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Perspectives, Scope and Meanings of Scientific Initiation in Scientific Productions

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Abstract

The objective of this study is to discuss the perspectives, scope and meanings of scientific initiation (SI) in the productions of the National Post Graduate Education Association (ANPEd) and the Coordination for the Improvement of Higher Education Personnel (Capes), in the period from 2008 to 2015. It is a qualitative research, of the state of knowledge type, that allows to identify contradictions and characteristics not studied or little explored. The results evidenced an expressiveness of the publications focused on university education when related to research and professional experiences. There are also debates about the epistemologies of science, production and diffusion of knowledge with emphasis on the implications in the national scenario, corroborating for the advancement of education by indicating ways to reevaluate science policies and institutional strategies.

Keywords: Scientific initiation. Higher education. Scientific production.

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Perspectivas, abrangência e significados da iniciação científica nas produções científicas

Resumo

Este estudo tem como objetivo discutir as perspectivas, a abrangência e os significados da iniciação científica (IC) nas produções da Associação Nacional de Pós-graduação em Educação (ANPEd) e da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes), no período de 2008 a 2015. Trata-se de uma investigação qualitativa, do tipo estado do conhecimento, que permite identificar as contradições e as características não estudadas ou pouco exploradas. Os resultados evidenciam uma expressividade das publicações voltadas à formação universitária quando relacionadas às experiências de pesquisa e profissionais. Tem-se, ainda, debates acerca das epistemologias da ciência, da produção e difusão do conhecimento com destaque às implicações no cenário nacional, corroborando para o avanço da educação por meio da indicação de caminhos para a reavaliação das políticas de ciência e estratégias institucionais.

Palavras-chave: Iniciação científica. Educação superior. Produções científicas.

Perspectivas, alcance y significados de la iniciación científica en las producciones científicas

Resumen

Este estudio tiene como objetivo discutir las perspectivas, el alcance y los significados de la iniciación científica (IC) en las producciones de la Asociación Nacional de Postgrado en Educación (ANPEd) y de la Coordinación de Perfeccionamiento de Personal de Nivel Superior (Capes), en el período de 2008 a 2015. Se trata de una investigación cualitativa, del tipo estado del conocimiento, que permite identificar las contradicciones y las características no estudiadas o poco explotadas. Los resultados evidencian una expresividad de las publicaciones dirigidas a la formación universitaria cuando relacionadas con las experiencias de investigación y profesionales. Se tiene, aún, debates acerca de las epistemologías de la ciencia, de la producción y difusión del conocimiento con destaque a las implicaciones en el escenario nacional, corroborando para el avance de la educación por medio de la indicación de caminos para la reevaluación de las políticas de ciencia y estrategias institucionales.

Palabras clave: Iniciación científica. Educación universitaria. Producciones científicas.

1. Introduction

This article aims to discuss the perspectives, the scope and the meanings of Scientific Initiation (SI) in the productions of the National Association of Graduate Studies in Education (ANPEd) and Coordination of Improvement of Higher Education Personnel (Capes), in the period from 2008 to 2015, based on the contributions of this public policy that, besides awakening a scientific vocation, represents an inductor of scientific training (ST)[1] in higher education.

SI is a public policy that enables the construction of knowledge through research in Higher Education Institutions (HEIs). The concept of this device in Brazilian universities was formed as an activity that inserts the graduate in the game of science and allows the experiences linked to the research projects, be elaborated and developed by a professor-mentor (MASSI; QUEIROZ, 2010). Thus, SI contributes to the systematic and guided training of student awareness about the importance and accessibility of the research process, as well as the communication and use of its results. The university students are inserted into regular research activities through the SI, through planning and follow-up, aiming to (re)construct and re-signify knowledge from the perspective of experienced researchers.

In 2016, SI completed 65 years of existence with a continuous increase in the number of grants (40,406). SI grants have been offered by the National Council for Scientific and Technological Development (CNPq), since its foundation, for stakeholder graduates and aim to "[...] awaken young talents to science by promoting their participation in research projects" (BRASIL, 2010, p. 15. Our Translation). This configures SI as the first stage in the academic-scientific career, becoming an opportunity for professional qualification through access and integration to the research culture, as well as making possible a greater insertion in the contemporary society focused on scientific and technological knowledge.

Grant holders improve their scientific and technological vocation and provide an experience with ownership of the research path. In this way, SI enhances ST as it develops scientific attitudes towards knowledge. This reality means that this policy has advanced in other modalities of education, as in basic education[2].

As for the nature of the data, it is a qualitative research, of the state of knowledge type, which reveals the scientific production process, being possible, "[…] to identify duplications, contradictions and, above all, gaps, i.e., aspects not studied or still precariously studied, research methodologies little explored." (SOARES; MACIEL, 2000, p. 6. Our Translation).

1 Damasceno (1999), Chicarelle (2001), Massi and Queiroz (2010) understand scientific training as a process consisting of research experiences in which the student appropriates the "doing" of science. It should be remembered that this training is not limited to collecting, organizing, analyzing, discussing and communicating the research results.

2 In this modality there are the following programs: Junior Scientific Initiation (ICJ) created in 2003 and developed in partnership with the Foundations of Support to Research (FAP); Institutional Program for Scientific Initiation of High School Education (PIBIC-EM), launched in June 2010, the latest program created by CNPq; Scientific Initiation Program of the Brazilian Mathematics Olympiad of the Public Schools (PIC-OBMEP). The OBMEP is addressed to students on grades from 6 to 9 of elementary and high school in municipal, state and federal public schools.

