Education Research Networks and Scientific Collaboration[1]

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ABSTRACT

We aim to understand how research networks operate in education and scientific collaboration and the cooperation with Brazilian universities. We did bibliographical research to gather data for the proposed investigation, having as a database: Rede Universitas, RedeEstrado, Rede Aste, RedeCentro and RIEOnLIFE. As a result, we identified that the creation of networks takes place within scientific and/or academic criteria and, in some cases, within economic and training criteria to expand publication possibilities. This answers the constituent questions of some networks herein analyzed and shows the financial crisis Brazilian universities face as research entities, in addition to showing the need for alignment with external funding sources and compliance with the metrics of the rating agencies. The final considerations, from a critical and analytical point of view, show processes that are conflicting and, at the same time, complementary. We are convinced of the importance of working in a network as the connection allows the researcher to acquire knowledge, in addition to observing a mutual effort in the dynamics engaged towards the consolidation of research networks and in the maintenance of research groups.

KEYWORDS: Research networks. Teacher training. Teaching Work. Scientific Collaboration. Research financing.

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Redes de Pesquisa em Educação e Colaboração Científica

RESUMO

Nosso objetivo é compreender as formas de atuação das redes de pesquisa em educação e colaboração científica e a cooperação com a universidade brasileira. Fizemos uma pesquisa bibliográfica para reunir dados na investigação proposta tendo como base de dados: Rede Universitas, RedeEstrado, Rede Aste, RedeCentro, RIEOnLIFE. Como resultados, identificamos que a criação de redes acontece dentro de critérios científicos e/ou acadêmicos tendo, em alguns casos, critérios econômicos, formativos para ampliar possibilidades de publicações, isso responde as questões constituintes de algumas redes aqui analisadas, mostra a crise financeira da universidade brasileira enquanto entidade de pesquisa, e a necessidade de alinhamento com fontes externas de fomento e ao cumprimento da métrica das agências avaliadoras. As considerações finais, do ponto de vista crítico analítico, evidenciam processos em confronto e, ao mesmo tempo, complementares. Estamos convictas da importância do trabalho em rede, pois a vinculação possibilita ao pesquisador a aquisição de conhecimentos novos, além de observar um esforço mútuo nas dinâmicas empreendidas em prol da consolidação de redes de pesquisa, e na manutenção dos grupos de pesquisa.

Palavras-Chave: Redes de pesquisa. Critérios formativos. Universidade brasileira. Colaboração científica. Financiamento de pesquisa.

Redes de investigación en educación y colaboración científica

RESUMEN

Nuestro objetivo es comprender las formas de actuación de las redes de investigación en educación y colaboración científica y cooperación con la universidad brasileña. Hicimos una pesquisa bibliográfica para recopilar datos en la investigación propuesta teniendo como base de datos: Rede Universitas, RedeEstrado, Rede Aste, RedeCentro, RIEOnLIFE. Como resultados, identificamos que la creación de redes ocurre dentro de criterios científicos y / o académicos teniendo, en algunos casos, criterios económicos y formativos para ampliar las posibilidades de publicaciones, esto responde a las preguntas constitutivas de algunas redes aquí

analizadas, muestra la crisis financiera de la universidad brasileña como entidad de investigación, y la necesidad de alineación con fuentes de estímulos externos y cumplimiento de las métricas de las agencias calificadoras. Las consideraciones finales, desde un punto de vista analítico crítico, muestran procesos enfrentados y, al mismo tiempo, complementarios. Estamos convencidos de la importancia de trabajar en red, ya que el vínculo permite al investigador adquirir nuevos conocimientos, además de observar un esfuerzo mutuo en las dinámicas emprendidas en relación a la consolidación de redes de investigación, y el mantenimiento de grupos de investigación.

PALABRAS CLAVE: Redes de investigación. Formación de profesores. Trabajo docente. Colaboración científica. Fondos de investigación.

