Prácticas académicas de profesores de posgrado en el contexto de la era Internet. Estudio de caso: Doctorados Consolidados del PNPC de CONACYT[1]

Academic practices of Post graduate teachers in the context of the Internet age. Case study: Consolidated doctorates of the PNPC of CONACYT

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*"...requerimos fortalecer nuestras universidades que son las fábricas de conocimiento de la nación. Debemos multiplicarlas y dotarlas de **la infraestructura y los recursos necesarios** para llevar a cabo su labor".*
(Franco, Coordinador del FCCyT, 2014)

Resumen

En la era de internet la economía basada en el conocimiento está sujeta a constantes cambios, por lo que la adquisición de nuevas habilidades y la innovación tecnológica son vitales para toda sociedad moderna. Este trabajo tiene como propósito señalar que con base en las políticas educativas, en México, los posgrados de calidad, mediados por tecnologías digitales, constituyen una herramienta académica privilegiada para el aprendizaje, la investigación y la innovación tecnológica. Desde una perspectiva metodológica de estudio de caso se analizó una nuestra de 22 doctorados consolidados del Programa Nacional de Posgrados de Calidad (PNPC) del CONACYT. Se obtuvo, entre otros resultados relevantes, que en la mayoría de las Instituciones de Educación Superior (IES), responsables de

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[1] The National Quality Graduate Program (PNPC) is a proposed academic training that the Department of Higher Education of the Ministry of Public Education (SEP SES) and the Consejo Nacional de Ciencia y Tecnología (CONACYT), have been doing so uninterrupted for 23 years. For its part, the Council is an independent agency of the State, not zoned, with legal personality and its own, which enjoys technical, operational and administrative autonomy, based in Mexico City, Federal District and is the advisory body of the Executive Federal and specialized to create public policy development of scientific research, innovation and technological modernization. Source: Organic Law of the National Council of Science and Technology published in the Official Journal of the Federation on June 5, 2002.

agenciar dichos programas, las condiciones de infraestructura y equipamiento tecnológico adolecen de serias limitaciones o carencias que van en demérito de brindar a los profesores y estudiantes de posgrados de calidad mejores espacios para un alto rendimiento académico. Lo anterior que constituye un factor negativo en los procesos de formación de profesionales e investigadores con niveles superiores de competencia que les permita ser competitivos a nivel nacional e internacional.

Abstract

In the internet era the knowledge-based economy is subject to constant changes, so the acquisition of new skills and technological innovation are vital to the modern society as a whole. This work aims to point out that based on educational policies, in Mexico, the postgraduate programs of quality, mediated by digital technologies, constitute privileged academic tool for learning, research and technological innovation. From a methodological perspective of case study discussed one of our 22 consolidated PhD of the National Program of Quality Graduate Programs (PNPC) of the CONACYT. Among other relevant search results, we obtained that in the majority of the Higher Education Institutions (HEIs), responsible for managing those programs, the conditions of infrastructure and technological equipment suffer from serious limitations or shortcomings ranging in demerit to teachers and students in graduate quality programs of better spaces for high academic performance.

The above that is a negative factor in the process of training of professionals and researchers with superior levels of competence that allows them to be competitive at national and international levels.

Introduction

The current context in which higher education in the world and the incorporation of technologies of information and communication technologies (ICT) in education develops generate changes in the traditional practices of teaching and research as well as in the organization educational institutions serving this level. The emergence and development of new technologies generate profound structural changes in the fields of economics, public policy, education and the transformation of labor relations (Valenti, 2008). In the Internet age the knowledge-based economy is subject to constant changes, so the acquisition of new skills and technological innovation are vital.

The integration of ICT in the teaching, learning and research at the graduate of the Mexican educational system can not be left out of the plans and programs of study they constitute one of the factors necessary for change in modern societies, including culture, organizations, businesses, education, social and individual communication and entertainment itself. Are digital tools which are contributing to the creation of knowledge societies in which graduates of postgraduate professionals are called to compete. This implies the need to review the development of national education policies, specifically those related to graduate, now has a high significance and strategic importance in the process of training professionals and researchers with higher levels of competence (Fresán, 2013) .

The constant and rapid technological changes, including ICT, forcing academics and students in training to update their knowledge to avoid the risk of being caught in the digital divide. "The rate of appearance of new concepts, paradigms and tools is so dizzying that a professional with just a few years of experience finds that requires expertise that could not acquire during their time in college because, at that time, were unknown subjects or even They were just under investigation "(Di Tada, 2008, p. 2). There is no doubt that one of the alternatives to overcome this shortcoming is, among other options, quality graduate study.

As part of the national development of graduate widely exposed in the various instruments of educational policies, which cover quality, equity and relevance is widely present

objectives, the role of ICT is relevant in more ways than one . The use of ICT is not only essential in the processes of teaching and research but also essential for the dissemination of knowledge, which is another critical in the development of graduate factor: "Not only those involved in graduate and research soon have access to the progress of scientific, technological, artistic and humanistic knowledge but are increasingly the beneficiaries of new approaches to the dissemination of science and humanities: Students are responsible for making decisions, legislators, businessmen, among others "(Sánchez Saldaña, 2008, p.7).

Modern communication mediated by new generations of technological devices is at the heart of all human activity, so it is true that the media play a crucial role in educational innovation. Use and appropriation by agents of educational processes must be based on higher quality, coverage and relevance of graduate programs in our country, which is a great challenge to be faced.

