

**The Internationalization of Professional and Technological Education:
a Study on the Agreement Between the Brazilian Federal Institutes and Canada**

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Abstract

The internationalization of educational policies constitutes a relevant theme, mainly by constant changes resulting from globalization. Educational standards have been influenced and shaped by global market trends. In this sense, this article aims to present the agreement signed between the Federal Network of Professional and Technological Education of Brazil and Canada's educational institutions. The approach of this article was an exploratory study based on the analysis of the documents published by the actors involved, such as Federal Institutes, Science Without Borders Program and Canadian education institutions.

Keywords: Globalization. Internationalization. Professional and technological education.

Introduction

The year of 2008 is considered a milestone for the professional and technological education in Brazil. In 2008, the law gave birth to the Brazilian Federal Network of Professional and Technological Education (Federal Network) and created the Federal Institutes of Education, Science and Technology (IFs), through the merging or transformation of three different types of schools: 1) Federal Centers of Technological Education (Cefets), 2) Agro-Technical Schools and 3) Technical Schools. The publication of law no. 11,892/2008 brought significant changes in the context of the professional and technical education in the country, arising mainly from the expansion of the Federal Network and the large amount of resources invested in it.

After the publication of the Act in 2008, the IFs have attribution similar to the Brazilian Federal Universities, as demonstrated by the text of law no. 11,892, Art. 7, item VI,

which deals with the courses to be taught in higher level, such as technology courses, degrees, Bachelor and Engineering, *lato sensu* and *stricto sensu*.

This article aims to present the existing agreement between Canada and the Federal Network of Professional and Technological Education of Brazil designed to provide training for Brazilian technologists through the public policy Science Without Borders (SWB). To do so, first are punctuated some aspects relating to globalization and the process of internationalization of educational policies. Below is presented: 1) a history of the Federal Network, stating with the creation of schools of Apprentices Craftsmen in 1909 until the nowadays phase of internationalization; and 2) a contextualizing of the major transformations occurred in professional and technological education in Brazil.

Following is showed the existing agreement between Brazil and presented details about: the actors involved, the edicts for participation, selection criteria and the purposes of the agreement.

Globalization and internationalization of educational policies

Many researchers in various parts of the world (Cudmore, 2005; Tham, 2013; McCabe 2001; Yemini, 2012, Friesen, 2012) have been discussing about Globalization and its impact on educational policies.

Knight (2004) explains that there is a constant confusion between the terms globalization and internationalization. The author seeks to clarify the relationship between these two terms. Globalization is related to flows of technology, economy, knowledge, people, values and ideas through the borders. Internationalization began to become prominent in the education debate from the late 1980 onwards and is used with different meanings, such as: academic mobility to international academic programs, the provision of education to other countries through arrangements, and is also seen as the growing trade of higher education (Knight, 2004).

Analyzing the relationship between globalization and higher education, Cudmore (2005) points out that the World Trade Organization (WTO) promotes globalization by opening all areas of social life, including public services (e.g. education) for international capital. This occurs through agreements such as the General Agreement on Trade and Services (GATS), which regulates the international trade in services, such as tourism, transport and telecommunications. Now the GATS also include health and education that, in Canada, have traditionally been in the purview of the public sector.

Examining some definitions about the terms internationalization and globalization, McCabe (2001) suggests that internationalization is more related to cooperation and understanding between the countries, on the other hand, the term globalization brings negative connotations related to neocolonialism and cultural homogenization.

For Castells (2003), the new economy is organized around networks of capital, business and information, whose access to technological knowledge is the root of productivity and competitiveness. Networks are made up of interconnected nodes, which form structures, like systems, open and receptive to innovation. The nets are appropriate instruments for the capitalist system since they are based on innovation, on the globalization and on forms of work focused on adaptation and flexibility, i.e. the nets promote continuously the deconstruction and reconstruction of culture (Castells, 2003).