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Introduction

In various circumstances, on one hand, the challenge of undertaking research is recurrent due to its often lonely character, demanding intellectual effort from the researcher. On the other hand, sharing and socialization make it possible to strengthen their constructions, establishing partnerships that are woven and solidified both between researchers and in individual maturation, which can expand the participation strategies between research groups and institutions.

The interaction between researchers from different institutions has been a major factor in evaluating graduate education programs, and we highlight the creation of an item in the evaluation category that makes interinstitutionality and participation in research networks notorious. This demonstrates the relevance and impact that research networks have on the coordinating bodies of the country's stricto sensu graduate courses. Leite and others (2014) understand that partnerships also make it possible to increase evaluation metrics because they encourage greater

research production and, consequently, more articles, resulting in greater prestige for the professors' academic works.

In turn, collaborative network research is different and has a different concept from the one that uses the term collaborative research as a collaborative application in action research. In this article, we do not refer to collaborative research, we focus on collaboration between researchers, research groups and higher education institutions that, faced with a common objective and theme, decide to weave a network for the development of their actions and research. Notably, the focus is on collaboration between researchers, carried out through interinstitutional research networks, as explained by Magalhães (2021, p. 7):

> [...] the group of researchers who associate in a network, counts on researchers who come with greater training baggage, which is not daunting, but becomes necessary help for members formalizing how they start to think about theoretical and methodological bases, depending on their own experience as researchers. These, generally, are occupied with teaching and collectively reflecting on the theoretical and methodological issues that the group develops. This posture is reinforced by the thought of Boaventura Santos, who states that, in the effort to carry out research, it is necessary to have an attitude or presence of an attitude of epistemological wandering. This idea of maintaining an attitude of epistemological wandering has to do with the researcher's reflective capacity, and it expands in the interlocution of collective work, which helps to think about the various ways of thinking and analyzing the same research path. Souza Santos advises that the researcher should think about the epistemological plurality existing in the field of academic research as there are varied views to understand educational phenomena. However, issues related to narrow scientism, their unicist lines of vision, are debated only in the dialogue with the network research group, which creates an epistemological blindness that needs to be overcome. (MAGALHÃES, 2021, p. 7).

In this sense, the author also emphasizes that, in the research projects carried out, there is a tendency, especially for those financed with themes of social inclusion, to end up surrendering to the precepts of International

Organizations or even to the current educational policies, which are not always the most suitable for education. Thus, Magalhães (2021, p. 7) understands that it is necessary to ask:

> [...] what source is our research approach serving? What demand? This is a constant concern of a group that works in a network: which demand will be met? Does it represent social participation? Will it give voice to social agents, social movements, or does it only serve certain clienteles or certain ideologies, regardless of the impact or possibility of use for social transformation?

Such questions make us reflect on the relevance of the constitution of a network for an ideological definition. In this sense, Magalhães (2021, p. 10) still defends that the existence of the network

> [...] helps us to analyze the fact that sometimes the underlying issues are ideological, and although they seem socially important, they basically deal with fads and deliberations of occasional hegemonic groups. This is not an easy process. It requires fierce and collective discussions to leave the superficial and opt for a production that relates to and responds to social demands. Collaborative network research, by maintaining an axis of study and investigation that seeks to deepen the conditions of the object of study to understand it in its entirety, in addition to political and ideological positioning against hegemony, seeks to avoid passion and ideology. This makes studies and research progress in their critical and organic sense, avoiding the expression of internal desires and the obstacles of current commercialism. (MAGALHÃES, 2021, p. 10).

We understand that the development of quality research depends on funding, whether it be a grant in the scope of master's and doctoral research, or other types of grants that are claimed by public notice, but which offer support for research funding. With the reduction of investment by public authorities and the reduction of scholarships and the number of public notices covering humanities, there is also a reduced number of research groups that have some type of research funding linked to them.

