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Professional and Technological Education and Management Experiences of the Federal Institute of Rondônia, Brazil

Sergio Francisco Loss Franzin[a1], Fabrício Moraes de Almeida[b]

[a]*Instituto Federal de Rondônia, Avenida Sete de Setembro, 2090, Bairro Nossa Senhora das Graças, Porto Velho/RO, CEP 76.804-124, Brasil*
[b] *Universidade Federal de Rondônia, Avenida Presidente Dutra, Centro, Porto Velho/RO, CEP 76.801-974, Brasil*

Abstract

The theme of this paper is the management of professional and technological education. The purpose is to demonstrate trends in Federal Network of Education in Brazil and specifically discuss issues of management of Federal Institutes, in particular the Federal Institute of Rondônia. The research is documentary. National indicators of dropout and retention reveal that less than half of the students of the Federal Institutes of Education, Science and Technology can complete courses of middle and higher levels. The academic indexes of the Federal Institute of Rondônia are similar to the national indexes and require management strategies beyond common procedures for positive intervention in the processes of formation.

Keywords: Professional Education; Federal Institutes; Management; Indexes.

1. Introduction

The Brazilian Professional, Scientific and Technological Education (EPCT), founded in 1909, has followed a path in which high schools became technical schools (such as the Agrotechnicals), these in Federal Centers for Technological Education (CEFETs) and, finally, almost all became Federal Institutes (IFs). Along this trajectory, there were many changes of direction in training policies, especially in the last 20 years, because while during the 1990s professional education and basic education were separated, in the next decade were reintegrated. One of the largest public policy investments for professional education was the establishment in Law 11,892 (Brasil, 2008) of the Federal Network of Professional, Scientific and Technological Education. In this, the Institutes spread across the country and expanded their reach far beyond, with Campus, poles of distance education and other units. This has autonomy equivalent to Federal Universities and a greater range of services, such as: basic mid-level training; short courses; higher education; graduation at all levels; certification of competences; revalidation of diplomas; technological development and innovation; patenting, and others.

[1] Corresponding author. Tel.: (69) 9206-8299.
E-mail address: sergio.loss@ifro.edu.br

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Lives is, therefore, the old enthusiasm for education, beating the dust of the flag of the "Escolanovismo" ("New School Movement"), with the belief that such expansion at least tends to overcome social inequalities. However, institutions have experienced such problems as student absence and network professionals, low utilization of teaching and even idleness of vacancies in their professional training schemes, as recently discussed in the XXXVII Meeting of Directors of Federal Institutions of Professional and Technological Education (Reditec, 2013) in Maceió/AL/Brazil.

The paths of Professional and Technological Education, while theme present, are quite troubled. This article, the result of desk research, has the objective to demonstrate some of the trends of the Federal Network of Education and specifically discuss issues of management of Federal Institutes, in particular the Federal Institute of Rondônia, and highlight what national programs and local proposals present for this decade.

