitable environment to stimulate ideas.

It is also presented a literature review with respect to concepts such as identifying opportunities, creativity, innovation and entrepreneurship, which are directly related to the research question. In the end, the teacher's perceptions are presented when applying the didactic strategy, reinforcing the result of this investigation.

## 2 THEORETICAL FRAMEWORK

### 2.1 OPPORTUNITIES IDENTIFICATION

The advancement of competitiveness, worldwide, has caused the company to be increasingly worried with the search for new market opportunities. The word opportunity is defined in the dictionary as the quality of being timely for something, a favorable occasion, appropriate to enable or motivate something, or also a convenience for something (Ferreira, 1988). To Holmén, Magnusson and McKelvey (2007), it is a concept widely used in several areas, which, although it has yet vague and imprecise definition, somehow, it is related to the choice that the authors make towards innovation. Thus, it will be seen the definition of the word '*opportunity*' according to some authors' view in order to situate the understanding of the issue.

An opportunity can be a chance to meet a need, an interest or a market desire through the creative combination of resources to deliver value (Schumpeter, 1934; Kirzner, 1973; Casson, 1982 cited by Ardichvili, Cardoso & Ray, 2003). The opportunities involve several phenomena that start in a basic way or without any specific way, developing them more accurately over the time.

The market opportunities can be understood as situations in which new goods, services, raw materials and organizational methods can be introduced and sold, generating higher profits than the production costs (Schumpeter, 1934; Casson, 1982 cited by Alsos & Kaikkonen, 2004). In the definition of Koen et al. (2001) and Koen et al. (2002) it is possible to notice a strong connotation about the prediction of opportunities that may arise in the future, as they refer to them as being a business or a technological gap that a company or individual realizes that exists between the current (present) and an envisioned future in order to capture

competitive advantage, to respond to a threat, to solve a problem or to mitigate a difficulty.

Holmén et al. (2007), in turn, support the concept that the opportunity is the probability of verifying an intrinsic potential economic value in a new arrangement of resources and market needs arising from changes in the basis of scientific and technological knowledge of new consumption traditions, consumer preferences or inter-relationship among economic players.

Lee and Venkataraman (2006), cited by Fernandes (2012), argue that the opportunity identification can be understood as a chance for an individual (or a team) to provide some new value to the society, often introducing innovative, modern and original products or services, through a new company. These opportunities outweigh the possibility for not only economic gain but also for any financial loss.

Bautzer (2009) states that opportunities do not appear casually, but as a concrete result of the knowledge flow in organizations, markets or segments. When referring to the subject, Kotler (1999) behaves more generally, saying that for a need there will always be an opportunity.

Shane and Venkataraman (2000) consider the opportunity (identification, assessment and exploration) as a fundamental attribute of entrepreneurship. So that there is entrepreneurship, it is first necessary to have the entrepreneurial opportunity, in other words, situations where new goods, services, raw material and organizational methods can be introduced and sold at a better cost of production.

It is interesting to notice that, although there are many definitions for the term opportunity, most of them can be summarized in three key features: the potential economic value, the novelty (in other words, any product, service or technology no yet existent) and the opportunity accomplishment (for example, the acceptability of the new product or service by the society), which may represent the only one expression of a need, a desire or a uniqueness. The opportunities are, in general, sought by creative individuals with the ability and opportunity to generate innovations.

## 2.2 CREATIVITY

The human brain is the connection between two minds. On the one hand, the left hemisphere, which has logical and rational attributes, thinks better individually, creates many ideas, look at the parts (disregards the set as a whole), it also reasons in a sequential, analytical and objective manner; it is capable of performing complex calculations and plans. On the other hand, in the right hemisphere, there is the sensitive emotional and

visionary side, who thinks better in groups, creates daring ideas, presents holistic view (consider the set as a whole), it is intuitive, has power of synthesis, is subjective and looks at the set as a whole (not the parts). In a creative society, individuals use the right side of the brain much more than the left one, working in creative sectors such as science, art and professional services, argue Kotler et al. (2010), suggesting that the main driver factor of this is the evolution of technology. Creative individuals are influenced by the new wave of technology, they are innovative people who create and use these new technologies in their ideas, in other words, in the perceived opportunities.