In this way, we understand that the existing funding in a research group impacts its results, since those who are linked to a research network

can share the funding with the others in order to strengthen the network. Thus, we found that the reduction in funding for research groups directly impacts the development of collaborative network research. If the budgetary demands of this area are not able to be met, it can lead the entire network to volunteer, drastically reduce their actions or, even, redefine its objectives based on the budgetary possibilities in order to stay connected. Therefore, it becomes relevant to reflect on these issues that, although not the objective of this article, are latent when one observes the reasons for the existence of a research network to deal directly with teacher training and teaching work.

Therefore, we believe it is important to emphasize that research networks, in general, and specifically those in education, invest efforts to achieve better results:

> The network, as a whole, must have an executable project with guaranteed performance, which must be used as an anchor. This is what meets the principle of continentality, that is, the group of participants in the network will perform a common task. The computational resources that speed up accessing and archiving information are at the heart of new media and can be used for common program tasks. If the project is broad, as it usually is, it should be divided into a phase or subproject of an umbrella project. At this level, it is the principle of specificity. It is revealed by the single task execution of a participating unit, but one that contributes to the whole. (MOROSINI and FRANCO, 2001, p. 36).

Collaborative Networks and their genesis

Changes in society drive people and organizations to seek new ways to live together, work and share data, information and knowledge. Universities and their laboratories, research groups/nuclei, as centers for the production of scientific knowledge, play a prominent role in sharing knowledge with society. It is in this context that research networks begin to be formed.

Gatti (2005) clarifies that, in view of notes originating from the 1978 meeting of the National Association of Graduate Studies and Research in Education (ANPEd), the exchange network between researchers and research

began to be thought of in Brazil after the constitution of an Integrated Education Program, promoted by the National Council for Scientific and Technological Development (CNPq), the Funding Authority for Studies and Projects (FINEP), the Anísio Teixeira National Institute of Educational Studies and Research (INEP) and the Coordination for the Improvement of Personnel in Higher Education (CAPES), from 1981 to 1992. This program began with a pilot project and successive evaluation meetings that sought to bring the actions of the four development agencies together. At the end of the Project, ANPEd produced a document that evaluated the results of the Program and suggested direction.

The author also clarifies that, after the Program stages, she joined ANPEd work groups, perfected work organizations, expanded the reach of more involved groups and stood out for her impact and maturation throughout the Program internships. In this sense, she highlights that:

> The autonomy assumed by various ANPEd work groups in the organization of their internships and in the organization of workshops in recent years reveals a new level for the area, both in terms of its work autonomy and in terms of further developing relevant and specific questions for each theme and methodology. The development and consolidation of some ANPEd work groups are associated with this program, which provided meetings, seminars and internships, with guaranteed funding for the participation of researchers, forming groups and some reference networks in several of the sub-areas of research in the field of education. (GATTI, 2005, p. 132).

The experience from this project, in a way, impacted the exchange between institutions for the consolidation of collaborative research networks, which became a term that can bring with it a *raison d'être* that underlies its structure, that is, the network started to surpass the research professions.

Around the 1960s, with the creation of telephone networks and microcomputers, the need to share information between them increased. Then, as computer use expanded, the need for interconnection to share information (aiming at the sharing of peripherals such as printers) and to store data sets to be accessed by many simultaneously, also increased. In this

way, national computer networks expanded with the interface between the companies themselves, with different types of networks, always seeking to meet the need. (MARQUES, KIRNER, 1988, p. 3). But why would we address this emphasis on the computer network, given that we are dealing with a collaborative research network? The justification is precisely because we understand that the continuous use of this term, in the sense of technologies, has boosted its application in other contexts, which we also understand to have been a motivator for the "network" to be used in the context of research.

The term collaborative, on the other hand, has been used in research that has characteristics that are similar, in some aspects, to action research. The term research is intrinsic to the activity of teaching, it encompasses all its actions, it is part of the teaching *ethos*, its constitution and its doing, which is essentially investigative, since "[...] there is no teaching without research and no research without teaching". (FREIRE, 2006, p. 29).