2. Benchmarks of Efficiency and Effectiveness

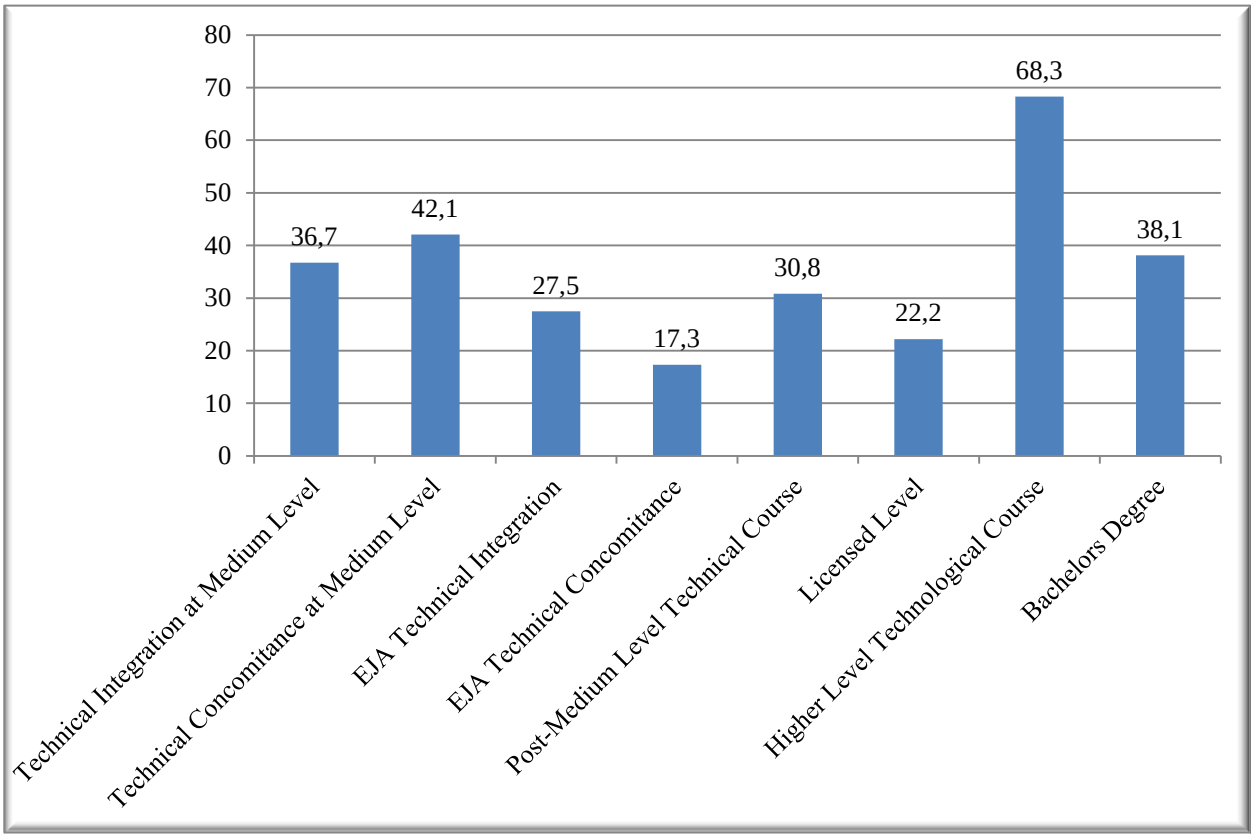
Since the creation of the Federal Institutes, the concept of "excellence" is the key to much of the discussion regarding the enhancement of teaching in the Federal Network of Education. Professional education is often considered in the discussion of the overvaluation of financial gains in view of technical training. Among intellectuals, representatives of the professional class (unions), and amongst groups of managers, this data has been put to the test in order to find solutions, but many problems still seem chronic, such as the long-standing dropout and repetition rates.

In the XXXVII Reditec, the data presented were those taken from the National System of Professional and Technological Education (Sistec), of the Secretary of Professional and Technological Education of the Ministry of Education (Setec/MEC). Although there are statistical imperfections, considering that the Sistec statistics only reflect the numbers they are supplied with, the references given remain plausible, considering the findings of indicators that are made for practically the same purpose as in experiments Federal Institute of Rondônia (IFRO), which will be addressed later. Data from 2011 and 2012 revealed that the national level of withdrawal, or dropouts, reaches 18% in the courses of concomitant mode to Middle Teaching of the Youth and Adult Education (EJA), 12% in the subsequent mode and 7.7% in the integrated mode to Middle Teaching.

The indices are aggravated when superimposed on non-completion rates between the years 2011 and 2012, from an ascertainment of September 2013, over all Federal Institutes of the country (Dantas, 2013). The figures for the EJA, with a completion rate of 17.3% in the concomitant mode and 27.5% in the integrated mode, are extremely precarious. In the subsequent technical courses to Medium Teaching, the rate is 30.8%, worse than that of Bachelor degrees, 38.1%, probably because many of the students in this modality has trend to migrate to the Bachelors degree when possible in view of the opportunities that arise, which are more advantageous at the top level. However, an analysis of the causes of dropout shows that it goes beyond speculation, as evidenced by the studies of the Getúlio Vargas Foundation (2012). Finally, also worth mentioning the low completion rate in licensed degrees (22.2%), particularly considering the need for training of teachers for basic education in Brazil (Dantas, 2013).

These are statistics showing that commitment becomes even more alarming when collated with non-completion indicators. After all, there are two major challenges for institutions: promoting the permanence of freshmen and getting them to positive results at the end of the training processes.

The national completion rates denote that for the upper courses of technology the results are better than in the post-medium level technical courses, jeopardizing the rationale of the second mode, without necessarily voiding it. At the same time, it also damages the concept of education for youth and adults (EJA) in professional education, as state policy to guarantee vacancies to those students who had no opportunity the proper age, considering the use of 27.5% on completion rates of courses integrated mode and 17.3% in the subsequent mode of the Program, as shown in graph 1.



