Comparing the Teaching of Entrepreneurship and Innovation between Brazil and Finland

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INTRODUCTION

Teaching of entrepreneurship and innovation in Brazilian universities has increased in recent years due to several factors such as the emergence of disciplines like biotechnology increased globalization reduced basic funding and new perspectives on the role of the university in the system of knowledge production. Innovation is increasingly seen as an evolutionary process that involves different institutional spheres or sectors in society. Entrepreneurship is a milestone on the road towards economic progress, and makes a huge contribution towards increasing the quality and future hopes of a sector, economy or even a country. Entrepreneurship is as important in small and medium-sized enterprises (SMEs) and local markets as in large companies, and national and international markets, and is just as key a consideration for public companies as or private organizations. Entrepreneurship helps to encourage the competition in the current environment that leads to the effects of globalization (Domingo & Kun-Huang, 2013).

There is an increasing tendency for government policy to promote entrepreneurship for its apparent economic benefit. Accordingly, governments seek to employ entrepreneurship education as a means to stimulate increased levels of economic activity (O'Connor, 2013).

According to Martin et al (2013), Entrepreneurship education and training (EET) is growing rapidly in universities and colleges throughout the world, and governments are supporting it both directly and through funding major investments in advice-provision to would-be entrepreneurs and existing small businesses. The Triple Helix of university–industry–government relations is compared with alternative models for explaining the current research system in its social contexts. Communications and negotiations between institutional partners generate an overlay that increasingly reorganizes the underlying arrangements. The institutional layer can be considered as the retention mechanism of a developing system. For example, the national organization of the system of innovation has historically been important in determining competition. Reorganizations across industrial sectors and nation states, however, are induced by new technologies as biotechnology, ICT.

Developing countries are increasingly finding that entrepreneurship and innovation are the ways to speed up their developments and initiate or encourage technological development. The educational institutions such as Universities, Colleges and Colleges of Technology, has two main roles in this process, to guide and train entrepreneurs and provide technological knowledge and encourage innovation. There was thus completing the triple helix model of innovation with universities, government and industry. The objective of this research is to see how the teaching innovation and entrepreneurship in Fatecs is aligned with the Universities of Applied Sciences in Finland through the use of methods and current methodology.
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The choice of Fatecs (Technology Colleges) of the state of Sao Paulo, due to the fact that the state of Sao Paulo have the largest network publishes Technical Schools and Colleges of Technology through the Paula Souza Center. The Centro Paula Souza is a municipality of the State of Sao Paulo, linked to the Department of Economic Development, Science, Technology and Innovation (SDECTI). The institution manages 218 State Technical Schools (Etecs) and 64 Colleges of Technology (Fatecs), gathering over 283 thousand students in technical courses of medium and higher technological level, in more than 300 municipalities (Centro Paula Souza, 2014).

Already in Fatecs, more than 70,000 students are enrolled in 71 technological undergraduate courses in various fields such as Construction, Mechanical, Computer Science, Information Technology, Tourism, among others. Beyond graduation, are offered graduate courses, technology upgrade and extension. The choice of Fatecs (Technology Colleges) of the state of Sao Paulo, due to the fact that the state of Sao Paulo have the largest network publishes Technical Schools and Colleges of Technology through the Paula Souza Center. The Centro Paula Souza is a municipality of the State of Sao Paulo, linked to the Department of Economic Development, Science, Technology and Innovation (SDECTI). The institution manages 218 State Technical Schools (Etecs) and 64 Colleges of Technology (Fatecs), gathering over 283 thousand students in technical courses of medium and higher technological level, in more than 300 municipalities.

The choice of Finland is due to the process that went for evolution of entrepreneurship and innovation. The student revolution was part of a wider reconsideration of the proper relationship between government and business. This had started in 2008, when the Finnish government shook up the universities (and created Aalto) in an attempt to spur innovation. But it was speeded up by Nokia's problems. Finland had become dangerously dependent on this one company: in 2000 Nokia accounted for 4% of the country's GDP. The government wanted to make the mobile-phone giant's decline as painless as possible and ensure that Finland would never again become so dependent on a single company (The Economist, 2014).

The Finns created an innovation and technology agency, Tekes, with an annual budget of 600 milion of Euros and a staff of 360. They also established a venture-capital fund, Finnvera, to find early-stage companies and help them get established. The centre piece of their innovation system is a collection of business accelerators, partly funded by the government and partly by private enterprise, that operate in every significant area of business and provide potential high-growth companies with advice and support from experienced businesspeople and angel investors (The Economist, 2014).