Today access to software tools by teachers and students requires involvement and constant interaction, individual and group, for the approach to problems and situations that demand the implementation of strategic skills. ICT in education longer a means to provide themselves constitute information and interactive spaces that encourage the development of cognitive, reflective and communicative skills. When these environments become substantial part of a learning community allow yourself to feel, think, discover and innovate collaboratively. Therefore, you should think of innovative educational policies that enable intelligent use and ownership to reverse the arrears of the current education system and successfully respond to the changing needs of global and local education emerges in the XXI century.

It is pertinent that teachers and students transform computing resources in cognitive devices that support "meaningful learning, learning that promotes the ability to use what they learn in different contexts and disciplines, and naturally leads to creativity" (Narro, Martucelli and Barzana, 2012, p. 361). For computing resources and meaningful learning environments for academic communities need to be available permanently and integrated within the plans and curricula at all educational levels.

Moreover, a significant number of graduate studies in Mexico have focused on multiple topics; however, little research focused on examining the conditions of existence and institutional resources availability of physical and technological infrastructure that is recommended are available to teachers and students of postgraduate designated quality by training system Conacyt.

For this indicator of quality of graduate programs feasible is required to have institutional conditions conducive to academic exchange between teachers and those with students. Graduate academic work depends, Pineapple, institutional conditions such as academic infrastructure that teachers and students to the appropriation of knowledge is offered as a channel to build relationships between all stakeholders in the educational process. For him, "the institutional conditions allow students approach the daily communication between them as well as their teachers so that academic life is not restricted to the classroom is strengthened" (Piña, 2013, p. 119).

It is logical that the relations established in the classroom between students and between them and their teachers are legitimate forms of transmission and assimilation of a certain knowledge; however, by themselves are insufficient, so the institution must provide the planning and the availability of informal spaces for dialogue and the meeting of the academic community; eg cubicles for personal or group counseling, library, staff room, cafes and unscheduled spaces such as hallways, because all relationships and fosters the exchange of ideas related to the academic field.

Improving the institutional administrative efficiency of postgraduate is linked to the inclusion of ICT in business processes of the programs. The administrative support allows the best use of available resources to achieve the objectives of research, training and dissemination of knowledge. Self-assessment guides for accreditation of graduate programs designed by the Conacyt probe the physical and institutional infrastructure and technology students have access to computers and laboratory equipment, but not analyzed in detail what you do with those teams. For Sanchez, "the quality of postgraduate much more dependent arising strategies to promote learning, with various types of ICT support that the number of computers, multimedia equipment, tele-classrooms or video conferencing rooms that an institution may have "(Sánchez Saldaña, 2008, p.12).

According Thematic Network Conacyt ICT, the national education system is currently undergoing "by one of its most critical phases due to the accumulating evidence in recent years of significant deficiencies in quality, equity and coverage. To respond to this situation, has produced a series of reforms to the programs of the different educational levels, with particular emphasis on the development of generic skills -learning to be, to do, to know and convivir- and the inclusion of ICT in education "(Red Theme ICT Conacyt, 2009, p.17). These technologies constitute means and tools to innovate and optimize the educational process and its execution context.

This research aims to investigate the existence and terms of availability of resources of physical and technological infrastructure as vital in the operational planning of graduate quality and impact, especially in the training of university academic communities graduate. Are thought to constitute the maximum cycle graduate in higher education and the inclusion of technological tools in their programs, as well as ownership of these and their use by the research professors in educational practices, carried out so natural and is a must for quality and innovation of these studies input.

The work was divided into four sections, the first a description of educational policies in relation to the incorporation and use of ICT in quality graduate by analyzing official documents ago; in the second part of Conacyt PNPC is analyzed in the third methodological components are outlined and the fourth the empirical results of the study sample are presented selected case.

Educational policy instruments in relation to the incorporation and use of technology in higher education and quality graduate and research

      1. *Education Sector Program (PSE) 2013-2018*

From a diagnostic vision, the PSE of the Secretariat of Public Education (SEP) states that the rapid advance of knowledge has led to technological and social changes in the past had been unexpected, so it is necessary to have access to updated information and timely.

With regard to higher education, the program recognizes that in graduate school where the generation of new knowledge and creativity are more important. To "promote the relevance of graduate programs and research will be promoted jointly with the CONACYT, knowledge networks involving institutions of higher education, and support to their internal organization fosters links with production requirements and social "(PSE 2013-2018, p. 7). It expresses that respond to advances in information societies and knowledge is claimed to

Higher Education Institutions (HEIs) to carry out "investments in technology platforms, working with communities of teachers, reviewing the relevant legislation promote research on the use of technology and the evaluation of results "(PSE 2013-2018, p. 8).

The importance and functions assigned to the PSE higher education and graduate programs is reflected in the Objective 2: Strengthen the quality and relevance of higher secondary and higher education and job training, to contribute to the development of Mexico. For this purpose includes the strategy: Harnessing information technology and communication to strengthen the upper and upper secondary education, with the following lines:

- • Promote the incorporation of new technological teaching resources for generating capabilities own knowledge society.
- • Working with teachers communities outreach programs and training in the use of ICT in education.
- • To promote collegial and multidisciplinary use and development of technologies applied to education research.
- • Using technologies for teacher training, management and support staff involved in the schooled modalities, unschooled and mixed (PSE 2013-2018, pp. 12, 19 and 20).

Through the pages of this program are perceived in usually two strategies: a) incorporate the need for citizens, students and teachers to efficiently use ICT to understand the environment and generate innovation processes, and b) create a solid link between schools, universities, research centers and the private sector, primarily at the graduate programs (PSE 2013 to 2018, p.3).