Graph 1. Conclusion Rates in the Federal Network of Education (in %)
Font: XXXVII Reditec (Dantas, 2013)

The problem also highlights on data of the Court of Accounts of the Union (TCU) (Brasil, 2013 a), described in the audit report on the supervision at the Federal Education Network, which brings forward the following themes arranged in the summary document:

> [...] NEED FOR IMPROVEMENT IN PROCEEDINGS RELATING TO SCHOOL DROPOUTS, THE INTERACTION WITH THE PRODUCTIVE LOCAL ARRANGEMENTS AND PROFESSIONAL SUPPORT FOR INCLUSION OF STUDENTS. LACK OF TEACHERS AND PROFESSIONAL LABORATORIES. LACK OF ADEQUATE PHYSICAL FACILITIES IN SOME FEDERAL INSTITUTES [...]

The problem raised in the Federal Network of Education is not limited to academic achievement, but also involves the various purposes of the Federal Institutes as expressed in the laws that established these Institutes, among which is stipulated the need for productive relationships with local, cultural and social arrangements (APLs). The table 1, with the data of the report of TCU (Brasil, 2013 a), which established the National System of Professional and Technological Education (Sistec), brings forward the precariousness of efficacy rates of the Network.

Table 1. Outcome indicators in the Federal Network of Professional Education in relation to tuition cycles ended in 2011

Indicator/Type of Course	Middle Level			Higher Level		
	Medium Proeja[2]	Post-Medium Proeja	Medium Integrated	Licencing Level	Bachelor Degree	Technological Qualification
Quantity of Matriculation Cycles	287	1.544	483	163	107	739
Quantity of Students in Courses	5.836	59.871	16.066	3.084	2.538	21.762
Percentage of Dropouts	24,0%	18,9%	6,4%	8,7%	4,0%	5,8%
Percentage of Students still in Education	37,9%	49,3%	44,4%	64,5%	68,1%	50,8%
Percentage of Graduates	37,5%	31,4%	46,8%	25,4%	27,5%	42,7%

Font: TCU (Brasil, 2013 a, p. 12)

The dropout rate appears higher in Reditec data (Dantas, 2013) than the TCU data (2013 a) concerning the measurements in 2011 and 2012, for the integrated mode (7.7 *versus* 6.4%); but is lower for the subsequent (12% *versus* 18.9%). At the other levels and modalities expressed, the variances also occur. In the two reports, of the TCU (2013) and of Dantas (2013), there is no distinction between On-Campus and Off-Campus offerings. It is believed that the causes of dropout and non-completion problems can be separated into four categories: a) social, cultural and economic vulnerability; b) reconciliation of work and study; c) learning ability; d) problems with food and/or transport (Dantas, 2013).

The FGV survey (2012) concludes that the reasons for students not completing the courses are mostly an incompatibility with the content requirements of the labor market (29.45%), dissatisfaction with the course or not monitoring classes (11.29%) and family or health problems (25.91%). Therefore, there is a greater complexity than disclosed by Dantas (2013), especially with regards to the mismatch between curriculum and expectation of formation. For operations under government management, it is suggested: " Guidelines for permanence and success (combat to retention and evasion)"; "Fostering actions student assistance"; "Encouraging the training of professionals" (Dantas, 2013). For institutional management, the list of focal points is greater.

All proposals should have been implemented, because are common and traditional references for education in the democratic political field. Intervention actions, for example, are always required, while the composition of teams is a regular forecast, but this has been a cause of major clashes in discussions about the structure of the Federal Institutes, almost since its inception and more severely today. The strengthening of the relationship between teaching, research and extension is one of the urgent measures not yet implemented.

According to the TCU report (Brasil, 2013 a), there are no sufficient monitoring indicators for verification of employability of graduates or entrepreneurial projects, nor other means of analysis of demand conditions. The institutional management units do not have the need indicators, along with indicators of opinion. This perception emerges from referrals from TCU as recommendations to Setec/MEC/Brasil, which can be summarized thusly: a) optimization of efficacy rates, the fight against student dropout and towards student retention; b) instruction to formalize partnerships between the Federal Institutes, other educational institutions and the productive sector; c) greater integration between teaching, research and extension; d) establishment or strengthening of shares of integration of students in the productive sector, with an emphasis on traineeship; e) investment in training programs of servers; f) overcoming the deficit of teachers and technicians; g) establishment of a system of evaluation of technical courses. These recommendations were part of the guidelines discussed in the strike movement of the employees of the Federal Education Network between 2012 and 2013. These proposals are aimed at correcting problems evidenced daily in each Federal Institute (IF), including the example of the Federal Institute of Rondônia (IFRO), which is specific reference as study in this article.