When looking for the definition of research networks, we found the glossary that appears in the CNPq Research Group Directory, which characterizes them as those seeking to:

> [...] stimulate the creation of knowledge and the innovation process that results from the exchange of information and, above all, from the joining of group competences in an effort to search for common goals, with or without sharing research facilities. (BRASIL, 2020, p. 1).

In the same document, there is an alert to the specificity of the term and its application, being different from social research networks:

> Not to be confused with social research networks, which are not targeted by the Research Group Directory. These aim to meet the need for a specific environment that is specialized in a particular area of knowledge, with possibilities for discussion, networking, the purchase of input, dissemination and the marketing of research results and innovations. (BRASIL, 2020, p. 1).

In the study by Leite et al. (2014), the authors rely on Christakis' (2010, p. 8) definition that "a network community can be defined as a group of people

who are more connected to each other than they are to people from other groups". Leite et al. (2014) analyze collaborative research networks in an attempt to develop markers that make it possible to identify both the motivations and forms of collaborative research network evaluation. Such markers indicate the operating process and its relationships and interactions within the research groups.

In order to understand the breadth of collaborative research networks aimed at studying teacher training and teaching work, we searched for a document on the subject on the CNPq, Capes and MEC websites, and in none of them did we locate, even right up until the moment of elaboration of this article, some normative that had the specific criteria of a research network. The most complete definition was found on the website of two research support foundations: in Goiás (FAPEG) and in Minas Gerais (FAPEMIG). FAPEG regulates and defines research networks in its Normative Resolution Consup/FAPEG n. 6/2007:

> Art. 1 – A Research Network is understood as a group of entities through their researchers and professionals, in permanent interaction, organized to jointly develop scientific or technological research projects that can significantly contribute to the advancement and dissemination of knowledge.
> Art. 2 – The network is characterized as the union of at least 3 (three) or more institutions headquartered in Goiás, with at least one being a higher education or research institution, with the objective of, together, enabling the execution of research and/or development projects and contributing significantly to the scientific and technological development of the State of Goiás. (GOIÁS, 2007, p. 1).

In this same normative resolution, we find more elements with specifications for operating in a Network, namely: proposition of scientific activity of relevance to the state; composition of at least 3 institutions, one of which is a higher education or research institution headquartered in the state; existence of a cooperation agreement between all institutions to share productions and material resources; general coordinator accredited by FAPEG; members who participate in research projects; demonstration of the

network's capacity, such as a qualified list of those involved and the infrastructure available to the Network. (GOIÁS, 2007).

The composition of a research group is made up of several researchers, while a network is made up of different research groups, which expands its coverage potential and can reach local, regional and international contexts. In this sense, a network is established when groups of people, institutions, agencies and companies are in contact and such interaction can be graphically represented. A collaborative research network carries the same defining attributes and adds to them the intention to produce knowledge. Furthermore, as Maria Isabel da Cunha highlights in an interview with Magalhães (2021, p. 8, press):

> A Network weaves its own culture that merges the participants' previous experiences and the conditions of the institutions that host the experience. The wise words of the Spanish poet Machado fit well "[...] There is no path for a hiker [...] the path is made by hiking [...]. However, each situation will require reading of the objective conditions that involve interests, participants, possibilities, goals and resilience. These are the conditions that guide the processes, the advances, and the gains. They also help to avoid difficulties and alleviate failure.

And so, when thinking about the genesis and constitution of research networks, we tread spaces and times weaving references and following the paths already taken by more experienced researchers and the work carried out within research entities and associations.

Methodological Path

In order to achieve the objective of conceptualizing the research networks, their ways of operating and listing which ones have conducted their studies and research on teacher education and teaching work, we chose to use bibliographical research so as to gather elements that would serve as a basis for the construction of the proposed investigation.

After choosing the theme "research networks and their ways of operating", we limited ourselves to listing which ones have directed their

studies and research towards teacher training and teaching work as a way to deepen the subject. In this way, we trace a history of research network creation, conceptualization and operation in the field of teacher training and teaching work in Brazil.