**MATERIAL AND METHOD**

**Entrepreneurship and Innovation:**

Traditionally, teaching and research have been the university’s main missions. This has gradually changed with the emergence of disciplines like biotechnology, increased globalization, reduced basic funding, and new perspectives on the role of the university in the system of knowledge production. Innovation is increasingly seen as an evolutionary process that involves different institutional spheres, or sectors, in society.

Although innovation and entrepreneurship generally go hand in hand, forming a distinction between the two concepts is possible. The definitions for entrepreneurship may vary; however, one of the most popular works on the subject defines this concept as the process of identification, evaluation and implementation of business opportunities (Shane & Venkataraman, 2000; Soriano & Huarng, 2013).

Entrepreneurship is a milestone on the road towards economic progress, and makes a huge contribution towards the quality and future hopes of a sector, economy or even a country. Entrepreneurship is as important in small and medium-sized enterprises (SMEs) and local markets as in large companies, and national and international markets, and is just as key a consideration for public companies as for private organizations. Entrepreneurship helps to encourage the competition in the current environment that leads to the effects of globalization (Soriano & Huarng, 2013).

Innovation is a tool for entrepreneurs and thus innovation is a specific instrument of entrepreneurship (Drucker, 1985).

Universities have an important role in the formation of entrepreneurs, since the transmission of knowledge to the formation of the individual as entrepreneur. This process has taken various forms, but it is generally assumed that technological advances are created by faculty and research staff and diffused to society through a technology transfer process, either through licensing of the technology to established firms or through the creation of new spin-off firms. Technology Licensing (or transfer) Offices (TLOs), incubators, and science parks have in turn been created to facilitate such technology transfer (Rothaermel et al., 2007).
Shane and Venkataraman (2006) define entrepreneurship as the “scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited.” Entrepreneurship, in general terms, positively impacts economic growth because it is necessary to have a group of persons willing to assume risk, using their funds to generate new firms and business. This is the best way to achieve a sustainable economic growth (Nissan et al., 2011).

1. The definition takes into account the economic agents’ behavior. For this reason, entrepreneurship doesn’t mean an occupation but an activity that considers the different circumstances and aspects of a person.

2. Entrepreneurships must consider uncertainty and obstacles inherent in the business creation process.

3. They must have information or ideas about efficient production processes, as well as new organizational forms. This doesn’t mean entrepreneurs had to have attended special academic courses about management. They must have the idea and they can ask information or advice from experts to execute the idea.

4. The entrepreneurs can be also encountered in big firms. In this case, they are named “entrepreneurs” or “corporate preneurs” (Arendt and Brettel 2010).

The entrepreneurship factor also includes persons that search information or ideas about efficient production processes, as well as new organizational forms. Taking into account these ideas, different types of entrepreneurship can be considered (Nissan et al., 2011).

First is the innovator, following Schumpeter’s thesis (Schumpeter, 1950, 1911). Schumpeter considers that entrepreneurship activity implies innovation in the introduction of a new product, organization or process, generating a destruction process. The innovator creates new industries and for this reason he causes relevant structural changes in the economy. Second is the entrepreneur that takes advantage of profit opportunities (Kirzner, 1973). Third, uncertainty element must be taken into account (Knight, 1921). And fourth, productive and nonproductive entrepreneurship must be also considered (Baumol, 1990).

**Business Modeling X Business Planning:**

A business plan is a document that describes (in writing) what the goals of a business and what steps should be taken so that these objectives are achieved, reducing the risks and uncertainties. A business plan allows you to identify and restrict your mistakes on paper rather than commit them in the Market (Rosa, 2014).

According to Leschke (2013), the target students lack sufficient business background and experience to research, analyze, or construct a reasonably complete or credible business plan, and it would be unfair to expect this of them. At this stage of their development, students need to be encouraged to be more inventive, creative, open-minded and divergent, as opposed to converging on the details of a particular plan. While understanding and appreciating what is involved in preparing a business plan is important, knowing its purpose, format, tone and content is sufficient. These students are better served by developing skills relevant during the earlier stages of the entrepreneurial path (i.e., idea generation, concept development, opportunity assessment and business modeling) and developing the fundamental discipline of considering a broad set of options and making a thoughtful, informed choice before proceeding.