Kotler et al. (2010) also cite authors like Richard Florida and Prahalad, Hart and Christensen, who discuss creativity at a high level in European countries according to their technological development, as well as state that disruptive innovations usually occur between low-income markets, countries where the need appears when a problem needs to be solved.

Creativity is a human being characteristic which is capable to make human beings different from other living creatures on Earth, because creativity enables human beings to shape the world around them. Creative people have always been trying to improve themselves and the world around them (Kotler et al., 2010).

According to Gonçalves and Campos (2012), creativity is the human competence that, with the right stimuli, allows the breaking of paradigms and the generation of new ideas.

To Bessant and Tidd (2007), creativity is the creation and the communication of new connections that allow the human being to think of several possibilities, to carry out different experiments and use different views; to imagine new and unusual possibilities, which lead him to identify and select alternatives that can result in something valuable to the individual and the group, to the organization and to the society.

When referring to such a subject, Audy and Morosini (2006) argue that creativity is the genesis of the change, of the differentiation and of the innovation as they are related not only with thought (origin of ideas, a new insight), but also with action (to produce something), that is, to make things happen.

For Alencar (1996), creativity is defined as the process that results in the conception of a new product (good or service), accepted as beneficial, satisfactory and/or of value by a group of people at some point.

The challenge is to know how the creative minds work and how organizations can create structures that maximize the results of this creative potential, namely the generation of innovations.

## 2.3 INOVATION

Identification of business opportunities is positively related to the innovation capacity. For Holmén et al. (2007), with their concept more focused on the entrepreneurship and on the vision of the economy, innovative opportunity is the possibility of carrying out an economic potential with value inherent to a new combination of resources and to the market needs, emerging changes in the scientific or technological basis of knowledge, customer preferences, or interrelations among economic players. The innovative opportunities are made up of three elements, namely: economic value, resource mobilization and appropriateness (property of the innovation generates high gains for those who are innovative).

For Valeriano (1998), the technological innovation is the process through which an idea or invention is conveyed to the economy, that is, it loops through the path that goes from this idea's inception, making use of existing technologies or researched technologies to do so, up to the creation of the product or service and making them available for consumption and use. A non-technological innovation in turn, is one that generates changes that provide greater satisfaction for the customer. They can be classified as subjective, based on personal taste and aesthetic judgment, and/or derived from the desire to be trendy.

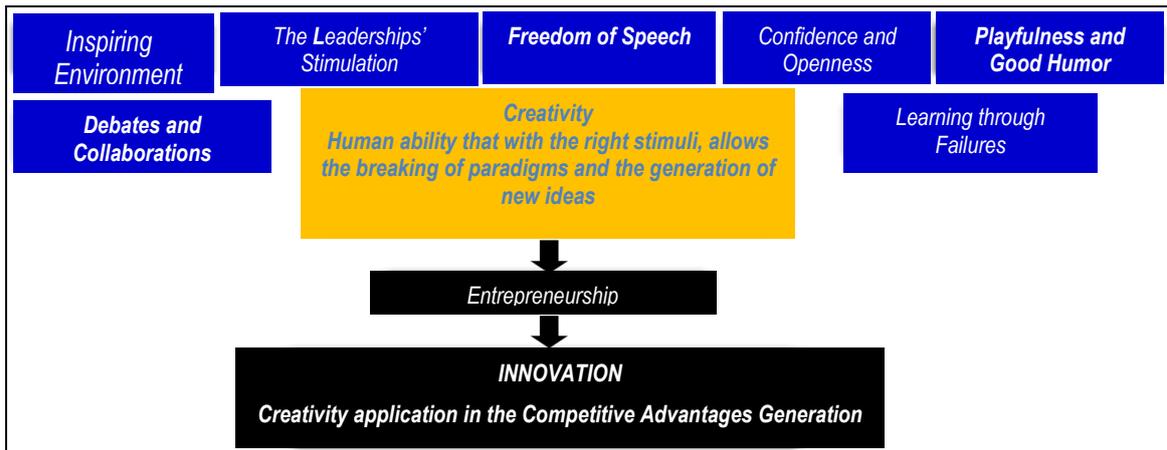
According to the Oslo Manual (OCDE, 2005), the innovations may be in both, in the product and in the process. To distinguish innovation, the most common type classifies it as radical and incremental. A radical innovation is that which causes the appearance (or extinction) of a company and has the potential to change the competitive basis in favor of the innovative individual. However, projects dedicated to radical innovations are riskier and take longer to achieve tangible results. An incremental innovation is connected to improvement of processes or products of an organization, they are safer, cheaper and, more easily they bring positive returns within reasonable time.