This research had as a *locus* the databases of ANPEd and Capes. The first is a non-profit association that establishes links with postgraduate and the production/diffusion of knowledge in the area of education, acting in the main struggles for the universalization and development of the educational area in Brazil. The second was founded by the Ministry of Education (MEC), on July 11th, 1951, by Decree No. 29,741, with the objective of "[...] ensuring the availability of specialized personnel in sufficient quantity and quality to meet the needs of public and private enterprises that aim at the development of the country" (CAPES, 2015, without pagination. Our Translation). In 2007, Law No. 11502/2007 established that Capes, in addition to coordinating the Brazilian National Post-Graduation System, would also be responsible for initial and continuing training of primary education teachers.

2. The research question

This research, of the state of knowledge type[3], started from the floating reading of the titles and abstracts of the articles of the Working Groups (WGs)[4] of ANPEd[5] in the period from 2010 to 2015, corresponding to the publications of the 33rd, 34th, 35th, 36th and 37th National Meetings[6]. This type of reading consisted of the organization of the *corpus* to investigate the comprehensiveness, meanings and situational characteristics about SI. Out of the 23 WGs that compose this database, 14 of them presented articles pertinent to the subject under discussion. See table:

3 For Morosini (2015, p. 102. Our translation) state of knowledge is "[...] identification, registration, categorization leading to reflection and summary of the scientific production of a certain area at a certain time, bringing periodicals, theses, dissertations and books on a specific theme". The author establishes a relationship between scientific production, education and the social and scientific fields of Bourdieu (1983) in the article State of Knowledge and Questions of the Scientific Field, discussing the unveiling of scientific production in Brazil, specifically about the state of knowledge in the area of education, indicating substantive theoretical positions on the articulated practice of research to the national reality.

4 WGs are instances of agglutination and dissemination of knowledge. These thematic groups bring together researchers from specialized knowledge areas to deepen the debate on interfaces of education, to define academic activities of the National Scientific Meetings. The majority was created in 1981, at the 4th Annual Meeting in Belo Horizonte, as a locus of discussion about research results; selection of relevant problems; methodological experiences; exchange of bibliographic information, studies and work carried out (BOLETIM ANPEd, 1986).

5 Following is the nomination of the ANPEd WG: GT02 - History of Education; WG03 - Social Movements, Subjects and Educational Processes; WG04 - Teaching; WG05 - State and Educational Policy; WG06 - Popular Education; WG07 - Education of children from 0 to 6 years old; WG08 - Teacher Training; WG09 - Work and Education; WG10 - Literacy, Reading and Writing; WG11 - Higher Education Policy; WG12 - Curriculum; WG13 - Basic Education; WG14 - Sociology of Education; WG15 - Special Education; WG16 - Education and Communication; WG17 - Philosophy of Education; WG18 - Education of Young and Old People; WG19 - Mathematics Education; WG20 - Educational Psychology; WG21 - Education and Ethnic-Racial Relations; WG22 - Environmental Education; WG23 - Gender, Sexuality and Education; WG24 - Education and Art.

6 The board of ANPEd decided at a statutory assembly in 2012 that the National Meetings would occur biennially at the 2013 meeting at the Federal University of Goiás (UFG) .The decision to carry out the itinerant meetings was guided by the need to contribute to the strengthening of post graduation education in all regions of Brazil. Thus, the 36th meeting took place in 2013 and the 37th in 2015.

Table 1 – ANPEd Working Groups (2010-2015)

Annual Meeting	Working Group (WG)	Total of Articles	Selected Articles
33rd 2010	WG04 - Teaching	13	01
	WG08 - Teacher Training	21	01
	GT22 - Environmental Education	21	01
Subtotal		55	03
34th 2011	WG04 - Teaching	13	01
	WG06 - Popular Education	10	01
	WG08 - Teacher Training	22	02
	WG11 - Higher Education Policy	18	03
	WG12 - Curriculum	29	01
Subtotal		92	08
35th 2012	WG04 - Teaching	21	02
	WG10 - Literacy, Reading and Writing	17	01
	WG11 - Higher Education Policy	12	02
	WG12 - Curriculum	15	01
Subtotal		65	06
36th 2013	WG04 - Teaching	09	01
	WG08 - Teacher Training	18	02
	WG14 - Sociology of Education	17	01
Subtotal		44	04
37th 2015	WG02 - History of Education	18	01
	WG05 - State and Educational Policy	30	01
	WG08 - Teacher Training	36	01
	WG09 - Work and Education	20	01
	WG11 - Higher Education Policy	23	01
	WG12 - Curriculum	27	02
	WG13 - Basic Education	22	03
	WG15 - Special Education	29	01
	WG24 - Education and Art	22	03
Subtotal		227	14
Total		483	35

Source: Authors (2016).

The WGs published 483 articles in the indicated period, 35 of which were selected[7]. A percentage of approximately 7.2% that allowed for the inference of dimensions geared to **production and scientific knowledge**: overcoming the scientific rationality of education with the construction of interdisciplinary knowledge*;* **research and teacher training**: teacher profession, taking research as an educational principle in an innovative teaching and learning perspective*;* **quality in education**: evaluation, accreditation, *rankings* and their links with quality indicators and internationalization.