In our experience, we adopted business modeling instead of business planning. Osterwalder (2008, 2010) introduced the business model canvas methodology to provide an efficient means of capturing completely the key aspects of how a firm might approach a particular business proposition. The business model canvas, depicted in Figure 1, is comprised of nine “building blocks” that encompass a relatively complete and comprehensive set of business planning dimensions. Completing the canvas (i.e., creating bulleted lists of descriptors within each building block) to document how a firm might approach a particular opportunity constitutes a business model and the process of generating a number of alternative models is business modeling.

**Design Thinking:**

The SAP Design Services Team (DST) was created in 2005 by Hasso Plattner, Chairman and Chief Software Advisor, to improve the design of SAP software solutions as well as provide the organization with the means to scale up its adoption of design thinking. Design thinking is a term used to describe how designers typically approach problem solving. Beginning with a holistic, “360” understanding of the problem, including customer’s needs (explicit and tactic), the end-user’s environment, social factors, market adjacencies, and emerging trends, etc., design thinking looks beyond the immediate boundaries of the problem to ensure the right question is being addressed.

Using interdisciplinary teams, design thinking incorporates diversity and leverages different paradigms and tool sets from each profession to analyze, synthesize, and generate insights and new ideas. The interdisciplinary nature of design thinking also ensures that innovations are naturally balanced between the technical, business, and human dimensions.

The design thinking approach also encourages teams to create “project war rooms” and to work visually using pictures, diagrams, sketches, video clips, photographs, and artifacts collected from their research to create immersive work environments that allow the team to gain deeper, more intuitive empathy and understanding of
their users’ needs. Using rapid iterative development cycles, teams build rough, “throw-away” prototypes for validation with end-users and project stakeholders.

The team is challenged to risk failure by pushing the limits of both their own capacity as well as the capabilities of the technology and the boundaries within their organization. Using artifacts to express ideas, the final deliverable in the design thinking approach is a prototype that can be used for communication, alignment, and living requirement specifications to provide clarity and transparency during the production of the solution.

Fig. 1: Canvas Business Model


Elevator Pitching:

According Stewart (2014), the elevator pitch is not a high-speed regurgitation of what you do for all types of clients or all of the firm's practice areas. By design, the elevator pitch is meant to be a succinct expression of what you do in a way that demonstrates the benefit to the recipient.

The elevator pitch gets its name from the short ride in an elevator, so keeping with that concept it needs to be brief and concise. At best, it should be two to three sentences and take less than thirty seconds to deliver. Remember that not all elevator rides are long. Your goal should be to explain what you do as it relates to the individual you are addressing, if possible (Stewart, 2014).

By definition, an elevator pitch is an overview of an idea, product, service or project that is designed to initiate a conversation. When developing an elevator pitch, there are several things to keep in mind (Stewart, 2014).

The elevator pitch, sometimes known as the elevator speech, is a short summary that quickly defines a product or service and its value proposition. A successful pitch induces the listener to make a decision sought by the speaker. The pitch is usually approximately 30 seconds, never more than two minutes (Denning & Dew, 2012).

Spin-Out Companies and Start-Up Business:

The creation of university spin-out companies that create wealth is a major policy objective of governments and universities. Finance is a catalyst of this wealth creation yet access to venture capital is a major impediment faced by these companies. The commercialisation of university activities has become a key part of the agenda for governments and universities (Wright et al., 2006).

The rise in the number of spin-offs from universities in Europe, which has taken place since the 1990s, is often linked to the professionalization of Technology Transfer Offices (TTOs) at these universities. With the support of public funds, TTOs have stimulated a range of entrepreneurial activities by academics, spanning invention disclosures to patent applications, the generation of licensing income, and the involvement of academics in the founding of spin-offs (Clarysse et al., 2011).

Since the early 1980s output of university research has been increasing dramatically along many new dimensions such as patenting, licensing, and the creation of spin-off firms (Mowery et al., 2004).

Spin-offs can be consider start-ups; Astebro et al. (2012) define start-ups by recent graduates as entrepreneurial firms started by undergraduate students in the three years immediately after graduation or while they were students.