Also, the PSE, from our point of view, overestimates what that can mean the graduate in the country: "In graduate school has the responsibility to train those who make a direct contribution to the advancement of knowledge, innovation and development science and technology "(PSE 2013-2018, p. 18). This approach does not prevent inquire: Is this six-

year program achieved significant progress in this area? The plans and projects of the previous administrations, mostly, the practical results have been highly limited.[2]

2. Policy programs for the promotion of science, technology and innovation

Since late last century the implementation of educational policies regarding the promotion and development of higher education and specifically of postgraduate in Mexico, has been a constant through the National Development Plan (NDP), of Sector Programs Education (PSE) and CONACYT programs. In all of them demand that schools incorporate the use and appropriation of ICT in the curriculum. In this case only the policies relating to quality graduate analyzed.

- Contributions of Institutional (PI) Program and the Special Program for Science, Technology and Innovation 2014-2018b (PECiTI) Conacyt:[3]

1°. The PI raises two strategies: The first relates to strengthening the PNPC and the second examines the incorporation and intensive and extensive use of technological infrastructure in quality graduate programs in HEIs. With regard to infrastructure and technological tools, proposes two important topics:

A) The relation to open access to information. To respond to the current global demand OA (AA), ie, open all the knowledge that has been generated using public resources. In the coming years, the Conacyt should "design and promote a policy of AA to democratize information in Science, Technology and Information (CTI), including the creation of a national repository" (PI 2014-2018ª, p. 16). This project is one of the most significant achievements of Mexico to enter the network society paradigm outlined by Castells (2001).

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[2] The results are available on the various presidential reports on education, end of six years, especially the last three. Cf. Report of Government, President of the Republic Online:
http://www.presidencia.gob.mx/informes/ [Consulta 20 de julio 2014]

[3] Conacyt published two similar programs recently: a) The Institutional Program (IP) 2014-2018a, Official Journal of the Federation (DOF), April 30, 2014 b) Special Program on Science, Technology and Innovation 2014-2018b (PECiTI), July 2014, (the date has not been published in DOF). The two programs are governed by the NDP 2013-2018. Cf. En línea: a) http://www.conacyt.mx/images/conacyt/normatividad/interna/PROGRAMA_INSTITUCIONAL_CONACYT_2014-2018.pdf [Consulta 20 junio 2014] y b) PECiTI: http://www.adiat.org/es/documento/500.pdf [Consulta 10 de julio 2014]

B) The prototype of Thematic Research Networks. The worldwide trend is to seek to connect research groups and groups of teachers with common interests for more efficient processes solving scientific and pedagogical problems cooperation. In Mexico still has not built a culture around collaborative work; will continue to demand jobs in academia or thesis single, which encourages interdisciplinary isolation detriment of efficient use of human and financial resources. Hence, "thematic networks has boosted Conacyt are a linkage mechanism that transcends institutional and disciplinary barriers. However, it should be a review of its organization and results to make them work better "(PI 2014-2018, p. 14).

Access to information is a necessary for society and its institutions to acquire the knowledge step. Knowledge becomes a social and economic good when available information collections are open source. To strengthen scientific research in the academic sector and support the transition to a knowledge-based society, the PI takes up the theme of the integration of ICT into two objectives:

In Objective 3: To contribute to the generation and application of scientific and technological knowledge, proposed as Strategy: Creating and strengthening research groups and networks as priorities of Science, Technology and Innovation sector (CTI), with the following lines: a) Promote networking of researchers in institutions underdeveloped states or regions in CTI, b) Encourage the formation of groups of researchers in networks and consolidate the already formed (PI 2014-2018, p. 31).

Similarly, in the Objective 5: Establish a National Digital Strategy to accelerate the inclusion of Mexico in the Information Society and Knowledge, mentioned as a strategy: "To promote the transformation of the educational model with technological tools" and as a line of action "Encourage the creation of projects related to science, technology and art, offering content for digital platforms (PI 2014-2018ª, p. 41).

For its part, the PECiTI 2014-2018 poses strengthen scientific and technological infrastructure of the country (Goal 5) by applying the strategy of "Strengthening the physical and virtual capacities for social appropriation of knowledge" and for this trace,

among other lines of action: "Creating programs and virtual public spaces for social appropriation of science, technology and innovation" (PECiTI 2014-2018b, p.58).

This reflects so evident in his speech Conacyt regulated states significant advances and opens many doors for quality graduate studies achieve advances in the fields of knowledge, innovation and technological development. This also begs the question, to what extent this Council achieved consistency between saying and doing, mainly in the field of high-level academic training?

Implementation of policies generation and application of scientific and technological knowledge by PNPC Conacyt

In PNPC [4] —as normative and evaluative national strategy quality- postgraduate Conacyt displays the guiding principles of higher education in Mexico and the world, among which are: academic freedom, training-research linkages, joint respect to the cultural diversity and the ability to internationalization of graduate and their impacts and outcomes (Sánchez, 2014, p. 4). It also recognizes the capacity of postgraduate training institutions and research centers that meet the highest standards of relevance and quality in the country.

The PNPC examines those specialty programs, masters and doctoral[5] for their outstanding quality in different areas of knowledge. It also drives continuous improvement in the quality of graduate programs offered by IES, Public Research Centres (ICC) and related institutions in the country (PI 1014-2018ª, p. 10).

The current version of the Framework for the Assessment and Monitoring graduate programs (2014c)[6] (hereinafter MRESPP), retrieves and recognizes the multidisciplinary diversity and new ways of organizing graduate, reduce the number of categories and assessment criteria and gives a new relevance to the assessment of outcomes and impacts of

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[4] Véase nota 1 de este trabajo.