In relation to the survey of dissertations and theses, Capes database allowed access to consolidated information that reflects the publications of the National System of Postgraduate *stricto sensu* in Brazil. See table:

7 It should be noted that only one paper entitled Writing Culture and Scientific Initiation in Teacher Training in a Normal Higher Course was found, in WG10 – Literacy, Reading and Writing, had the objective of investigating the impacts of a new and alternative space for the training of professors, at a non-university higher level, in the development of the career of these graduates in relation specifically to the written culture and the SI. This indicates that the SI as a public science policy in undergraduate studies is not contemplated in the ANPEd discussions. Which led us to advance in the analysis, using the word search.

Table 2 – Capes/Theses and Dissertations Database (2008-2012)

Year	Search Type		Total
	T	D	
2008	02	03	05
2009	03	02	05
2010	03	03	06
2011	-	06	06
2012	-	13	13
Subtotal	08	27	35

Caption: D = dissertations; T = thesis. Source: Authors (2016).

The study also started from the units of analysis of the abstracts in which 35 researches (08 theses and 27 dissertations) that dealt with the SI[8] were selected as public science policy. After the unitarization and deconstruction of abstracts, the dimensions of knowledge construction/diffusion emerged: conceptions of science and scientific field; teaching and learning: dialogic, hologramatic and recursive principles; university education: a scientific, professional and social perspective focused on citizenship.

3. Contextualization of Scientific Initiation in ANPEd and Capes productions

Faced with the 70 productions under study (ANPEd and Capes), 84.3% (59) adopted for analysis the nature of qualitative data with a view to developing "[…] a set of material and interpretative practices that provide visibility to the world." (DENZIN; LINCOLN, 2006, p. 17. Our translation). Nine had a quali-quantitative character and two, exclusively, quantitative. It was also observed the collection of a variety of empirical material, such as: case study, personal experiences, life narratives, interviews, artifacts, cultural productions, observational, historical, interactive and visual texts.

Most publications have used a diversity of interrelated interpretive practices to achieve a better understanding of the phenomenon or fact studied. Characteristic of qualitative research. Denzin and Lincoln (2006) argue that the history of this type of research arose out of concern for the other, attaching itself to Sociology and Anthropology with the mission of analyzing and understanding standardized conduct and social processes through observations.

The field of qualitative research has a multiparadigmatic focus with an inter/transdisciplinary and sometimes contradictory approach that permeates the humanities, the social and physical sciences (NELSON; TREICHLER; GROSSBERG, 2002). This signals to the development of practices, "[…] within their own multiplicity of disciplinary histories, tensions and constant contradictions around a project itself, including its methods and the forms that its discoveries and interpretations assume." (DENZIN; LINCOLN, 2006, p. 22. Our translation).

The qualitative research seeks the details, meanings and characteristics of the complex and particular situations of the investigated object, aiming at describing the problem, analyzing the interaction between certain variables, classifying dynamic processes

8 Unlike ANPEd, Capes' researches directly involved SI.

lived by social groups, as well as understanding the particularities of individuals behavior (RICHARDSON, 2007).

As for the objectives, the nature of qualitative data employs procedures of an emergent project of personal experiences in a natural environment (concentrates on a single phenomenon originated from the quotidian), avoiding an adjectival description (CRESWELL, 2007). The main procedures detected in the productions under analysis used intentional sampling, open data collection, analysis of texts or images and personal interpretation of the findings.

On the other hand, 12.8% (09) of the productions used mixed methods (strategy of triangulation of quantitative and qualitative data in order to determine convergences, differences or possible combinations) and only 2.9% (02) made use of the quantitative methods that start from the understanding of factors and variables by proposing a theory to objectively confirm a hypothesis (CRESWELL, 2007).

The percentages confirm the tradition of qualitative research in the area of education. On the other hand, there are scholars who advocate the use of quantitative instruments with a view to understanding "[…] more reasoned and critical about what they can or cannot offer" (GATTI, 2004, p. 14. Our translation). The fact of not using the method makes it difficult even to construct a consistent perspective against the limits. These are also present in the so-called qualitative methodologies.

The author defends the relevance of the quantitative approach in educational research, given that many social and educational issues can be dimensioned, equated and understood, such as the analysis of external evaluations[9] applied by the National Institute of Educational Studies and Research Anísio Teixeira (Inep), Capes and CNPq.

Quantitative investigations are characterized by the use of quantification, "[...] both in the information collection modalities and in the treatment of them by means of statistical techniques, from the simplest ones such as percentage, rate, standard deviation, to the most complex ones, as a correlation coefficient, regression analyzes [...]" (RICHARDSON, 2007, p. 70. Our translation). Conducting this type of research is intended to ensure the accuracy of the results, avoiding distortions of analysis and interpretation in order to ensure a small margin of error as far as inferences are concerned.

It is noted that the method is based on the generalization that allows to accept or reject the hypothesis of the study, being a well questioned criterion in the field of qualitative research that comprises a phenomenon, relating it to the facts of the past or studies referring to social groups; attitudes, motivations, expectations and values; to the functioning of social structures (RICHARDSON, 2007).

Beyond the epistemological tensions[10], it should be noted that any scientific study needs to consider questions such as: "[...] 'for what', 'for whom' and 'how the values of

9 These are standardized actions with tests, socioeconomic questionnaires and on-site visits that aim to evaluate the teaching offered by the Brazilian educational system. Of course they need to be rethought to consider the qualitative perspective. This aspect does not invalidate the information about context factors that may be associated with the quantitative performance of the results.