According to the Oslo Manual (OCDE, 2005), the organizations innovate not only to defend their current competitive position, but also to seek new advantages in their market sector. A company may have a reactive behavior and innovate in order to avoid losing their market share for an innovative competitor or may have a proactive behavior to gain strategic market positions in face of their competitors, for example by developing and trying to impose higher technological standards for the products they manufacture.

Gonçalves and Campos (2012) argue that innovation denotes break of paradigms and old customs. The imposition of changes usually occurs in organizations where the habits remain the same, and there is low maturity to cope with the losses. In such an environment, people tend to preserve

the *status quo*, staying in their comfort zone and suppressing their creativity. In this scenario, innovations are perceived as threats rather than opportunities, making projects that should provide great benefits to the business into mere technological evolution, despising the opportunity to rethink processes and business rules, aiming at generating innovations and place the company on a new competitive level.

Gonçalves and Campos (2012) present a suggestion for a favorable environment to encourage creativity in order to generate innovation (Figure 1).



**Figure 1: Application of creativity in order to generate innovation**

Source: Adapted from Gonçalves and Campos (2012)

The scheme presented in Figure 1 suggests that a creative environment should take into account factors such as the leaders' stimulus and inspiration, the freedom of speech (without criticism or derision), the learning from failure (tolerance to attempts and well-intentioned failures), confidence and openness, debates and collaboration to the enrichment of ideas. Thus, it is possible to minimize the fear of what is new; it is possible to minimize the attachment to the standards imposed by the organization, which are ways to consolidate the desire to maintain the current status (Gonçalves & Campos, 2012)..

When the individual realizes that he is not under threat (for example, losing his job or being ridiculed because of his initiative) he feels comfortable using his creativity, losing the fear to innovate.

Some techniques that can be used to stimulate the generation of creative solutions include brainstorming, brainstorming with post-it, brainwriting (a brainstorming derivation) and the SCAMPER (Substitute, Combine, Adapt, Modify, Search for other uses, Eliminate and Reorganize) techniques that aim to stimulate creative thinking oriented to explore the transformation of an object, system or process in different ways.

While creativity can be summed up in human ability to produce new things, innovation needs of the entrepreneurial spirit in order to identify and to

select opportunities and turn them into true competitive advantages that provide productivity gains and profit for organizations.

## 2.4 ENTREPRENEURSHIP

Why do some people recognize viable business opportunity, others perceive only problems, or worse, others see nothing? Entrepreneurs have the ability to see what others do not see (Dellabarca, 2002).

Indeed, identify and select the best opportunities for new business are among the most important skills of a successful entrepreneur (Stevenson & Gumper, 1985). The same authors also point out the following characteristics of an entrepreneur: they are people driven to action, aggressive, they better support the inaccuracies and are self-confident, having a strong personal control.

To Gielnik, Kramer, Kappel & Frese (2012), identify opportunities, without fully exploring them, does not lead to innovations. However, the entrepreneurs who identify more opportunities should have an advantage over their competitors with regard to potential opportunities that could result in innovative products or services.

Access to information is the key to identify opportunities. Having information, for example, about technology, regulatory or demographic changes are the basis for identifying opportunities that arise from these changes (Shane, 2003; Baron & Shane, 2007; Gielnik et al, 2012).

Entrepreneurs who demonstrate a high level of active information research, present a behavior of seeking information more pronounced since they dedicate more time, effort and other resources, exploring different sources in search of information (Frese, 2009, quoted by Gielnik et al. 2012).