Initially, we searched the descriptors *Research - Network* in the CAPES/MEC Journal Portal and found 29 (twenty-nine) results. However, when reading the abstracts, we found that none of the articles dealt with the theme of research networks, basically referring to the action research methodology (collaborative research).

In order to proceed with a more refined search, we went to the pages of scientific entities and research associations, looking for more robust data regarding the formation of research networks. We consulted the ANPEd, ANFOPE, CAPES and CNPq websites, and on these we found indications of existing research networks aimed at dealing with the theme of teacher training and teaching work, from which we chose the following:

Table 1. Research networks focused on the theme of teacher training and teaching work in Brazil

Network	Founded in	Integrating Groups	Address
Rede Universitas/ Br	1990	GTPS/UFRRJ GEPPES-UCDB GEPES – UFPA GEPES – UNICAMP GEU – UFRGS NEDESC-UFG NEGRA - Center for Studies on Education, Gender, Race and Otherness PRÁXIS – UFRO PROEDES – UFRJ Researchers' Network on Education Workers' Associations and Unionism Universitátis	http://www.redeuniversitas.com.br/p/rede-universitas_22.html

RedEstrado - Latin American Network of Studies on Teaching Work	1999	It brings together researchers and institutions interested in the political and academic debate in Studies on Teaching Work, in the context of the Latin American region.	https://redeestrado.org/apresentacao/
REDECENTRO Network of Researchers on Teachers in Brazil's Midwestern Region	2004	Graduate Programs in Education in the Midwestern Region - Universidade de Brasília (UnB), Universidade Federal de Mato Grosso (UFMT), Universidade Federal de Mato Grosso do Sul (UFMS), Universidade Federal de Goiás (UFG) Universidade Federal de Uberlândia (UFU) Universidade Federal de Catalão (UFCAT) Universidade de Uberaba (UNIUBE)	https://ppge.fe.ufg.br/n/49772-redecentro-rede-de-pesquisadores-sobre-professores-do-centro-oeste
Rede ASTE Network of Researchers on Collective Cooperation and Unionism of Workers in Education	2009	Adrián Ascolani (Argentina), Amarílio Ferreira Jr. (Brasil), André Robert (França), Aurora Loyo (México), Carlos Bauer (Brasil), Deise Mancebo (Brasil), Julián Gindin (Brasil), Márcia Ondina Vieira Ferreira (Brasil), Marcos Ferraz (Brasil), Ricardo Pires de Paula (Brasil), Rosa Serradas (Portugal), Sadi dal Rosso (Brasil) Savana Diniz Gomes Melo (Brasil).	https://redeaste.irice-conicet.gov.ar/
International On Life Education Network – RIEOnLife	2020	Unisinos; GPe-dU - Digital Research Group Unisinos; UniLaSalle; GP-Cotedic; Universidade Estadual do Maranhão; Universidade Aberta de Portugal; Instituto Federal do Norte de Minas Gerais; Faculdade CMB; Universidade Federal de Pernambuco; Grupo Marista; Fundação Universidade Federal de Rondônia; Centro Universitário Vale do Salgado; Universidade Franciscana; Universidade Federal de Sergipe; Universidade Feevale; Universidade Estadual do Oeste do Paraná.	https://rieonlife.com/

Source: Prepared by the authors from data collected on the research network websites

The Rede Universitas/Br was structured based on integrated academic research projects that have resulted in seminars, collective publications, the formation of research groups, centers and directories, the establishment of lines of research in graduate programs, and student training in the scope of scientific initiation and master's, doctoral and post-doctoral courses, all of which are directly linked to researchers in the Network. The entry of researchers and students into the Network has taken place through integrated and articulated research projects. The nomination belongs to the research project coordinators and the Network researchers. Each integrated or articulated project must guarantee autonomy and fidelity to the historical and critical principles that guide it. According to Rede Universitas (2021), they seek research and "[...] dialogue between peers who have the area of knowledge, Higher Education Policies, in common".