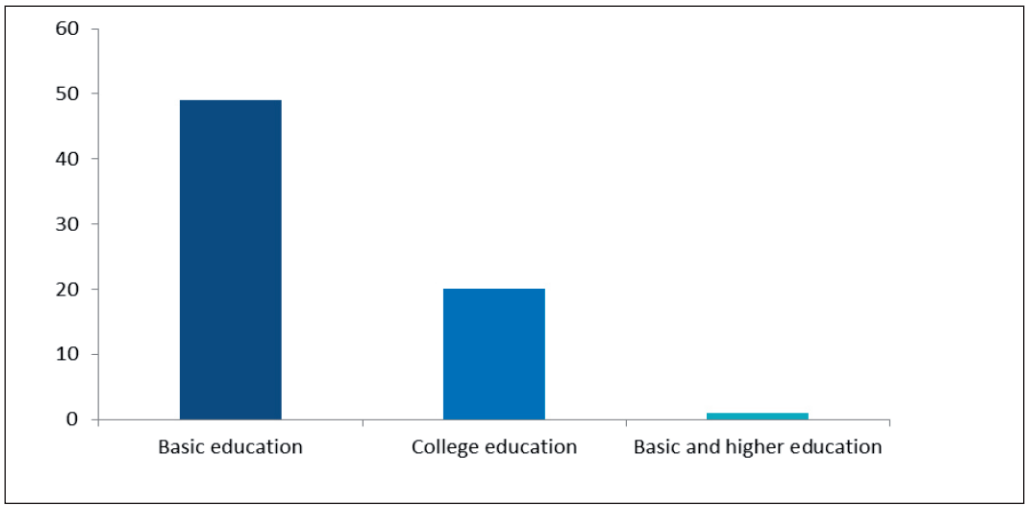
10 "The fact that both quantitative and qualitative methods can be historical descendants of incompatible positivist and interpretive epistemologies not undertake researchers to endorse either of these epistemologies as much as the fact of astronomy to be a descendant of astrology compromise current astronomers to associate their predictions with your horoscopes." (HOWE, 1988, p. 15. Our translation).

researchers' influence research; and these are the issues that need to be considered [...] by making research more than an attempt to mirror reality." (FEILZER, 2010, p. 8. Our translation). Also supported by Richardson (2007) is the thesis that research work must be thought out and planned according to the type of study to be carried out, the nature of the problem and its level of deepening being the factor determinant in the choice of method (quanti, quali or mixed).

This implies ruptures with historical questions that marked the researches in the post graduation programs in education in Brazil. After the influences of the quantitative trends of the United States of America (USA) – the 1960s and 1970s – research has given priority to qualitative approaches. This rupture is supported by the belief that quantity confers quality (MOROSINI, 2009).

Another aspect that emerged from the survey was the predominance of studies in the field of higher education, 70% (49) of the productions. 28.6% (20) had basic education as the investigative *locus*. Only 01 work (1.4%) compared the results with subjects of basic and higher education. See chart:

Chart 1 – Field of Research Coverage/ANPEd and Capes



Source: Authors (2016).

One possible hypothesis to justify these data would be the tradition of doing research in higher education and in the *stricto sensu* post graduation programs. For Saviani (2000), this modality is focused on the academic training specifically translated in the objective of training researchers, with research being the defining element that determines the objective to be achieved. In addition, policies of expansion, internalization and access to higher education have also brought about changes in the focus of what should be studied in the area of education.

Initially, educational research emphasized exclusively the teacher/professor, considering that the teacher/professor is the sole responsible for the teaching and learning processes. Parallel to this reality, the focus was reoriented to study the courses, the students and, recently, the former students. The studies in the field of education with a focus on the course have a sharing character, considering the perspectives: a) national

– Law of Guidelines and Bases (LDB) of 1996, National Education Council (CNE) Opinions 1 and 2, National Curricular Guidelines (DCN) and other regulatory frameworks; b) institutional – teachers identify skills and learning indicators necessary for the ongoing study in order to define the scope of the investigation and its initial *design* (MOROSINI, 2009).

We emphasize the student centered researches on education in the USA based on three theories: a) **Astin** - student involvement model that seeks to explain the construction process based on longitudinal research to accompany different levels (personal, family, abilities and university characteristics) with a view to academic and social integration; b) **Tinto** - institutional training model that adopts the institutional intentions (goals and commitments) within the academic system to evaluate curricular performance and extracurricular activities of the student; c) **Pascarella** - a general model to evaluate change based on students' historical characteristics, interactions with socialization agents and the quality of effort in learning and personal development (MOROSINI, 2009).

The researches in education with focus on former students (*learning outcomes model*) adopt two questions as premise: what did the students learned during the course? What did they expect to learn? In practice, Reflex projects in the European Union (2008) and Proflex in Latin America (2009) develop studies among past graduates (2 and 5 years after graduating) (SHOMBURG; TEICHLER, 2008 apud MOROSINI, 2009).