[2] Proeja: National Programme for Integration of Professional Education with Basic Education in the Mode Education for Youth and Adults

3. The EPCT in Brazil

The National Education Plan for the decade 2011 to 2020 (Brasil, 2013 b) also lies in a controversial stage because it's been more than three years and is still in progress through government. According to the News Portal of the Senate on September 25, 2013 (Brasil, 2013 c), the plan had been approved by the Committee on Constitution, Justice and Citizenship (CCJ) and passed to the Committee on Education, Culture and Sports (CE). The Draft Law which is attached provides as guidelines in its Article 2º, "training for work", "humanistic, scientific and technological promotion of the Country" and "enhancement of professional education", in sections V , VII and IX as well as an inclusive education system and democratic management of education in Articles 8º and 9º. In the Goals Plan, highlight the Target 11, which provides "[...] double enrollment of professional technical high school education, ensuring the quality of supply." We need to pay attention to this, because the problems that culminated with the TCU audit of the Federal Institutes were precisely those arising from a rampant expansionism considered, which did not meet the needs of infrastructure and personnel. The table below summarizes the main goals of the Plan in relation to the Federal Network of Professional, Scientific and Technological Education (EPCT).

Meta	Description / Summary of Strategies
3	"To universalize by 2016 the educational attainment for the population aged 15 to 17 years and raise by 2020, the net enrollment rate in secondary education to 85% in this age group."
4	"Universalize, among the population of 4-17 years, school assistance to students with disabilities, pervasive developmental disorders and high ability or giftedness in regular network teaching."
10	"Provide at least 25% of enrollments of youth and adult education in the integrated form with professional education during the final years of primary school and in medium teaching."
11	Duplicate registrations of professional medium level education, ensuring the quality of supply .
12	"Raising the gross enrollment ratio in higher education to 50% and the net rate to 33% of the population of 18-24 years old, assuring the quality of provision."
13	"Raising the quality of higher teaching by expanding of operation of masters and doctors in institutions of higher education to, at least, 75% of the teaching staff in effective exercise, including a total of 35% of doctors."
14	"Gradually increase enrollment in graduate courses *sensu stricto* in order to reach annual titration of 60,000 teachers and 25,000 doctors."
16	"Enable 50% of teachers of basic education in sensu lato and senso stricto, while allowing and ensuring that they can continue education in their field."
17	"Enhancing the public teaching of basic education in order to approximate the average yield of the teaching professional with over eleven years of schooling of the average income of other professionals with equivalent education."

Tableau 1. Summary of Goals of the National Education Plan related with the EPCT
Font: Adapted from National Education Plan of Brazil (Brasil, 2013 b)

Several other targets, mostly, are also related to EPCT, especially with regard to the universalization of education, teaching careers and investments to improve the quality of education. However, as this article refers to a specific theme, the above scenario was focused on the goals objectively directed more to professional education. It is observed that they are founded on eminent challenges such as the enhancement of educational agents, the servicing of a diversity of subjects, the overcoming of performance indicators, the restructuring of the Federal Network and interaction with other networks (financial investment), as well as the increment of policies to promote joint institutions with the world and the labor market.

4. Results of Teaching Dimension on IFRO

The results of teaching and learning endorse the national problem raised by the Court of Accounts of the Union and that has motivated many political clashes and union struggles within the Federal Education Network. The following table shows the results recorded in Sistec, extracted by the institutional researcher of the IFRO on March 24, 2014 (Brasil, 2014). These contemplate the cycles of registration included between the beginning of the activities of the institution in the first half of 2009 and the first half of 2013. Other data were discarded due to the