Similarly, the information processing is important because it describes the processes of interpretation and when combining new information, such processes can lead to new conclusions and to the identification of new business opportunities (Mitchell, Busenitz, Lant, McDougall, Morse, Smith, 2002; Mitchell, 2007; Vaghely & Julien, 2010, cited by Gielnik et al, 2012).

To Ardichvili, Cardoso and Ray (2003), the opportunity identification process can be influenced by factors such as:

- enterprise agility: propensity to perceive and be sensitive to the information about projects, incidents and behavior standards at the environment, with special sensitivity to produce something or resolve user problems;
- alert entrepreneurial: any recognition of opportunity by a prospective entrepreneur is preceded by a state of heightened alertness to the information, known as state of business consciousness;

- previous knowledge: people tend to perceive new information related to the information they already have (Von Hippel, 1994 cited by Ardichvili et al., 2003). The entrepreneurs find out opportunities because the previous knowledge triggers recognition of the information value (Shane, 1999, cited by Ardichvili et al., 2003);
- social networks: networks of entrepreneurs are important ties (weak or strong) which form bridges for information sources (this includes friends and family), for the casual knowledge can provide unique information (Granovetter, 1973, quoted by Ardichvili et al. , 2003);
- personality traits: personality traits such as optimism, self-efficacy and creativity identified in entrepreneurs are related to the success of their endeavors. The optimism is related to the self-efficacy or achievement of difficult goals. Creativity is important for identifying opportunities.

The entrepreneurship cognitive perspective suggests that the experience and the knowledge of the individual influence the identification of opportunities because the understanding and the interpretation of new information are facilitated in this process (Mitchell, 2002;. 2007 cited by Gielnik et al, 2012).

### **3 METHODOLOGY**

The case study is characterized as the most appropriate type of research when the aim is to study complex situations. When considering the data, the objective is to summarize the information in order to enable answers to research questions such as "how" and "why", fundamental questions to the research drawing up.

In accordance with Yin's conceptualization (2001), the case study can be understood as an empirical cognition seeking a current phenomenon (in loco – 'on the spot'), when the boundaries between the phenomenon and the context are not clear, and various sources of emphasis are used.

It was chosen the single case study for this investigation. The choice of the case study can be done having in view its character of uniqueness (being single), which requires an essential or instrumental investigation when seeking to investigate any hypothesis (Yin, 2005 cited by Maffezzolli & Boehs, 2008). The authors also argue that the types of case study can be summarized in single or multiple and can be at the same time, holistic, those that work only one analysis unit, or integrated, those that work various analysis units.

The choice for a project of single case or of multiple cases is a point to be thought of when formulating the research questions. In the intrinsic case studies (as this research case), the research interest concerns a particular case. That is, what matters is exclusively to understand the

particular case, without regard to other cases or other more comprehensive issues.

In this study, it was used the technique of unstructured or unsystematic observation, which according to Marconi and Lakatos (1999) definition can be termed as spontaneous, informal, ordinary, simple, free, casual and accidental. It involves collecting and recording facts without having to use special technical means or draw direct questions. It features an unsystematic observation the fact that the knowledge is achieved through a casual experience, without having been previously determined the relevant aspects to be observed and how they would be observed.