In the scope of theses and dissertations, research in the Proflex perspective reached 22.9% (08). These productions[11] involved the identification of teachers knowledge and their implications for teacher learning; SI as a tool for inclusion and social transformation based on the perceptions of the graduates of the Institutional Program for Scientific Initiation Grants (PIBIC) from Oswaldo Cruz Foundation (Fiocruz), Bahia (PD26--2012)[12]; the self-reported differences in the academic experiences of students enrolled in the Master's degree in Nursing between those who were and those who were not former SI students (PD27-2012); the evaluation of PIBIC as public policy based on the data of ex-holders (PD29-2012); the evaluation of the individual's training as a researcher and professional, especially the impacts on the labor market (PD35-2012); the SI and its effects on the graduates participating in the Scientific Initiation Programs (PIC) of the initial teacher training courses, as well as the expectations of the project supervisors (PD19-2011); the SI as an integrative methodology in the teaching of Chemistry to mobilize students' previous knowledge (PD20-2011); the knowledge and the analysis of the contradictions, harmonies, correspondences and differences existing between the initial training of university professor-researcher and the professional practice of the graduates (PT01-2008).

These themes reinforce the idea that, regardless of the focus of the research, it is necessary to "[…] overcome the simplistic logic of understanding knowledge production

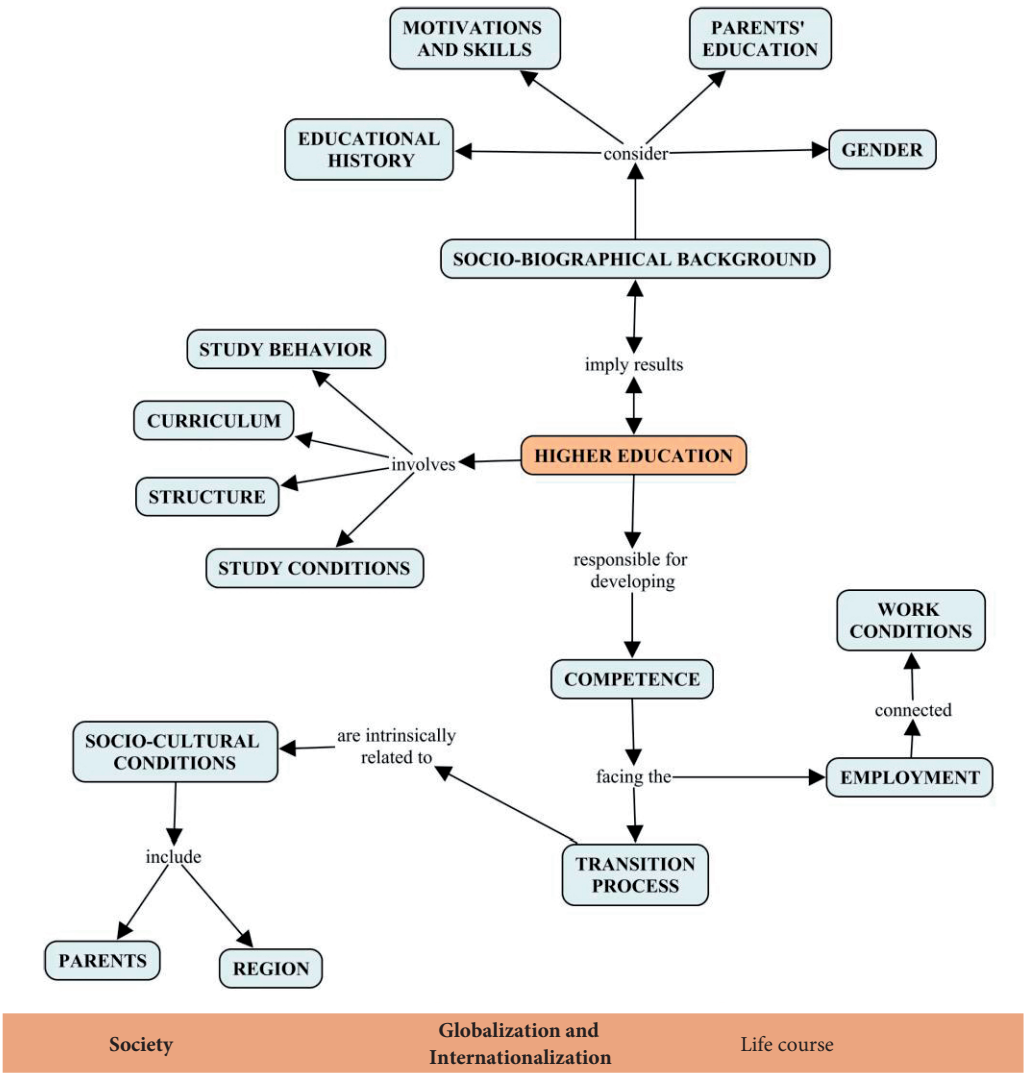
11 Results found in one thesis and seven dissertations.

12 It was considered the operational sequence of categorization of Moraes and Galiazzi (2007). The coding adopted was the mixed system using alphabet and numbers. In ANPEd, the letter "T" represents the analyzed work (in portuguese "trabalho") and the numeral (01, 02, 03 etc.) the quantity of productions of the period from 2010 to 2015. Example: T01-2010, T02-2010, T03-2010 etc. In Capes, next to the letter P that indicates research (In portuguese "pesquisa"), one adds the letter "D" for dissertation or "T" for thesis. Finally, the year is placed (2008 to 2012). Example: PT01-2008, PT02-2008, PD03-2008 etc.

within university spaces" (T14-2012), which would reduce gaps between science and social inequalities, also among countries. For Suwanwela (2009, p. 78. Our translation), "[…] research as the production of knowledge encompasses new discoveries and inventions as well as inquiries about specific situations so that this knowledge can be applied to development." This means breaking with the idea of importing solutions to local problems.