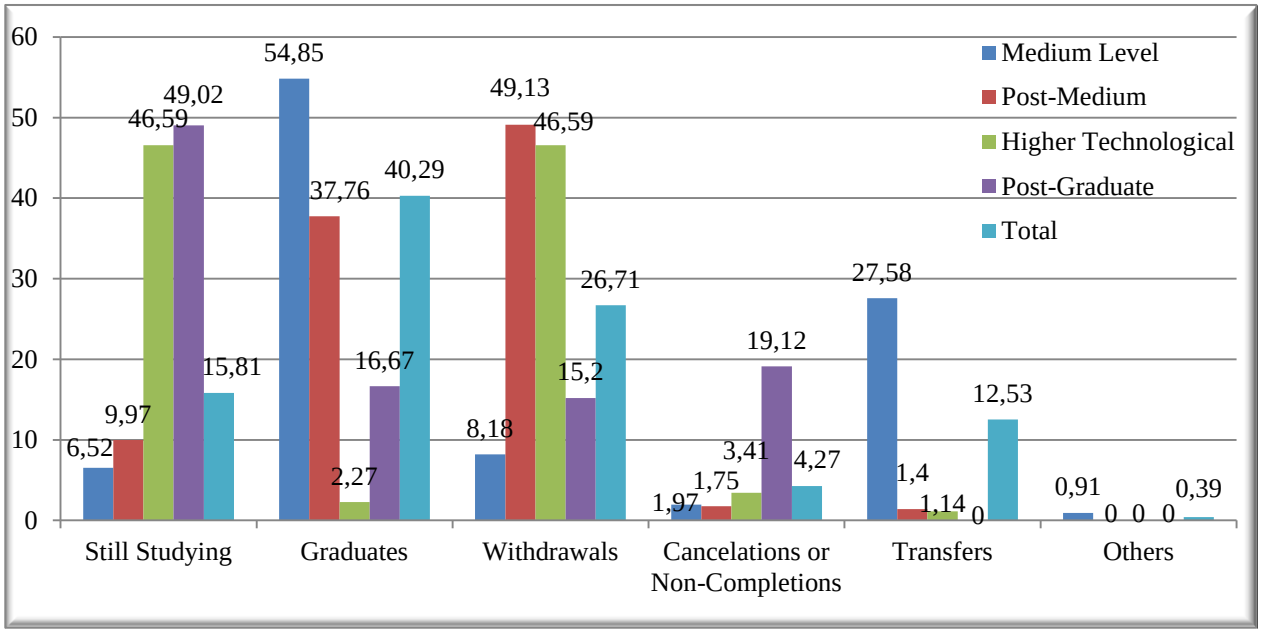
fact that some campuses have not fed the Sistec with the latest results.

Table 2. Academic achievement of students in IFRO between the first half of 2009 and the first half of 2013

Student Situation at the end of Minimum Cycles	Technical Integration at Medium Level	Post-Medium Level Technical Course	Higher Level Technological Course	Post-Graduate Level	Total
Still Studying	43	57	41	100	241
Graduates	362	216	2	34	614
Withdrawals	54	281	41	31	407
Disconnected from de System (Cancelations or Non-Completions)	13	10	3	39	65
Transfers (external)	182	8	1	0	191
Others	6	0	0	0	6
Total	**660**	**572**	**88**	**204**	**1524**

Font: Adapted from Sistec/Institutional Research of the IFRO (Brasil, 2014)

In the IFRO, the courses have a minimum term of completion and a maximum — the second is twice the first, in general. For this research we consider "current" students who have not paid up studies in full; the dropouts are the withdrawals; and disconnect from de system are those that exceeded the maximum period of completion or cancelled registration. The final number of not approved or retained does not appear because the maximum cycle has not yet closed in technical courses and higher level courses. The data in Table 2 are shown in the graph 2 below.



Graph 2. Academic achievement of students of the IFRO with cycles registration between the first half of 2009 and the first half of 2013 (in %)

Font: Adapted from Sistec/Institutional Research of IFRO (Brasil, 2014)

The graphic shows that, in the Technical Integrated at Medium Level Courses, the graduating rate is 54.85%, higher than the national average of 46.8%; in the form of Technical Courses Subsequent to high school, the rate drops to 37.76% — greater than the national again, 31.4% , but equally critical, since over 50% are dropouts, cancelations or transfers. Among College Courses in Technology, the graduates are only 2.27%, with 46.59% on

students still ongoing. The result is very poor compared to national averages, with 42.7% of graduates. A similar situation occurs in Postgraduate *Sensu Lato*, which has a graduation rate of 16.67%.

The informations about the number of licensed not are presented because the first groups had initial completion only in December 2013, and so the data have not yet been fully launched in Sistec. The Bachelor level classes not had completed cycles and the those of the Technical Concomitant Medium Level Courses involve unrepresentative data yet, because have low number of vacancies. According to the Report of the Dean of Teaching of the IFRO (Brasil, 2012), there is a stabilization in the rates of overall progression of students from one period to another, in the range of approximately 70%, for the initial enrollment periods from 2009 to 2011. The document indicates negative trends in the process, since the cumulative loss of 30% per period, partial and final, leads to greater losses at the end of registration cycles.