According to Rizvi and Lingard (2010) globalization brought advantages to the capitalism system, because it extended the reach of markets, enabling the companies to influence larger areas of the globe. Improvements in communication, information flow and the rationalization of distribution techniques allow goods to move into high gear all over the world. However, the authors argue that global integration is far from complete and benefits some people more than others.

How the global integration occurs in the educational field? Or, why educators should worry about internationalization? Shultz (2012) states that educators often perceive their performance in micro space of the classroom disconnected of the policies involving the educational systems. However, for the author, the educational organization reflects the values, norms and agendas that will form the basis of society, i.e. the education relates directly to how we build the society.

In this sense, education is designed to meet the needs of the market. For Galway (2000) the commoditization of education is the process of transforming education in a market product. Educational policies have been addressed by global standards and models aimed at efficiency, as seen in standardized tests designed to evaluate and highlight the highest-performing schools. The educational policy based on the idea of human capital is very different from policies based on conception of education as a means of building society (Shultz, 2012).

Ball (2012) highlights that as the educator's job is being translated into key performance indicators, work becomes a teaching contract. When education is treated as a

commodity, the school becomes an attractive investment option for the capitalists. The results of this transformation can be seen in the increasing participation of private business in education.

Globalization, territorial decentralizations, privatization and accountability have set the framework for the educational policies intended to measure student performance. In Brazil tests as National High School Exam (Enem), Evaluation System of Basic Education (Saeb) and Brazil Test follow this conceptual framework. The World Bank funded projects in several Brazilian States have the premise of quality, decentralization and accountability (Akkari, 2011).

Akkari (2011) writes that the boundaries between public and private have become increasingly unclear. The private sector has penetrated in the educational system in various ways through privatization and subsidies.

In research done by Galway (2000) on the international recruitment by The Colleges of Applied Arts and Technology of Ontario (CAATs), the three main reasons appointed by the institutions to justify their recruitment of international students were: the opportunity to generate revenue, the opportunity to bring foreign perspectives to the local student body, and the opportunity to promote international trading relations.

The Federal Network of Professional and Technological Education

Professional education started late in Brazil. For Cunha (2000), the slave relationship worked as a disincentive to training of workers. In the imperial period, the free workforce was not inclined to perform activities done by the slaves, such as: services of carpenter, bricklayer, blacksmith and other. The relationship between the plantation owner and the worker was stained by servitude links, which drove away the free worker (Cunha, 2000).

The year 1909 was a landmark for professional education. In 1909, the President of Brazil Nilo Peçanha created nineteen schools of apprentices craftsmen. The rationale for the creation of these schools was to empower and train the underprivileged children, as well as keep them away from idleness - considered at the time a vice and a doorway to a life in crime (Brasil, 2010).

In *Educação não é privilégio (Education is not a privilege)*, Teixeira (1977) highlights Brazilian social dualism in education. Education for work directed to the lower classes and cultural education exclusively for the elite. The school for all was never for all, it has always targeted the elite. Set aside the professional schools, all remaining establishments kept the

spirit of elite education, compounded by prejudice against manual labor because of the slave heritage.

In the 1930's Brazilian economy was based on agri-export. From 1940's onward, it became more and more based on the industrial sector. This shift in the economy helps to explain the emergence of public policies directed to the creation of apprentices schools (Brasil, 2010). The beginning of 40's is characterized in Brazil by the economic model of substitution of imports designed as a policy to fight the effects of global crisis of 1929 (Freitag, 1980).

In the context of the Brazilian economic change, the Constitution of 1937 in article 129 set up the State as the responsible for the professional educational. Thus, the only way the labor class could access the educational system was through professional schools. The work force was mainly educated via professional schools, establishing the duality of the Brazilian educational system. The State created conditions to ensure productivity, reproducing the work force and consolidating a class society (Freitag, 1980).