[5] Postgraduate studies are level academic programs that have as a prerequisite degree: a) "Specialty: post-graduate preparing for exercise in a specific field of professional work without creating an academic degree studies; b) Master: academic degree whose antecedent is the degree and aims to expand knowledge in a disciplinary field, and c) Doctorate: degree studies involving whose history usually is the master, and represents the highest rank of preparation professional and academic in the national education system "(PECiTI 2014-2018b, Glossary, p. 96).

[6] Framework for the Assessment and Monitoring Program Graduate PNPC-2, (2014c). Cf. Online:http://www.conacyt.mx/index.php/el-conacyt/convocatorias-y-resultados-conacyt/convocatorias-pnpc/convocatorias-cerradas-pnpc/915-modalidad-escolarizada/file [Consulta 8 julio 2014]

the graduate programs. This framework includes, among others, the following categories: Program Structure, Admission of Students, Graduate Profile, curriculum, infrastructure, basic academic core, Lines generation and / or application of knowledge of the program and Linkages to other sectors society.[7]

Precepts and guidelines for quality assurance of postgraduate programs

In studies conducted postgraduate address Conacyt the concept of infrastructure and student support is used, and under code provisions and guidelines standard system for ensuring the quality and relevance of graduate programs and announces which are binding on the institutions of public and private higher education and public research centers that offer such programs.

The Code of Good Practice, Infrastructure and supports the student, the following provision is mentioned: "The institution or research center ensures availability of scientific infrastructure and resources necessary for the development of research performed by the student, international standards ". The Guidelines are aimed at the "graduate program has a scientific infrastructure and suitable for their development in accordance with the design of planned training and have a strategy to improve the scientific infrastructure resources" (CBP, 2014, p. 7).

Key areas related to the quality and relevance of graduate programs in this work, only two precepts are analyzed: the first refers to the infrastructure and supports the student and the second to the website of the graduate program.

- The scientific infrastructure and supports the student

Regarding the scientific infrastructure component and supports the student is appropriate to specify that CONACYT has the following specific criteria weighting grade a quality graduate enrolled in the PNPC: 1. Operating Conditions: Infrastructure and Curriculum: 35 %; 2. Academic staff: 30%; 3. Students: 20% 4. Results (including cooperation): 15% (MRESPP, 2014, p. 40). Assigning different percentages to the items mentioned evidence

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[7] Infrastructure category (in physical and technological dimension) is the specific subject matter of this breakthrough research.

the relevance to system operation Assessment and Monitoring of graduate programs has not only the curriculum but also the type of scientific infrastructure and supports the student, by the program offices institutions.

In the scientific infrastructure and supports component the student a series of elements that need to retake it are linked to the availability and functionality of the physical facilities and equipment in accordance with the requirements and nature of the program and the security situation is observed. Among others, the following are mentioned:

- The spaces availability and functionality of the areas and equipment in the facility, including equipment for telecommuting or online.
- Specialized laboratories and workshops available, updated and functional by type of institution and in accordance with program requirements and safety conditions, and
- The specialized and updated as computer rooms located in large spaces for consultation library. (MRESPP, 2014, p. 38)

Other specific support to academic work of students mentioned:

☐ Availability of computer equipment, specialized software and licenses required to support courses and thesis preparation of students in the program.

☐ networks and electronic databases that allow access to national and international information nodes and databases and digital archives.

☐ Access to videoconferencing and various forms of electronic communication.

☐ Other types of equipment (tv, radio, laboratories), according to program needs (MRESPP, 2014, p. 39).

Two features help to assess the quality of these physical and digital services that should be of service to the academic community at the headquarters universities graduate program:

The first requires as already high standards already mentioned- "competitive research infrastructure with international standards. Appropriate and necessary means for students and teachers perform their work (library, access to databases,

excellent connectivity, technology appropriate to the nature of the program, among others "(CBP, 2014, p. 22).

The second refers to the demand for transparent data their quality graduate programs by posting relevant information on the websites of the graduate program or the respective institutional portal (MRESPP, 2014, p. 24).

- *WEB Page graduate program quality*

The study Code of Good Practice and Precept Conacyt making the institution or research center has a web page for each graduate program, with the updated information. Also, demand, in order to contribute to the transparency and access to information, the institution or research center to assume responsibility for disseminating all relevant to postgraduate offering, for which it is required that every program has a website (CBP, 2014, p. 25).

The page content should include, among others, the following indicators:

- ✓ The academic degrees conferred.
- ✓ ☐ Admission requirements and admission profile.
- ✓ ☐ The graduate profile.
- ✓ ☐ The general and specific objectives of the program.
- ✓ ☐ The structure of the curriculum, with the names of learning activities, courses, number of credits, content, methodology of teaching and learning, assessment criteria and procedures, relevant and updated bibliography.
- ✓ ☐ The physical, technological resources and student support structure.
- ✓ ☐ The number of students enrolled by generational cohort.
- ✓ ☐ The academic core (if possible with a brief CV of each participant).
- ✓ ☐ The generation and / or application of knowledge of program lines.
- ✓ ☐ A list of possible thesis supervisors and tutors of research or professional work.
- ✓ ☐ indicators relevant academic productivity graduate program.
- ✓ ☐ The availability of theses generated in the graduate program.
- ✓ ☐ Information on linkages with other sectors of society, where appropriate.