#### 4 CASE PRESENTATION

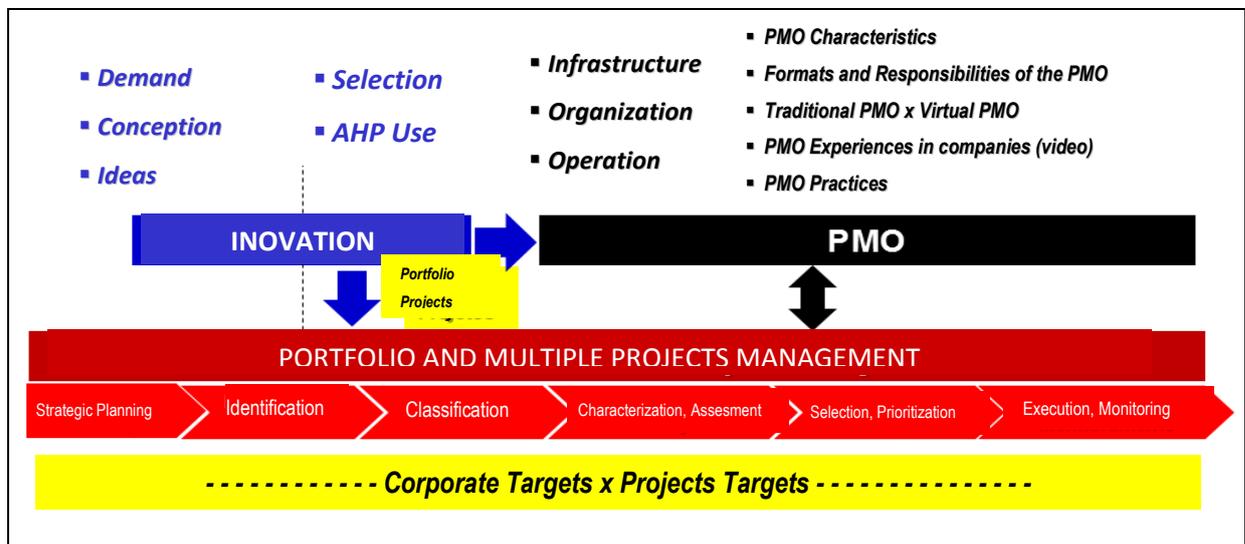
In general, educational institutions have focused their efforts to the manpower training in order to supply the labor market needs. Special attention should be given to the knowledge originated in the various universities, which has enabled the generation of diversified innovative solutions. However, large organizations have been unable to absorb at the same pace all this huge amount of generated insights and thoughts, which has led to the possibility for exploration of new ideas (business opportunities) to create new markets for small businesses, which account for the largest share of jobs creation.

Such a scenario has motivated a large number of newly graduated individuals to plunge into the entrepreneurial path, not only to escape from conditions such as underemployment, employment or unemployment but also for the opportunity to become owners of their own business. This can be perceived when analyzing the Global Report 2012 - Entrepreneurship in Brazil prepared by the *Global Entrepreneurship Monitor* (GEM), which mentions an increase in the rate of entrepreneurship due to opportunity, in relation to entrepreneurship due to the need. According to the study, in 2002 the rate of early entrepreneurs due to the need was 7.5%, higher than the 5.8% of early entrepreneurs due to opportunity. In 2012, the rate of early entrepreneurs due to opportunity of 10.7% comes to be 2.3 times higher than the 4.7% due to the need, representing the largest difference between these rates from 2002 until 2012.

Regarding the factors that limit entrepreneurship in Brazil, it is highlighted the education and the qualification with 39.1%, above the average across the countries participating in the survey (30.3%), highlighting the need to expand the entrepreneurship education in educational institutions (GEM, 2012).

The case studied in this research is presented in this the context. It is a study conducted in the MBA in Project Management at Univali / SC (University of Vale do Itajaí / Santa Catarina) on the subject Projects Innovation Management, where it was confirmed the application of a

didactic strategy aimed at the "awakening" for the generation of project proposals ideas, identification of opportunities, development of project proposals and project selection, as depicted in Figure 2 scheme.



**Figure 2: Alignment, innovation, PMO and portfolio and multiple projects management**

Source: Prepared by the authors

The generation of new ideas innovation (demand, design) is worked out in the beginning of the process with the application of selection of ideas methods and the application of the AHP method (*Analytic Hierarchy Process*) proposed by Thomas Saaty in 1997 (Moraes, 2007). In this scenario, education is perceived as the basis of a continuous development process once it generates better qualified and adapted individuals to better identify and seize the opportunities. The applied didactic strategy model can be characterized by an action deeply focused on education, which seeks the transformation of the process in order to promote changes in attitudes and behaviors and believes that the academic environment needs to be peopled by entrepreneurial culture.

#### 4.1 STIMULUS FOR THE CREATION OF INNOVATIVE PROJECTS

As already explained, the brain is divided into two hemispheres. The left comprises the rational side; the right comprises the creative side.