After the 1937 Constitution several changes impacted the development of the professional schools, such as: the transformation in technical schools and industrial sites in 1942; the process of transformation into federal organs started in 1959; the institution of the National Technological Education System in 1994 and the transformation in Federal Centers of Technological Education (CEFETs) occurred in 1999 (Brasil, 2010).

Of all the transformations that have occurred, the institution of the Federal Network of Professional Education and the creation of IFs in 2008 are the most impacting. The publication of law no. 11,892/2008 had a major impact because transformed the CEFETs, Technical Schools and Agro-Technical Schools into IFs (Brasil, 2008).

The text published by the Ministry of Education (MEC) in 2010, named *Concepções e Diretrizes dos Institutos Federais: um novo modelo em educação profissional e tecnológica*, (*Concepts and Guidelines of the Federal Institutes: a new model for professional and technological education*), establishes the following goals to the IFs: social justice, equity, economic competitiveness and the generation of new technologies (Brasil, 2010). This document aims to highlight conceptual aspects and principles that should guide the deployment and implementation of Federal Institutions (IFs) throughout the country.

The body of the document describes the intention of approaching the IFs local and regional realities, seeking solutions to the exclusion, in particular social and educational

exclusion. The decision between meet specific local features or follow the global standards is an issue that pervades the analysis of educational policies, according to Ball (1998). In this sense, one might question whether the agreement signed between the Federal Institutes of Education, Science and Technology of Brazil and teaching institutions of Canada signals the search for global standards to the detriment of local specificities. However, it is not the purpose of this text to address this issue at this moment, but to focus on the main aspects of this agreement.

The publication of law no. 11,892/2008 brought significant changes in the context of the professional and technological education in Brazil, arising mainly from the expansion of the network and the large amount of resources invested. After the publication of the Act in 2008, the IFs have attribution similar to the Brazilian Federal Universities, as the law says in article 7, item VI, which deals with the courses to be taught in higher level, as technology courses, teaching degrees, Bachelor and engineering, *lato sensu* and *stricto sensu*.

The law no. 11,892/2008 also set limits on the number of vacancies that the IFs should offer. The article 8 determines the distribution of vacancies among the courses, establishing that: a) fifty percent of the vacancies should be directed to provide professional technical education of middle level, primarily in the form of integrated courses for graduates of elementary school and for the public of adult and youth education and; b) twenty percent of the vacancies should be to attend graduate courses as well as special pedagogical training programs, with views on training of teachers for basic education, particularly in the areas of science and math, and for professional education.

The Federal Institutes shall: promote a citizen training; act as social network and build spaces and democratization of knowledge; help the local and regional development and the knowledge in an integrated and verticalized way. The IFs have been integrating the high school with professional educational to overcome the concept of dual and fragmented school. The merge of these two kinds of education aims to create a dialogue between different forms of knowledge: scientific, technological, social, humanistic and work-skills (Brasil, 2010).

The creation of the federal institutes was bold, once concentrated efforts on professional education and elevated levels of the courses to be taught. However, it cannot be overlooked that ideas like these (integration and verticalization of professional education) have been present before in the context of professional education. Cunha (2000) recalls that

the unification of secondary school was also discussed in the Manifest of the Pioneers of 1932, as a way to prevent divorce among handymen and intellectuals.

The agreement Brazil Canada

The internationalization of the Federal Network of Professional Education occurs through the program Science Without Borders (SWB). This program was created by the Ministry of Science, Technology and Innovation (MCTI) and the Ministry of Education (MEC), together with their respective research institutions - Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) - to promote consolidation, expansion and internationalization of science and technology (Brasil, n.d.).

One of the goals of the program is to provide 100,000 scholarships to be offered in the following ways: PhD sandwich, Phd, Postdoctoral, Graduate sandwich, Technological development and innovation abroad, Attracting young talents and special visiting researcher (Brasil, n.d.).