In addition to the enhancements of routine measures, the top management of IFRO instructed a study of possibilities for resizing the medium level technical courses, converting the time of minimum completion from four to three years at the completion module and four to three semesters in subsequent mode on some campuses. Experiences already exist of such arrangements, including the campuses offering full shift and shorter courses. The study was conducted by the Dean of Instruction and resulted in a paper discussed by the management teams of the Campus, teachers and other professionals of the units. He was justified not only because of the high rate of losses in the process (dropouts and non-completion), but also in light of national trends to optimize the time of formation of the students, the prospect of accreditation by the National High School Exam usually in the third year of training of participants, the trend optimization in institutions of National Learning Systems and proper configuration of high school in three years. According to the studies of the Dean of Teaching (Brasil, 2013 d), the resizing process would improve by reviewing the organization of curricula, which has a high-level of concentration of components of general education curriculum at the early stage and many specific disciplines at the final stage; there are also excess workloads in some cases approaching the design of the integrated technical courses of a bachelors degree. This proposed change generated some instabilities in management due to expected impacts, involving the reorganization of personnel, infrastructure investments and technology and integration among the work of agents. At the same time, this has led to complex changes. A comprehensive review of the curriculum proposal for the High School was taken in integrated technical professional education, through a forum parameter in Moodle environment, taking as a reference the verbal informations and exhibitions of the III Meeting of Leaders of Teaching[3]. Intervention measures have materialized in the document formalizing the menus of common and diverse core parameterized by teachers of the IFRO for the national basis, prepared by the Directorship of the Development of Teaching (Brasil, 2013 e) .

Other issues raised by the Directors of Teaching during the III Meeting of Leaders of Teaching of the IFRO (verbal information) should be complementarily considered: lack of teachers; limited infrastructure; the large amount of unlicensed teachers; an educational academic management system (Siga-Edu) without sufficient effectiveness yet; delays in hiring professionals; an absence of research into the demand for particular courses; contests with inadequate edicts and without the participation of teachers of the IFRO in examination boards; ill-equipped libraries; disinterest of students and servers; lack of monitoring of graduates; absence of institutional marketing and difficulties in implementing selective processes. As positive highlighted by management, the Directors of Teaching noted: promotion of many interdisciplinary events; harmonization of work teams; expansion of partnerships and linkages with external sectors; expansion of public consultations of interest for the courses; deployment of distance education; continuous training of servers. The goals were limited to forecasting routine activities, such as enhanced pedagogical support, but without the expected quantification; added up to this proposals for opening new courses, expansion of infrastructure, implementation of libraries, internalization of training units and revision and enhancement of the student assistance program.

5. Conclusion

The goings-on courses in Federal Education Network is in the process of turbulence that requires urgent

[3] The III Meeting of Leaders of Teaching of IFRO occurred in Ariquemes/RO/Brazil in October 2013. This event discusses the actions taken, problems and planning the year of education at the Institution.

action to seek balance. The intervention of TCU is a measure of control on the accountability of managers of institutions responsible for the use of public resources, because the completion rate of less than 40% of students reveals two major facets: the waste of more than half the cost of resources invested, and a failure to meet the market reserve, especially for technical of mid-level and graduates.

The National Education Plan also brings a lot of expansionist goals, but these should be implemented with sufficient planning and investment to guarantee proportional returns. The recommendations made by the TCU to Setec/MEC/Brazil are nothing more than what is expected of the Federal Institutes. Actions to strengthen the relationships between teaching, research and of the world of work is some of the directions expected for Professional Education, Scientific and Technological (EPCT), as well as intervention and positive leadership in clusters, with proposals for innovation and technological advances. Furthermore, the implementation measures of laboratories, grants for student assistance policies and the expansion of the staff are some of the corrective measures to stagnant problems, almost chronics. Such measures are not innovative, but commons, though unfortunately not regularly implemented in this system. The Agreement on Goals and Commitments (Brasil, 2010) signed by the Ministry of Education with the Federal Institutes corresponds precisely to a measure of intervention required for lack of efficiency and effectiveness.

The IFRO has not been immune to these management problems, it has presented similar statistical numbers to the national average. Your expansionism occurred with the generation of problem commons to the other institutes of the country. The management experiences have suffered low levels of achievement in course completion rates per cycle, plus lots of evasion and distancing the institution in relation to regional development systems. The IFRO must therefore broaden and diversify its actions to fulfill its vocation and strengthen the local productive arrangements, in order to meet the public policy of improving professional education effectively, expanding research and extension proposals within this tangle of indicators, pointing to various places and one at the same time: excellence in education.

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