Distinguishing about which side is predominant can be important in many situations. Knowing whether the thought is more focused or global, if the individual is methodical or free of rules can help to find out if the mind is divergent, when the right side is more used, or convergent, when the left side is more used. In Table 1, it is possible to see these differences.

<b>People of convergent minds:</b>	<b>People of divergent minds:</b>
They have a more focused thought, starting from the part toward the whole setting, sequential and logical.	They have a global thinking.
They reach accurate and reliable answers, but with little originality.	They go from the whole setting to the part, making unusual associations and finding creative solutions, not always with so much accuracy and competence.
In general they are perfectionists, organized and perform one task at a time.	They have typical behavior of disorganized and anxious people who do many things at once.
The left hemisphere of the brain is more activated and therefore, they slide into the Cartesian thinking and mathematical reasoning, always in a detailed and methodical way.	They make more mistakes, because they are more creative.
Although competent, they find it difficult to perceive the whole setting in a first moment, they are more intransigent and do not accept mistakes.	Considering that they demand more the right hemisphere, which does not house the area of language, they are sensitive, intuitive and less logical, more rules transgressors and find it difficult to comply with routines.
If they are placed out of the routine, they may feel a little lost in the environment.	They are capable of easily adapt to changes and have greater power of improvisation.

**Table 1: Divergent and Convergent sides of the brain**

Source: Adapted from Freitas (2012)

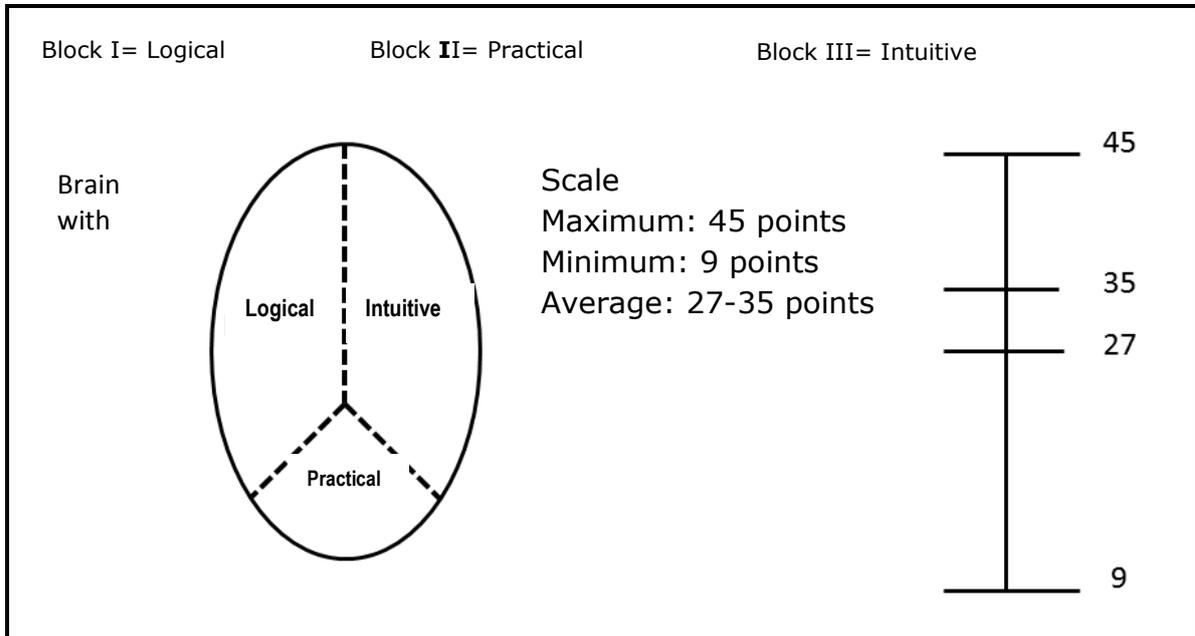
From this information, it is possible to work potentials and difficulties to achieve success, welfare and quality of life (Freitas, 2002).