- ✓ ☐ The administrative processes (deadlines and procedures for registration and enrollment) and other information of interest to the student on the program (name of program coordinator, addresses and contact numbers, etc.).

- ✓ ☐ In the case of programs involving several universities, the information shall appear on the website of each.

- ✓ ☐ The published information may also include the views and employment status of their graduates and the profile of the current student population. This information should be accurate, impartial, objective and easily accessible (CBP, 2014, p. 25).

To conclude this section is considered pertinent to mention two categories contained in the Code of Good Practice directly linked to the categories discussed above, but are not analyzed in this research advance. The first concerns the Institutional Commitment to develop the training program for doctors according to the parameters indicated in the PNPC. The second is linked to the site visit as an indicator of verification and evidence of the transparency of the information included in institutional reports assessing the quality graduate programs.

Institutional Commitment posed as Precept the institution or research center has procedures and standards that facilitate the strengthening and development of the graduate program. And in its Guideline explained that the main purpose of this provision is to describe the relevant aspects of institutional commitment in which the graduate program implementation of which requires PNPC is developed. This commitment allows peer committees have a reference in establishing the means to give quality assurance in the training of high level human resources (CBP, 2014, p. 30).

Similarly, the site visit has sui generis characteristics. Precept concept located within power relations decision: "The site visit will be made only in exceptional cases by decision of the National Council of Graduate". And in the Guidelines is standard function visiting committee is assigned according to the regulations of Conacyt: "The site assessment will be conducted by a committee of experts pairs. The committee's job is to verify the information of opinions through interviews with key actors associated to the postgraduate program:

managers, academic staff, students, alumni and representatives of employers or users of the services of graduates of the program "(CBP, 2014 , p. 31).

The site visit allows, according to the program, verify, modify or extend the information contained in the analysis of self-assessment report, besides appreciating aspects of the institutional reality of the graduate program. In addition, standard which is the peer reviewers who give a report to the National Council for Graduate of the final opinion.[8]

Moreover, the analysis group of graduate Scientific and Technological Consultative Forum (FCCyT, 2012), drafted a proposal evaluation criteria differentiated by area of knowledge for programs PNPC[9], in which he said that there is excessive regulation of administrative processes in equipment acquisition and use of resources: "It is ironic that while mechanisms are increased to promote transparency and access to information, requirements and procedures for exercising the resources granted research are more restrictive and bureaucratic. The fluid of resources for acquisitions and make us more competitive requires greater leeway exercise. Current regulations retains many measures (and incorporating new ones) that are inhibitory for research "(FCCyT, 2012, p. 10). This is evidence that the imposition of the restriction procedures and acquisition of technological resources negatively affect the academic work of the graduate programs of HEIs.

Methodology

To access the object of study, a qualitative approach was used depending on the type of the categories referred to: a) physical and technological infrastructure reported in the curricula of consolidated Conacyt doctorates; b) the website of quality graduate assigned to PNPC and is an important element of information on quality assurance of these programs.

A feature of university academic work, specifically in graduate school, is its complexity reflected in the fields of teaching, conducting research, advising students and management

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[8] Note: A date has not been possible to locate -within systems CONACYT- information relating to account for actions leading that have contributed to verify the result of institutional commitment or Views in situ, in locations in which they operate quality graduate programs.

[9] Cf. Evaluation criteria differentiated by area of knowledge for PNPC of FCCyT programs, online: http://www.foroconsultivo.org.mx/asuntos/academicos/posgrado_criterios.pdf   [Consultado 19 mayo de 2014].

work subject to individual, organizational and institutional factors cut across the proposals made in this regard.

Analysis techniques

In this study, two techniques were used: the descriptive analysis of the documentary sources, with projection insertion in empirical reality. According to Bisquerra in descriptive studies no variable is not handled, only observe and describe the phenomena studied; Additional to this author documentary or bibliographic research is to search, collect, organize, evaluate, and critique on specific topics (Bisquerra, 1989). For the analysis of this case study public education policy instruments Mexico and digital systems consulting Conacyt and other institutions of higher education were used.

The second technique qualitative refers to the semi-structured interview in order to collect the view and perception of teachers and coordinators of a strategic sample curricula quality graduate consolidated attached to PNPC. Without good measuring quantitative type is relevant when it comes to addressing objects large study in this inquiry Strategically was using a qualitative methodology that provides, according to Goetz and LeCompte (1988), analyzing the academic activities of the graduate teachers in the context in which they operate, for thereby facilitating more knowledge of his vision of universities and their academic practices. Consequently a dash of semistructured open online consultation, whose purpose was to determine the views of coordinators and teachers graduate programs selected for this study on the use and importance of ICT was designed specifically the field of teaching practices and research mediated by institutional physical and technological infrastructure.

This type of study is preferred in the interest of an approach to intuition, the discovery and understanding rather than a hypothesis interpretation; accepted that the validity of such methods rely on the fact that investigates and scientific legitimacy and not its frequency or its representative regarding a statistical average. A third quality of this method is that studies often focus on "micro" level of the system, without thereby analysis of broader perspectives related to the structures of society be relegated.

Selection criteria for postgraduate programs PNPC

The selection of academic programs of postgraduate studies of excellence registered in the Register of PNPC Conacyt was created under a strategy of efficiency and convenience, without using costly human and financial resources.

Brokered documentary information from the following criteria:

1. Of the 1742 postgraduate programs of excellence registered until the first half of 2014 in that pattern, composition degree is: 545 doctoral, master 996 and 291. While specialty master's programs are almost double the doctoral degree latter accounting for the advancement of science was chosen, technology and innovation in the country. Doctoral programs are classified according to four levels linked to quality: International Competition 60; Consolidated 187; Developing Recent Creation 141 and 157. It is evident that the level of consolidated accounts for the largest number of doctoral programs and why and this level was selected[10] for the study.