The production of knowledge is essential. Be research "[...] for local application of the global knowledge community; research to understand their own situation and their problems; problem-oriented research; policy research; systems research and operations research" (SUWANWELA, 2009, p. 79. Our translation). The research process in higher education can and should involve different models with a view to developing values and stimulating a society based on human rights and social justice. It is then the analysis of the elements and their interrelations that make up this scenario, namely:

Figure 1 – Model of Analysis of Higher Education

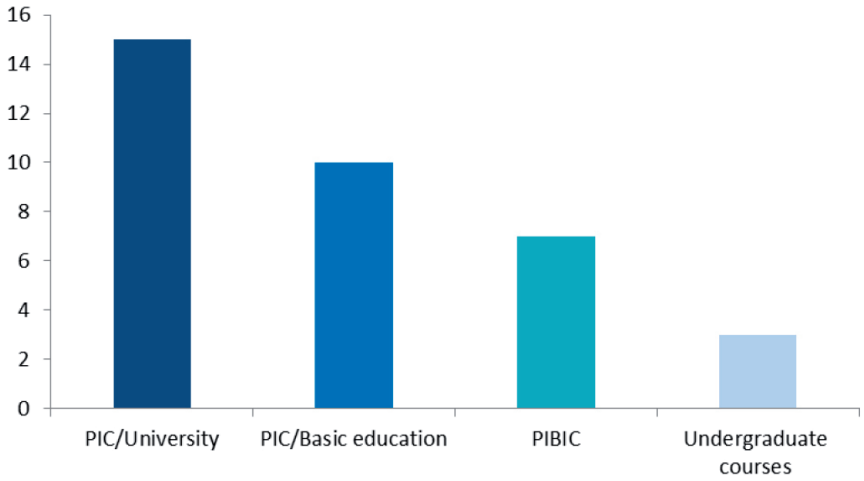


Source: Authors from Shomburg and Teichler (2008 apud MOROSINI, 2009).

In the perspective of this type of analysis, the challenge involves considering the *inputs* (conditions of study and support – biographical data of the student, motivations); the processes and the products in the analysis (teaching and research having as product knowledge, skills and notes); and not only the results (transition to employment and work) (MOROSINI, 2009). Higher education is not only about aspects related to economic interests, but also involves the democratization of society, the globalized context and the course of life (socio-biographical background) of the student.

College education productions[13] also evidenced research related to PIC. 91.5% (32) of the studies investigated SI from a program: 42.9% (15) at universities; 28.6% (10) in the area of basic education (ICJ, PCE[14]); 20.0% (07) studied PIBIC Grant holders[15]. The *locus* of the other works, 8.5% (03), was the SI in the undergraduate courses of HEIs. See chart:

Chart 2 – Programs of Scientific Initiation in Capes Productions (2010-2015)



Source: Authors (2016).

The country has several programs aimed at students: a) higher education - undergraduate and post graduation courses by PIBIC, PIBIC of Affirmative Actions (PIBIC--Af), Institutional Grants Program for Technological Development and Innovation (PIBITI) Scientific and Master's Degree (PICME); b) basic education – PIC-OBMEP, ICJ and PIBIC-EM. There are also the programs by quota to the researcher of SI and Industrial Technology Initiation (ITI). In financial terms, the government invested R$ 1,954,245,000, distributed on grants in the country (R$ 1,108,055 – 56.7%) and abroad (R$ 582,215,000 – 29.8%); and on aid to research (263,975,000 –13.5%). The numbers confirm a growth of more than, approximately, 176% when compared to amounts of R$ 703,681,000 invested in the year of 2001 (CNPq, 2015[16]).

13 PIC were studied in the 35 works of Capes.

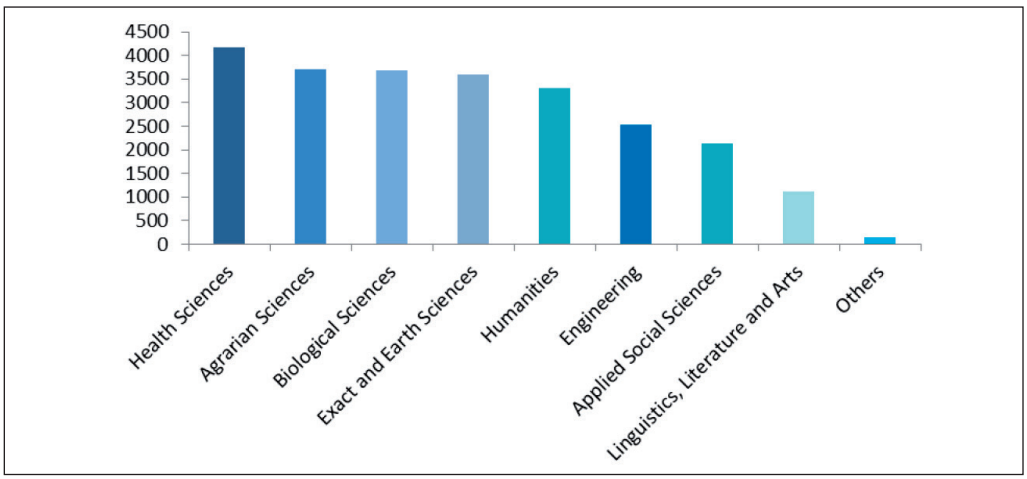
14 Science in School Program.