One of the last acts of Rede Universitas culminated in the production of an e-book, published in 2021, entitled H*igher Education Policy: technological and field professional education* (MANCEBO et al., 2021), which originated from a collective action for article production by those who are part of Rede Universitas. This publication is the result of works submitted to the Online Seminar, in May 2021, which was coordinated by the College of Education at the Universidade Federal de Goiás with the participation of the Graduate Programs in Education from the Universidade Estadual de Goiás and the Pontifícia Universidade Católica de Goiás. The aforementioned event was characterized as an action of Rede Universitas, with a view to share research on higher education policies, such as rural education, teacher training and their contributions to higher education policies and to the development of the countryside and Brazilian society, and new modes of regulation, trends in construction and teaching work in technological professional education.

On the other hand, RedEstrado, the Latin American Network of Studies on Teaching Work has as its general objective "to contribute to the dissemination

of knowledge about teaching work in Latin America and, consequently, to the construction of more assertive public policies" (REDESTRADO, 2021, p. 1).

This network is an important producer and disseminator of knowledge about teaching work in the Latin American region, connecting researchers linked to universities, research centers, unions and other movements that work in favor of valuing the teaching profession. RedEstrado is located in twelve Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico, Paraguay, Peru, Puerto Rico and Uruguay.

RedEstrado develops comparative research and studies, in addition to holding national seminars and debates on specific themes, and publishing books and other materials, such as seminar proceedings. It seeks to promote biennial international seminars in different countries in Latin America, which have already been held in Rio de Janeiro/Brazil (1999; 2006), Belo Horizonte/Brazil (2002), Salvador/Brazil (2014), Guadalajara/Mexico (2001), Buenos Aires/Argentina (2003; 2005; 2008), Santiago/Chile (2012) and Lima/Peru (2010; 2018). The seminars do not take place solely in one country as diversity is needed to debate the teaching condition in the Latin American context. As the network does not have a funding source, training activities are carried out with the support of the universities to which its members are affiliated (REDESTRADO, 2021).

One of RedEstrado's acts was the publication of a book, in 2015, entitled *Democratic inclusion and the right to education: challenges for teaching in Latin America*, organized by Dalila Andrade Oliveira, Myriam Feldfeber and Elizeu Clementino de Souza. It focuses on the debate on teaching in the context of inclusive and democratic education (OLIVEIRA, FELDFEBER, SOUZA, 2015). This work was developed in partnership with the international network INR/WERA (World International Research Network of World Education Research Association).

Another network identified is Redecentro - Network of Researchers on Teachers in Brazil's Midwestern Region, whose general objective is to "analyze the production of the professor, explain the various

epistemological approaches from the point of view of their internal connection and their relationship with the factors " (REDECENTRO, 2021, p. 1). It was created in mid-2000, being institutionalized in 2004. It has a markedly cooperative character that seeks to bring together researchers from various areas and from various contexts in the Midwestern Region in an effort to overcome the fragmentation of work production in education. This project brings together professor-researchers and students from an interdisciplinary perspective (REDECENTRO, 2021).

In an interview with Tiago Zanquêta de Souza, the general coordinator of the REDECENTRO, Solange Martins Oliveira Magalhães (2021, p. 8), explains to us how the work they develop has been conducted:

> [...] we dialogue about and value the contribution of other researchers, gathering together to overcome a production that is guided by the juxtaposition of authors. On the contrary, their links, their interconnections are debated and, even if they are authors from different perspectives, they always show themselves as either contributing to or opposing the composition of new criticisms and limits of collectively constructed thought. They are always suitable to be placed and debated, in the direction of a collective construction, which will also support authorship in the field of educational research.

An example of action by the REDECENTRO was the publication of a work organized by Souza, Magalhães and Queiroz (2017), which addresses studies on academic research on teacher training within the scope of the Universities that were part of the REDECENTRO at the time: UFG, UNB, UFU, UFMS, UFMT, UFT and Uniube. The work was remarkable for the Network as it brought traces of interinstitutionality, demonstrated the articulation of objectives, principles and common methodology between researchers and their respective groups, and supported a unified production.