2. The programs are approved in the process of academic evaluation are integrated into the PNPC and are comprised of these four levels. The interested us for this research has been to Consolidated are the "Programs that have national recognition for the relevance and impact on the formation of high-level human resources in academic productivity and collaboration with other sectors of the society."[11]

3. Within the different Areas of Knowledge [12] where the list of consolidated doctorates falls, resumed only those in Humanities and Behavioral Sciences.

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[10]Official source of data: Portal Conacyt, Current status of PNPC, online: http://svrtmp.main.conacyt.mx/ConsultasPNPC/intro.php [Consultado 15 mayo de 2014]

[11]The other levels, in ascending order, are: Newly established; In development and international competition. cf. PNPC: http://www.conacyt.mx/index.php/becas-y-posgrados/programa-nacional-de-posgrados-de-calidad [Consultado 10 junio de 2014].

[12] In Mexico there are two different categories of the study areas top level: a) the proposal by the ANUIES (ANUIES), which ranks in the following areas: Social and Administrative, Education and Humanities, Health Sciences, Engineering and Technology, Natural and Exact and Agriculture, and b) using the PNPC Conacyt to designate them as areas of expertise: Biology and Chemistry, Engineering, Social Sciences, Humanities and Behavioral Sciences, Physics and Mathematics and Earth Sciences, Medicine and Health Sciences and Biotechnology and Agricultural Sciences. This second classification is used to present the graduate Conacyt and Lines of Generation and Application of Knowledge of researchers from the National Research System (SNI).

The PNPC recorded 22 such programs [13] and it is conjectured, in some studies, which is one of the areas with graduate programs with lower availability in physical and technological infrastructure.[14]

Criteria for selection of programs, institutions and informants

For the selection of the venues institutions consolidated doctoral programs are not criteria for national distribution by region or census or quota samples were followed. Opted by those who are taught in universities, colleges and registered in the Register of PNPC institutes.

For the election of coordinators and teachers consolidated doctoral programs who acted as informants experienced consultants, we took into account the following: a) who have completed a minimum of three years as professors in graduate school; b) they were teachers researchers with a doctorate and employed full time, and c) they were registered in the public directory website program or institution, so that you could freely access their respective institutional e post the query was executed by electronic means.

Capturing data: sources

The sources that originated the information required for the research were twofold. First, the electronic consultation postgraduate Conacyt and, secondly, the information provided by each of the web pages of the respective programs of study for PhDs registered with the PNPC for categories of physical infrastructure and technological examined in the evaluation guide said Padrón. Institution, name of the graduate program, curriculum and indicators of physical and technological infrastructure by supporting tools like Excel program: for analysis were constructed matrices in which data and were included.

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[13] The central themes of doctoral programs consolidated Knowledge Area IV: Humanities and Behavioral Sciences, among others, are: humanistic studies, agricultural education, philosophy, architecture, humanities, organizational studies, behavioral science, neuroscience, education, history and art history, Mesoamerican studies, philosophy of science, education, mathematics education, linguistics, social sciences, studies in anthropology, educational research, city and territory and ethnohistory. Cf. Conacyt: National Quality Graduate Program (PNPC) online: http://svrtmp.main.conacyt.mx/ConsultasPNPC/inicio.php [Consultado abril 30 de 2014].

[14] Torres, S., C. and C. Tapia Barona (2013), technological infrastructure and appropriation of ICT in the Autonomous University of Puebla. Case Study in Torres, S. and J. Lara (eds.), Uses and appropriation of ICT experiences in the educational process, UAS / Juan Pablos Editor, Mexico.

Empirical Results

Of the 22 study programs rated as Consolidated doctorates, the following features were discovered based on the information provided Institutional Portals or direct to the websites of each of the programs online league leagues:

1. It was found that two universities-the UNAM and UdeG- have registered in the Register of postgraduate four doctoral programs consolidated each level and the other programs offered colleges, research institutes, IES and a private university. It should be noted that all programs of study for this type of postgraduate taught under the modality.

2. Of the 22 selected consolidated doctorates 7 only provide information on programs based on direct Internet links (see Annex 1) and the remaining (15) by the Institutional Portales, which certainly slows down your search and does not economy mode allows its location and query information.

3. Of the curricula of Consolidated level: 17 offer complete information about them. That is, of the 16 indicators that should include the website of programs, according to the Code of Practice Conacyt -and mentioned-, programs incorporate at least 10 of these (see Annex 1) indicators. While one of the indicators is related to the physical and technological infrastructure available in each institution, of the 17 programs under half includes information on coverage. In the rest of the programs (5), the information provided by the website is incomplete; usually only includes the basics of a call.

4. *Another important feature that should be present on the websites of the consolidated* doctoral programs is related to updating them. Of the total study programs 9 websites lack information about the update and others have been updated in the periods of the past three years (see Appendix 1).

In short, the absence of complete public information regarding the results of evaluation of the state of the physical and technological infrastructure and other relevant categories, is detrimental to those recorded in the PNPC program, which seeks recognition for quality the formation of its graduates, nationally and internationally.