For Frazon (2007), every individual owns three brains, used conveniently in every situation of life. In other words, in difficult times (under pressure, at work, at school, in life) when it is forced to make decisions, the person is under the influence of his instinctive brain that, without thinking or feeling, take a quick and flustered attitude.

The objective is to get students to reflect on the matter and discover the orientation of their brains, focusing on the key attributes in order to identify ideas and find out entrepreneurial opportunities. To do so, the QMT test is applied (Mental Quotient Triad) which is composed of 27 questions that can assist in the discovery of the individual's mental trend (Figure 3).

As from the allocation of points to the answers, it is possible to assess whether the individual is more conceptual (organization and

planning); more intuitive (feelings and emotions) or more procedural (practical and manual).



**Figure 3: Test Review Score QMT (Mental Quotient Triad)**

Source: Adapted from Frazon (2007)

The interpretation of results must be initiated by the highest score. Table 2 shows the interpretation of the results, taking into account the first and the second highest score obtained in the tests.

CENTRAL	LEFT	RIGHT
1st. highest score: Practical, organized, successfully at work, in business, leader of action. 2nd. highest score: if it was the <b>LEFT</b> , calculating leader; if it was the <b>RIGHT</b> , emotional populist leader.	1st. highest score: intellectual thinker. 2nd. highest score: if was the <b>CENTRAL</b> , he acts consciously and he reasons in view of the survival; if it was the <b>RIGHT</b> he is theoretical, inattentive.	1st. result: he is a sensitive affectionate, creative, and dreamy individual. 2nd. result: if it was the <b>CENTRAL</b> he is an individual down to earth; if it was the <b>LEFT</b> he is an individual distant from reality: probably he is a poet or a mystical individual.

**Table 2: Interpretation of the QMT test results**

Source: Adapted from Frazon (2007)

After interpreting the results each one can invest in reeducation or cultivation of particular identified characteristics and work items of a mental

process, be it to be proportional to others or to be distant from those who have equal points. It is suggested here to draw up a mental model for innovation and, thereafter, the didactic strategy shall be applied.

#### 4.2 APPLICATION OF THE DIDACTIC STRATEGY

According to Novak (1980, quoted by Moraes, 2007), a significant learning is close to the constructive connection of thought, of feelings and actions that lead to the acquisition of human ability as well as to the commitment and responsibility. Thus, when applying the didactic strategy, the teacher sought, as the learning objective, to provide the student with the knowledge of concepts and practices of Innovation Management in Projects and approaches to be applied in the Project Office establishment (*PMO - Project Management Office*), considering the life cycle and the phases of the Project Management as a support in the management through results.

The didactic strategy of projects creation as of the generation of ideas and opportunities takes place through innovation proposals aiming at meeting the demands and needs of stakeholders. In the classroom, the strategy is applied to the students as from the following steps:

1st part: **Individual** Preparation of ten ideas of project proposals: individual activity through the *brainstorming* technique, in order to enable the student to boost and strengthen his self-esteem, making him realizes that it is possible to create interesting ideas;

2nd part: **Individual** preparation of 20 ideas of project proposals: group activity, taking advantage of the individual proposals generated through *brainstorming* technique (1<sup>st</sup> Part), students select at least 20 project proposals. At this stage of the dynamics there is the exercise of creation in group, promoting the interaction of the projects team, as it is understood that innovations are generated through people thinking in groups. It also works to the joining of ideas on new ideas, through associations, modifications and alterations, chosen from some selection criteria established by the group itself;

3rd part: Categorization regarding the type of innovation and transformation in ten project ideas: group activity in which the team reduces the ideas to ten adopting criteria that need to be justified and classify the proposals regarding the concepts of innovation types: radical or incremental and in products, process, management and market. At this point, it is worked the use of selection criteria and the innovation impact;

4th part: Preparation of the synthetic pre-**project** proposal and transformation in five project ideas: then, the group must select five project ideas, always based on criteria established by the group which must be recorded. The selection decision criteria may change from one

part to another part of the dynamics, as they comply with the trends of modification of market and moment. Thus, the group should detail some aspects of the project proposal, namely:

- Envisaged solution (product or service) → Own idea.
- Problem or opportunity → what are we solving?
- Differentials (innovations) → Advantages / Benefits.
- Market impacts → Who will consume?
- Impacts on society → social and environmental benefits, and others.
- Financial means → General estimate of values for the project.