15 In addition to the percentage of university programs 42.9% (15) and 20.0% (07) of PIBIC, HEIs conduct research in 62.9% (22) of PIC. It is believed that this reality is pertinent to strengthening SI as a public science policy.

16 These numbers were collected from the investment portal of CNPq (2015).

At this level, the grants are also divided by the areas adopted by CNPq. The classification of the expressed areas should not be adopted to establish committees of the development agencies[17]. That is, these data do not determine the distribution of resources for development, let alone impose revisions in curricula of HEIs. Although the classification is not a determining factor, the differences in the distribution of SI grants appear. See chart:

Chart 3 – Grant Holder by Large Area (2015)



Source: Panel of Institutional Initiation Programs (CNPq, 2016) .

Education, within the area of human sciences, received 3,302 thousand grants of SI, ranking fifth among all areas. Several hypotheses can be raised for this scenario. However, the ideas of Morin (2007) are adopted when he affirms that all science must be understood as a human production, not conceiving the microphysics of power that is installed in the academies in favor of the hegemony of the exact sciences and technology on the area of humanities. The separation of areas should only guide users to situate their activities within the general framework of knowledge production, not serving epistemological issues of one area or another.

It should also be pointed out that the researches with an approach in PIBIC (07) have centralized their objects of study in the equity of the SI Grant distributions (PD25-2012); in identifying the egress profile and the possible relationships between participation in the program, employability and better remuneration (PD26-2012); evaluation of the program as an effective tool for academic training (PD29-2012); in the analysis and organization of the implementation process, as well as its relationship with undergraduate and postgraduate - teaching and research (PD33-2012); in the experience in scientific research and the good preparation for the labor market (PD35-2012); in the changes of the higher education as a result of the historical rationality imposed by the culture through the state action (PD18-2011); in the scientific formation of the young university student through the analysis of history on the progress of science in Brazil,

17 It is only a reference to organize the evaluation mechanisms of HEIs, and it is relevant to mention that. "[...] Table of Knowledge Areas adopted by agencies active in science, technology, culture, art and innovation is a tool for organizing information in order to implement, manage and evaluate its programs and activities" (CNPq, 2015, no pagination. Our translation).

with a view to the approximation of intellectual autonomy, educational policies and science and technology (PD14-2010).

These configurations indicate significant and wide-ranging productions when researching SI, which reveal a predominance of themes related to scientific, academic and professional training, encompassing the theories that support the teaching and learning processes. In particular, discussions of teacher training are given an expressive space when related to research experiences and teaching work. In addition, the researches portray educational trends within an articulating dynamic between SI, science, research and the training of the individual from local approaches that evaluate the global context.

It is also used to argue favorably with the proposal of Massi and Queiroz (2010) regarding the creation of databases linked to the CNPq, aiming at the regular and standardized collection of information about the SI in the universities. This action improves the flow of data at the national level, as well as stimulates research on the complex universe of science and its interrelationships.

4. Some considerations[18]

The scientific productions of ANPEd and Capes present different perspectives on SI. The publications are related to teacher training and research experiences articulated with science, teaching work in the glocal context. In addition, the discussions permeate the field of the epistemologies of science and the diffusion of knowledge with emphasis on the implications (for good and evil) of academic productivism corroborate for the advancement of education through the indication of ways that allow a reassessment of the science policies and institutional strategies. The objective is to promote the development of higher education based on a citizen education, and the SI is a device capable of contributing to the expansion of opportunities and reduction of scientific limitations.

The quality dimension of education has emerged with a reduced focus, evidencing debates about higher education in the context of internationalization and emerging contexts and evaluation policies. There are gaps in the field of SI and quality in ANPEd productions, which opens space for a debate aimed at identifying social practices and training of individuals that can re-significate social reality.

It is also noticed that the SI has its own characteristics, regardless of the scientific subjects (SI in the singular). In contrast , the various subjects have their specificities (SI in the plural). This indicates that the SI practices produced are not only discourse-makers, but they themselves need a set of schemes, pedagogical constructions, articulations of signs and meanings to exert their possibilities of undergraduate scientific training.

Within this scope, participation in an PIC promotes the development of a theoretical-scientific attitude, clarity in vocational choices, research skills and broadening the performance of study groups with a view to increasing scientific productivity. The SI should not be pragmatic in character only as an indicator of improvement for post-graduation, but must reach an increasing audience and provide quality education in HEIs in Brazil.

18 The results of this study were part of the author's doctoral research.

References

ANPEd. **Associação Nacional de Pós-graduação e Pesquisa em Educação**. Disponível em: <http://www.anped.org.br/>. Acesso em: 15 set. 2016.

BOLETIM ANPEd. **Associação Nacional de Pós-graduação e Pesquisa em Educação**, v. 8, p. 2, no. 1, jan./mar. 1986.

BRASIL. **Lei de Diretrizes e Bases da Educação Nacional**, n.º 9.394, de 1996. Brasília, 1997.

BRASIL. **Resolução Normativa dos Programas Institucionais de Iniciação Científica** do CNPq, n.º 17/2006. Brasília, 2006.

BRASIL. **A iniciação científica**: uma estratégia eficaz de transformação. Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq). Brasília, 2010.

CAPES. **Coordenação de Aperfeiçoamento de Pessoal de Nível Superior**. 2015. Disponível em: <http://www.cap es.gov.br/>. Acesso em: 15 set. 2016.