Controversy

As a first question regarding the implementation of public policies on the graduate program in Mexico with respect to the material conditions of functioning and operation, Arredondo says that, in many cases, are not what is intended with this type of study and training

opportunities for high-level resources often do not exist: "Most programs do not have adequate facilities, these have not been designed to enable students to" work "but only to" take lessons " sometimes even in the case of full-time trainees. Similarly in the case of teachers, the distribution of space and time, within programs is a factor often overlooked "(Arredondo, 2008, p. 6). The same applies to the services of physical and technological infrastructure to support the various cohorts of students in a high percentage of HEIs.

Overall, the strategic policy instrument of national development and the education sector predominates (the federal government) a political vision regarding the role pedagogical and educational outcomes. For example, to reiterate how slogan that education and postgraduate quality depends on the country's development means continue to maintain a reductionist view. As we mentioned Yáñez, "download in school such liability is a way of circumventing other spheres of government action and others whose behavior affects the action of the school and teachers" (Yanez, 2014, p. 19). This partial view on the real possibilities of education is not new, since the eighties of the last century has been repeated constantly that quality education is the solution to the problems and cognitive and technological gaps that plague our countries. Researchers should be careful with that.

Similarly, institutions related to Conacyt expressed: "It requires a critical reflection to reorient policies from national assessment of progress. Therefore, the analysis methodologies and schemes to weigh the quality of graduate school, as well as criteria to evaluate to estimate the extent to which the forms and processes instituted currently guarantee an evaluation under graduate diversity is necessary national "(FCCyT, 2012, p. 4). It is evident that even after more than twenty years of experience in evaluation of graduate before the CONACYT, the only models are not the best answer to the formation of high-level human resources given the complexity and multiculturalism in a country like Mexico.

Conclusions

In recent decades in Latin America the meaning of graduate studies has been transformed and has contributed to building a culture of quality thereof. To Fresán, a vigorous graduate constitutes "an alternative to ensure the continuity and growth of scientific work within educational institutions and strengthening research projects directed at solving relevant problems of local, national and even global environment" (Fresán, 2013, p. 9).

In our region, the politics of reform of higher education and graduate in particular becomes more important at national levels, as sometimes is biased by a biased view of reality, as has been noted along this work.

First, the public graduate is assigned the task of forming high-level human resources in both universities and research centers, as well as the production, transfer and innovation of scientific knowledge, leaving aside the problem of little or no involvement of the private sector.

Second, public policies for higher education and graduate Conacyt concentrated in the delicate and demanding task of training researchers our country needs by PNPC, currently recorded 1742 programs on your Padrón, equivalent to 25% of domestic supply, reason to conjecture that has gestated a policy of privilege and discrimination negatively impacting both the possibility of improving graduate whole nationwide.

In a program of this size involves a complex variety of factors, so it is not possible for practical academic excellence without the active contribution of educators: teachers, graduate students and school. The latter, especially, is committed to promoting and ensuring the quality of such programs. Without the political and academic responsibility of universities and research centers, scientific-technological infrastructure and supports the student would be illusory spaces and resources.

Finally, it is pertinent to settle that although there is the Framework for the Assessment and Monitoring Programme Postgraduate quality Conacyt, his success in training human resources senior is mediated by physical spaces and advanced technological infrastructure, so a new question arises: Why the absence of a monitoring and evaluation must be strict

regarding the effectiveness of these resources will undoubtedly contribute to a more prestigious graduate Mexican national and international level?[15]

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[15] It is expected that the results of the electronic consultation launched coordinators and professors from the selected consolidated postgraduate give us new light to clarify this question.

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Anexo 1: Lista de los doctorados consolidados del Área IV Humanidades y Ciencias de la Conducta, según el PNPC de CONACYT
Información sobre los Programas de Estudio en el Portal Institucional o por medio de la Web