There are many areas covered by SWB, such as: Engineering and other technology areas, Exact and Earth Sciences; Sustainable Agricultural Production; Biotechnology; Technologies of prevention and mitigation of natural disasters; Creative Industry (dedicated to products and processes for technological development and innovation); Training of Technologists, among others (Brasil, n.d.). The study proposed in this article focuses on the Training of Technologists.

Brazil and Canada concluded a *Framework Agreement* for cooperation in science, technology and innovation in November 17, 2008. This agreement was promulgated by Decree no. 7,345 in October 27, 2010, whereas the agreement entered into force only in April 19, 2010 (Brasil, 2010).

The *Framework Agreement* is based on the important commercial and political relations between Canada and Brazil and seeks to increase collaborative research and development activities, thus leading to commercialization of new ideas. Both countries are developing an agenda focused on innovation. This agenda is being guided by the joint Science and Technology Action Plan that aims to promote technological advancement and innovation in areas of common interest (Canada, 2013).

The Brazilian process of internationalization of the professional and technology education began in 2011. The Ministry of Science, Technology and Innovation (MCTI), the

Ministry of Education (MEC), the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) with the support of the Association of Canadian Community Colleges (ACCC) launched the first public call exclusive, ACCC no. 107/2011, for selection of students of the Federal Network of Professional and Technological Education (Federal Network) (Brasil, 2011).

This public call was a result of the agreement for collaboration in the area of professional education, science and technology, signed in October 8, 2010, between the ACCC and the National Council of the Institutions of the Federal Network of Professional, Scientific and Technological Education (CONIF) (Conif, 2010a).

The ACCC is a national Canadian organization, of voluntary membership, which represents colleges and institutes in Canada and internationally. Its mission is to defend and support learning provided by member institutions and their vision is to be the most respected voice in post-secondary education (ACCC, n.d.).

The CONIF was established in March 2009, shortly after the publication of the law no. 11,892/2008. This Council brings together all the Federal Institutions of Professional Education, Science and Technology of Brazil and aims to discuss the proposition and promotion of policies for vocational training and technological development, research and innovation (Conif, 2010b).

Another selection process in the scope of the agreement between ACCC and CONIF was the public call no. 147/2013, held in July 2013. Only students of technology courses in areas and subjects of study of interest to SWB Program could enroll in the selective process. The criteria for selection of students involved the proficiency in the language of the country of destination and good academic performance. Preference is given to students who have been classified in the National High School Exam (Enem) with grade above 600 points out of 1,000, won prizes in Science Olympiad or participated in scientific initiation program (Brasil, 2013a).

The institution of the Federal Network must enter into an agreement for adherence to SWB Program, assuming the commitment for the recognition of credits obtained by students in the foreign institution (Brasil, 2013b).

In addition to this agreement with the SWB Program, the IFs need to sign a memorandum of understanding with the Canadian institution that will receive the Brazilian

student. The Federal Institute of Brasília (IFB), for example, signed such agreement in November 2010 with the Niagara College and, in May 2013, with the Camosun College of British Columbia. These agreements aim to establish cooperation relationship and to promote initiatives of common interest.

The program SWB set up a web site (Control Panel) to disclosure the information about the grants conceded. The Control Panel allows to rank the grants conceded by country of destination, field of study, gender (sex), name of the student's educational institution. The data collected in November 2013 shows a total of 38,272 grants conceded, of which 30,771 were destined to doctoral sandwich programs. The main field of study is engineering and its sub-area (15,645 grants), while the top country of destination is the United States of America (8,863 grants) with Canada in the third place (3,795 grants). Figure 1 shows the participation of Canada in the total grants conceded.

The numbers of grants conceded by field of study show that only 0.3% (119 out of 38,272) goes to technologists and Canada is the main destination for the technologists (53 out of 119) as presented in Figure 2.

The public call no. 147/2013 coordinated by CAPES presented as partial result with a list of 668 students. These students were recommended by CAPES. The allocation of pre-selected candidates is an attribution of the program's partner (Brasil, 2013d). It has not been possible to obtain the results of public call no. 107/2011.