CHICARELLE, R. J. **Formação inicial científica no curso de Pedagogia**. São Paulo: Pontifícia Universidade Católica, 2001.

CNPq. **Conselho Nacional de Desenvolvimento Científico e Tecnológico**. 2011. Disponível em: <http://www.cnpq.br/>. Acesso em: 15 set. 2016.

CRESWELL, J. W. **Projeto de pesquisa**: métodos qualitativos, quantitativos e misto. Porto Alegre, Editora Artmed, 2007.

DAMASCENO, M. N. A formação de novos pesquisadores: a invenção como uma construção coletiva a partir da relação teoria-prática. In: Calazans, J. (Org.). **Iniciação científica**: construindo o pensamento crítico. São Paulo: Cortez, 1999.

DELANTY, G. A universidade e a cidadania cosmopolita. In: **Educação superior em um tempo de transformação**: novas dinâmicas para a responsabilidade social. Trad. Vera Muller. Porto Alegre: EDIPUCRS, 2009.

DENZIN, N. K.; LINCOLN, Y. S. (Org.). **O planejamento de pesquisa qualitativa**: teoria e abordagens. 2. ed. Porto Alegre: Artmed, 2006.

FEILZER, M. Y. Doing mixed methods research pragmatically: implications the rediscovery of pragmatism as a research paradigm**. Journal of Mixed Methods Research**, v.4, n. 1, p. 6-16, 2010.

GATTI, B. A. Estudos quantitativos em educação. **Revista Educação & Pesquisa**. São Paulo, v. 30, n. 1, p.11-30, 2004.

MASSI, L.; QUEIROZ, S. L. **Iniciação científica**. Campinas: Átomo, 2010.

MOROSINI, M. C. Qualidade da educação superior: tendências deste século. **Estudos em Avaliação Educacional**, São Paulo, v. 20, p. 165-186, n. 43, maio/ago. 2009.

NELSON, C.; TREICHLER, P. A.; GROSSBERG, L. Estudos culturais: uma introdução. In: SILVA, T. T. da**. Alienígenas em sala de aula**: uma introdução aos estudos culturais em educação. 4. ed. Petrópolis: Vozes, 2002.

PAINEL de investimentos. **Programas Institucionais de Iniciação Científica e Tecnológica do CNPq**. Disponível em: <http://memoria.cnpq.br/painel-de-investimentos>. Acesso em: 30 out. 2016.

PIBIC. **Programa Institucional de Bolsas de Iniciação Científica**. Disponível em: <http://cnpq.br/pibic>. Acesso em: 30 out. 2016.

PIBIC-Af. **Programa Institucional de Iniciação Científica nas Ações Afirmativas**. Disponível em: <http://cnpq.br/pibic-nas-acoes-afirmativas>. Acesso em: 30 out. 2016.

PIBIC-ME. **Programa Institucional de Bolsas de Iniciação Científica para o Ensino Médio**. Disponível em: <http://cnpq.br/pibic-ensino-medio>. Acesso em: 30 out. 2016.

PIBITI. **Programa Institucional de Bolsas de Iniciação em Desenvolvimento Tecnológico e Inovação**. Disponível em: <http://cnpq.br/pibiti>. Acesso em: 30 out. 2016.

PIC-OBMEP. **Programa de Iniciação Científica da Olimpíada Brasileira de Matemática das Escolas Públicas**. Disponível em: <http://cnpq.br/pic-obmep>. Acesso em: 30 out. 2016.

PICME. **Programa de Iniciação Científica e Mestrado**. Disponível em: <http://cnpq.br/ picme>. Acesso em: 30 out. 2016.

PROGRAMA Ciência sem Fronteira. Disponível em: <http://www.cienciasemfront eiras.gov.br/web/csf>. Acesso em: 30 out. 2016.

PROYECTO Reflex. **Reflex**: the flexible professional in knowledge society. Disponível em: <http://www.webs.ulpgc.es/gei/jose/Introduccion_Gabinete/Reflex.pdf>. Acesso em: 30 out. 2016.

PROYECTO Proflex. **Proflex**: el profesional flexible en la sociedad del conocimiento. Disponível em: <http://www.seguimientoegresados.com/>. Acesso em: 30 out. 2016.

RICHARDSON, R. J. **Pesquisa social**: métodos e técnicas. 3. ed. São Paulo: Atlas, 2007.

RIES. **Rede Sulbrasileira de Investigadores em Educação Superior**. <http://www.pucrs. br/faced/pos/ries/>. Acesso em: 10 out. 2014. Acesso em: 30 out. 2016.

SAVIANI, Dermeval. A pós-graduação em educação no Brasil: trajetória, situação atual e perspectivas. **Revista Diálogo Educacional**, v. 1, n. 1, p. 1-19, jan./jun. 2000.

SOARES, Magda Becker; MACIEL, Francisca Pereira (org.). **Alfabetização**: série estado do conhecimento. Brasília: Mec/Inep, 2000. Disponível em: <http://www.dominiopublico. gov.br/download/texto/me000084.pdf>. Acesso em: 30 out. 2016.

SUWANWELA, Charas. A contribuição política e social da Pesquisa. In: **Educação superior em um tempo de transformação**: novas dinâmicas para a responsabilidade social. Trad. Vera Muller. Porto Alegre: Edipucrs, 2009.

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