	PROGRAMA	INSTITUCIÓN	ENTIDAD	PÁGINA WEB INSTITUCIONAL	PÁGINA WEB EN INTERNET	TIPO DE INFORMACIÓN PROGRAMAS DE ESTUDIO: COMPLETA E INCOMPLETA
1	Doctorado en Ciencias con Especialidad en Investigaciones Educativas	Centro de Investigación y de Estudios avanzados del IPN	Distrito Federal	http://www.die.cinvestav.mx/		Ofrece información completa: programa, líneas de Inv. , Núcleo básico, convocatoria, lista de aceptados, Se actualizó diciembre de 2013.
2	.Doctorado en Lingüística	El Colegio de México, A.C.	Distrito Federal	http://cell.colmex.mx/		Ofrece información Completa:programa, convocatoria, tesis, proyectos y líneas de Inv. Información del 2012.
3	Doctorado en Ciencias Humanas Especialidad Estudio de las. Tradiciones	El Colegio de Michoacán, A. C.	Michoacán	http://www.colmich.edu.mx/		Cuenta con información incompleta, convocatoria del programa correspondiente al 2012. S/f de actualización.
4	Doctor.ado en Historia. y Etnohistoria	Instituto Nacional de Antropología e Historia	Distrito Federal		http://www.enah.edu.mx/index.php/posghis-inicio	Esta completa la información, presentación, plan de estudios, mapa curricular. Actualizada 2013
5	Doctorado en Estudios Humanísticos (DEH)	Instituto Tecnológico y de Estudios Superiores de Monterrey	Nuevo León		http://www.itesm.mx/wps/wcm/connect/itesm/tecnologico+de+monterrey/maestrias+y+doctorados/areas+de+estudio/humanidades+y+ciencias+sociales/deh	Información completa, descripción, plan de estudios, objetivos, visión, proceso de admisión. Actualizada 2014
6	Doctorado en Ciencias en Educación Agrícola Superior	Universidad Autónoma Chapíngo	Estado de México	http://portal.chapingo.mx/sociologia/?contenido=pos		Información completa: programa, convocatoria 2014, vinculación LGAC, estudiantes. Matriculados, núcleo básico. S/f de actualización.
7	Doctorado en Ciencias Educativas	Universidad Autónoma de Baja California	Baja California	http://iide.ens.uabc.mx/blogs/dce/		Información completa, convocatoria y lista de aceptados 2013, programa, núcleo básico de profesores, calendario, plan de estudios, comités de tesis. S/.f de actualización.
.8	Doctorado en Filosofía con Especialidad en Psicología	Universidad Autónoma de Nuevo León	Nuevo León		http://www.uanl.mx/oferta/doctorado-en-filosofia-con-especialidad-en-psicologia.html	Información incompleta, unidades de aprendizaje, requisitos específicos, plan de estudios, Actualizado 2014.
9	Doctorado en Filosofía con Orientación en Arquitectura y Asuntos Urbanos	Universidad Autónoma de Nuevo León	Nuevo León		http://www.uanl.mx/oferta/doctorado-en-filosofia-con-orientacion-en-arquitectura-y-asuntos-urbanos.html	Información incompleta, unidades de aprendizaje, información básica del Doctorado, propósito y requisitos específicos. Actualizado 2014.
10	Doctorado en Historia	Universidad Autónoma de Zacatecas	Zacatecas	http://historia.uaz.edu.mx/ http://nautilus.uaz.edu.mx/ofertaeducativa/view/ofertaEducativa.php?idPrograma=171030&idUnidad=23600		Información completa: misión, visión, tira curricular, requisitos de ingreso, perfil de ingreso y egreso, proyectos, docentes, infraestructura. S/f de actualización.
11	Maestría y Doctorado en Humanidades	Universidad Autónoma del Estado de México	Estado de México		http://humanidades.uaemex.mx/posgrado/	Información completa: perfil de egreso y egreso, síntesis del plan de estudios, publicaciones, planta académica, tutoría académica Actualización 2014.

12	Doctorado en estudios Organizacionales	Universidad Autónoma Metropolitana	Distrito Federal	http://www.izt.uam.mx/eorg/index.php		Información completa: perfil de ingreso y egreso, objetivos general y especifico, plan de estudios, mapa curricular, alumnos, tesis, actualizado 2014
13	Posgrado Maestría en ciencias Antropológicas	Universidad Autónoma Metropolitana	Distrito Federal		http://www.uam-antropologia.net/	Información completa: plan de estudios, perfil de ingreso y egreso, convocatoria, becas, planta docente. S/f de actualización.
14	Doctorado en Ciencias del Comportamiento: Análisis de la Conducta	Universidad de Guadalajara (UDG)	Jalisco	http://www.ceic.cucba.udg.mx/		Información completa: perfil de ingreso y egreso, plan de estudios, créditos, Investigación supervisada, estudio dirigido, planta docente, profesores invitados. S/f de actualización.
15	Doctorado en Ciencias del Comportamiento Opción Neurociencias	Universidad de Guadalajara	Jalisco	http://www.ineuro.cucba.udg.mx/		Información incompleta: convocatoria 2015, plan de estudios e información general. S/f de actualización.
16	Doctorado en Educación	Universidad de Guadalajara	Jalisco		http://www.udg.mx/es/oferta-academica/posgrados/doctorados/doctorado-en-educacion	Información incompleta: perfil de ingreso y egreso, plan de estudios, duración del programa, costos y apertura. S/f de actualización
17	Doctorado en Ciudad, Territorio y Sustentabilidad	Universidad de Guadalajara	Jalisco	http://www.posgradospnp.cuaad.udg.mx/		Información completa: plan de estudios, perfil de ingreso y egreso, manual de operaciones, planta académica, alumnos y egresados, tesis concluidas, calendario, acervos, y núcleo básico. S/f de actualización.
18	Programa Interinstitucional de Doctorado en Arquitectura	Universidad Michoacana de San Nicolás de Hidalgo	Michoacán		http://www.arq.umich.mx/posgrado/doctorado.php	Información completa: plan de estudios, plan de becas, líneas de investigación, infraestructura, organización académica, mapa curricular, planta docente, publicaciones. S/f de actualización.
19	Doctorado en Historia del Arte	Universidad Nacional Autónoma de México	Distrito Federal	http://historiarte.esteticas.unam.mx/		Información completa: convocatoria 2015, plan de estudios, tramites, aspirantes, proceso de graduación. S/f de actualización
20	Doctorado en Urbanismo	Universidad Nacional Autónoma de México	Distrito Federal	http://www.posgrado.unam.mx/urbanismo/		Información completa: planes y normativas, programas académicos, alumnos, calendario escolar, tutores, convocatoria 2014, publicaciones, vinculación y contacto. Actualización 2013.
21	Doctorado en Lingüística	Universidad Nacional Autónoma de México	distrito federal	http://www.posgrado.unam.mx/linguistica/indice.php		Información completa: plan de estudios, compromisos, becas, publicaciones, tutores, requisitos de ingreso, requisitos para obtener el grado. Actualizada 2014.
22	Doctorado en Pedagogía	Universidad Nacional Autónoma de México	distrito federal	http://www.filos.unam.mx/POSGRADO/programa/pedago.htm		Información completa: Plan de estudio, datos generales, fundamentos académicos, antecedentes de la facultad, objetivos, duración de estudios y créditos, requisitos de permanencia. S/f de actualización.

Fuente: Elaboración propia con base en la información del PNPC y página Web.