Research Methodology:

To achieve objective of this research, we used three methods of research:

a) first was a bibliographic research in key scientific basis for the main methods, tools and methodologies for teaching entrepreneurship and innovation in higher education institutions.

b) second was an exploratory research to understand how the methods, tools and methodologies have been applied in practice. For Gil (2002), the exploratory research aims to provide familiarity with the problem more closely in order to make it more explicit.

c) Third, we conducted an exploratory research, qualitative, to verify the proposed workflow. We use interviews as a tool for information with managers of six universities, three of them are Brazilians and others are Finnish.

RESULTS AND DISCUSSIONS

In literature and exploratory research, we have identified several methods, tools and methodologies used for the teaching of entrepreneurship and innovation, among which we highlight:

In literature and exploratory research, we have identified several methods, tools and methodologies used for the teaching of entrepreneurship and innovation, among which we highlight:

- Business Model Canvas - At the beginning of the course or discipline, students begin to develop their business ideas and model using this tool. It is used to model business ideas in nine areas of interest and value proposition, customer relations, customer segments, distribution channels, key partners, key activities, key resources, cost structure and revenue.
- Elevator Pitching - Used to present business ideas.
- Pivoting - In the business of ideas maturing, we use the pivot so that students always return to the Canvas and mess with models after feedback from experts and professors.
- Business Plan - After defining the business, students develop a business plan based on the regulations and standards.
- Design Thinking - used for students to solve the problems found in each step.
- Prototyping - As a way students visualize the projects we have developed a project is the product, service or process.
- Startup Contest - At the end of the course or discipline, we conducted a contest for us to verify the best ideas as done in the Slush.

Besides these items, we identify others who contribute to the learning of entrepreneurship and innovation:
- Student Association for entrepreneurship or innovation
- Specific room for entrepreneurship or innovation (war room)
- Coworking area

As results, we identified the following process or methods used to teaching entrepreneurship or innovation as shown in table 01, and which universities are using these one.

<table>
<thead>
<tr>
<th>Process or Method</th>
<th>Brazilian Univ 01</th>
<th>Brazilian Univ 02</th>
<th>Brazilian Univ 03</th>
<th>Finnish Univ 01</th>
<th>Finnish Univ 02</th>
<th>Finnish Univ 03</th>
</tr>
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<tbody>
<tr>
<td>Canvas Business Model</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Design Thinking</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Prototype</td>
<td>yes</td>
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<td>yes</td>
<td>yes</td>
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<tr>
<td>Elevator Pitching</td>
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<td>yes</td>
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<tr>
<td>Startup contest</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
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</tr>
<tr>
<td>Business Planning</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Student Association for entrepreneurship or innovation</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Specific room for entrepreneurship or innovation (war room)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>Coworking area</td>
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<td>No</td>
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</tr>
</tbody>
</table>

We observed in interviews with teachers and directors of universities teaching innovation and entrepreneurship is recent in both countries, not exceeding five years. In Fatecs began in 2013 with the creation of the Innovation Agency Inova Paula Souza. In two of the three Finnish universities, the courses are still being implemented.

The duration of teaching entrepreneurship and innovation vary the bars of the courses, found in three semesters throughout the course and a finalandesia university through extension courses.

In all universities, methods, tools and researched methodologies are used for teaching entrepreneurship and innovation.

But the Finnish universities are ahead in terms of infrastructure for innovation and entrepreneurship in all of them we find versatile and flexible rooms that adapt to each type of activity to be held in Brazilian university, only one has this facility.

Another important point that the Finn has universities are students associations for entrepreneurship, which allow exchanges of information and events on the subject, the own Slush held in Helsinki is organized by these associations, in Brazil we do not have these associations.

In the routing issue of students to form start-ups or spin-off, only a Finnish university has obtained results with 25 established companies. In Brazil, only one Fatec has an incubated company.

**Conclusions:**

We found that the Finland is ahead of Brazil to the teaching of entrepreneurship and innovation, but we are in the right track because we use the methods they.

The study achieved its objectives, the use of entrepreneurship and innovation in multidisciplinary work encourages students because it brings the reality of the labor market into college.

The methods such as Canvas and Design Thinking assist in shaping ideas and strategies, the weak point is the item innovation, because students still do not realize the importance of innovation in choosing unpublished projects.

It is amazing value given not only education, but other sectors as well. Companies like Nokia we all know, is the result of efforts in these areas involving education and encouraging innovation. Including the range of economic boost of Finland was the result of the emphasis placed on education and persistence.

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