5th part: **Ideas** versus industrial property: at this phase of the dynamics, the group lists the patent registration potential or other intellectual protection resource for the project proposal in which it is suggested an analysis in relation to the trademark protection, to the process, to the product, to the geographical destination, to the formula or to the innovative concept, to the software registration, in relation to the protection expansion for the same for innovation, or other resource.

It is worth noting that, at every stage of the dynamics, concepts are introduced to support the exercise. In the end it is applied a reinforcement with tips on how to prepare projects for grant bids projects and it is also presented a list of funding opportunities mechanisms for project proposals.

In conclusion the dynamics of new projects selection is proposed as an exercise and *ranking* comparison, practice the prioritization methods through intuitive way, weighted average and AHP method.

Thus, the groups must present a report that includes the development of the following topics in relation to the project proposals developed in the classroom by selecting five project proposals to develop the selection and final prioritization activities:

- Selection through intuition: Discussion of project proposals and decision on an order of priority for the carrying out, justifying the group decisions.
- Selection through the weighting matrix: apply the decision analysis through this method of selection and present results and comments of the process and decisions.
- Selection through the AHP Method: select three criteria to develop the method, apply the method and analyze the results with comments.
- Presentation: results by selection method; comparison between the decisions and comments; lessons learned in the process as a whole.

## 5 RESULTS

The teaching practice can be characterized by the ongoing challenge of education professionals in establishing interpersonal relationships with students, so that the teaching-learning process is articulated and that the procedures used achieve the objectives that they propose to do. When applying this strategy, it was scored the following perceptions, recorded by the subject's teacher:

- it is observed the project creation potentiality and it is interesting to emphasize that some students take what they have learned in the dynamics to their companies and/or to their own development;
- the personal empowerment of self-esteem and the conditions make the students confident about their ability to generate and create innovative projects through an oriented systematic together with methodologies and support techniques;
- the knowledge of methods helps students in the project prioritization (the AHP method or the weighting method itself);
- it is facilitated the student's understanding on the stage of alignment of the ideas and needs generation with the other phases of the project management;
- above all else, it is developed the perception that good ideas are not derived from occasional *insights* since projects with innovation are fundamental for achieving sustainable competitive advantage. Innovation is a systematic and continuous process of quality and should be addressed to the market and be customer-oriented.

The didactic applied suggests the creation of an environment conducive to the development of demands for innovation projects perceived in the work environment, within which students are challenged to recognize and reflect upon their own ideas.

## 6 CONCLUSIONS

Educating for uncertainties means to educate towards searching solutions for real problems and towards acquisition of knowledge based on actions that motivate the students to seek solutions for the improbabilities and answers for questions, creating innovative alternatives to the identified needs. The need to get away from traditional forms of teaching can cause the faculty reflect on new forms of teaching that provide other ways to structure new tactics such as the presented didactic strategy. The dynamics

brings together elements ranging from the stimulus to the discovery of the brain orientation, through motivation and the esteem rising in order to encourage the creative process, culminating in the applying of selection methods to choose the best innovation project, having also in view issues related to patents and intellectual property.

Given the results achieved in this work, carried out based on observations of the didactic strategy application and of the record of the teacher's perceptions, it was sought to emphasize the benefits provided by new didactic actions that disrupt the paradigm of the traditional education. The application of innovation is also perceived in the proposal for improving the teaching-learning process in order to contribute to the training of people capable of transforming the world around them when realizing there are needs and opportunities in the environment that surrounds them. So that this occurs, it is understood that creativity should be brought about, starting from practical exercises in the classroom, such as the strategy presented. However, the study presented can hardly be understood as a conclusive result, suggesting that, for future studies, more detailed research can be applied to the students and that also their perceptions can be taken into account.

As the main theoretical contribution of this study it is highlighted the identification of a positive and significant affinity in the application of the didactic strategy, considering the very positive and very well accepted initiative by the students, in accordance with the teacher's perceptions.

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