Discussion

It is noticed that the Brazil-Canada agreement is a bold strategy to combine efforts to promote innovation and technological development. The great disclosure made by the ACCC in visit to Brazil stimulated the participation of especially Federal Institutes' students. CONIF has been conducting outreach events, such as the Brazil-Canada Seminar III, held in April 2013, in the city of Salvador (BA), which aimed to amplify the cooperation among the countries and the internationalization of institutions (IFB, 2013).

It is important to say that this agreement is restricted to the technologists. The training of technologists represents only part of the vacancies of the Federal Institutes. According to law no. 11,892, art. 8, the priority of the Federal Institutes is basic education, preferably in integrated courses and adult and youth education. It is necessary to consider that the law establishes twenty per cent of vacancies for teaching degree, particularly math and science.

Considering the proposal for the creation of institutes can be noticed the preference for professional valuation and social inclusion. However, practice has shown a prevalence of technological areas to the detriment of technical areas. As observed in the Brazil-Canada agreement, the selection criteria for a student are good performance (especially with good grade in Enem) and fluency in English.

What is questioned, in this case, is the exclusivity regarding the training of technologists. Resuming the thought of Anísio Teixeira (1977), the reflection should address the perpetuation of the old duality in the educational system: cultural education for the elite and professional education to the poor.

Technological innovation is critical and the advances provided by research in this area are fundamental. In Brazil there is a great mass being formed in technical courses, which result in mere opportunity of certification, as defines Kuenzer (2000). These courses consist primarily of training for a job of low added value, as the mid-level technical courses which in most cases do not allow social ascension.

Also draws attention of teaching degree courses in science and math, which are now also the responsibility of the Federal Institutes, but are not part of the Science Without Borders. In this case specifically the science is within border.

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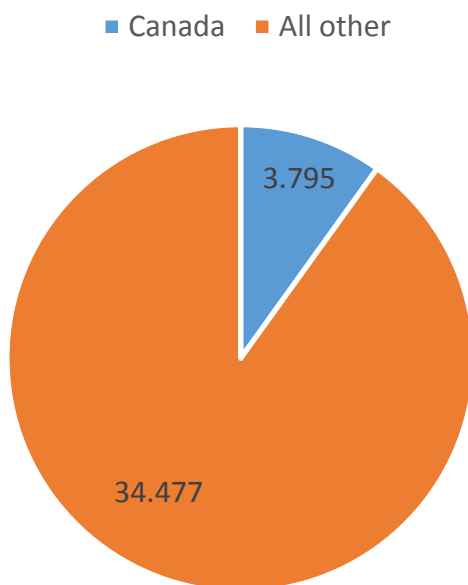


Figure 1. Brazil: Science Without Borders total grants conceded - information organized by country of destination (position of November 2013). Retrieved from <http://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>.

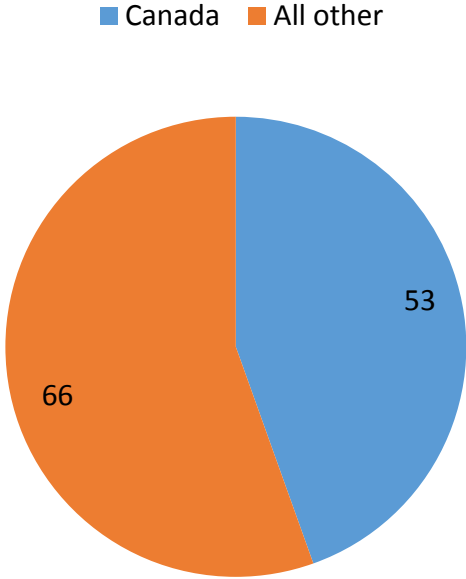


Figure 2. Brazil: Science Without Borders total grants conceded to technologist - organized by country (position of November 2013. Retrieved from <http://www.cienciasemfronteiras.gov.br/web/csf/painel-de-controle>.