Rede Aste - Network of Researchers on Collective Cooperation and Unionism of Workers in Education - was another identified in this study, which was approved and constituted in the final plenary of the 1st Seminar on Collective Teacher Cooperation and Unionism, held in 2009, in Rio de

Janeiro. It is a Network that has become international, expanding the dialogue between researchers from different countries. The results of the work carried out within the scope of the Network were, among others, the expansion of the discussion on the theoretical-methodological references that support research in the area; encouraging the production and sharing of research on the subject in several countries; and, still, the perspective of collective publications of its members' productions. The reaffirmation of the importance of solidary, open and horizontal relationships in the Network is also highlighted (ASTE, 2021).

Rede Aste is an open space for researchers, research centers, union members, education workers and students who seek to disseminate and debate their productions on collective cooperation and unionism in education. When visiting its website, we were able to access several works produced on the web, among which we point out two that deal directly with our topic of interest: teacher training and teaching work. In the article "Some Aspects of the Reorganization of the Public Teacher Movement in the State of Rio de Janeiro (1977-1980)", by Henrique Garcia Sobreira (2001), which is the result of his master's thesis, the author deals with the public teacher movement conducted by the State Center for Teaching Professionals of Rio de Janeiro, between 1977 and 1980. It is important to rescue the history of the Entity through its records and documents and to investigate the possibility of teaching organizations to configure themselves as "educators of the educator", inaugurating a new stage in the professionalization of teaching. From the confrontation between documents from political parties (analyzing the movement) and interviews with various participants in the movement, the history of the entity's early years was reconstructed. In doing so, the role of the union as an Apparatus of Hegemony (in the Gramscian sense, political organizer as well as a defender of economic-corporate interests) is put in doubt in view of the results attained (ASTE, 2021).

In one of the themes presented at the Collective Cooperation and Unionism Seminar organized by the Network, "The socio-historical nature of teaching work: from priesthood to unionization", Miranda (2009, p. 7) discusses:

> The teacher does not plan and carry out his work under complete freedom. There are limits to this. Therefore, it is worth discussing what are the conditions for planning and executing the pedagogical proposals. The question that arises is: what would be the limit of this freedom? We then fall into a situation similar to that in which Marx refers to the double freedom of the worker to sell his labor power and to be free from owning the means and instruments of production. We could make an analogy by saying that the teacher has a double autonomy, which is expressed on the one hand, by the autonomy to exercise their creativity without time for planning given the intensification of their working day (working up to three shifts a day at different schools) and, on the other hand, the autonomy to plan classes with their low qualifications – even though formal schooling is on the rise. Another aspect that we can highlight in this direction is that of assessments outside the classroom, school and teaching network. (MIRANDA, 2009, p. 7).

The International On Life Education Network (RIEOnLife), which aims to "co-create an OnLIFE Education network/platform, connecting researchers, managers, teachers and students to the knowledge of various Brazilian and international educational realities", was another one identified by us. According to electronic information, it was organized by the Digital Education Research Group GPe-dU - UNISINOS/CNPq, in partnership with the Universidade Aberta de Portugal - UAb-PT, and linked to the research project *Digital Transformation in Education*, funded by CNPq. It is made up of masters, doctors, post-docs, GPe-dU graduates and those who work in different institutions/regions in Brazil and abroad. This network emerged from the need to listen, discuss and reflect with managers, teachers and students from different levels and national and international contexts, on the understandings, actions and propositions related to education in contemporary times in order to strengthen itself as a network that thinks and builds OnLIFE Education (RIEOnLIFE, 2021).

When viewing the objectives that each collaborative network proposes, it is clear that there is something in common between the five networks mentioned here, namely, to spread knowledge about teaching work and teacher training, which corroborates the conceptualization provided in the Directory glossary of the CNPq Research Groups (2020. p. 1): "research networks aim to boost the creation of knowledge and the innovation process resulting from the exchange of information". At the same time, it is clear that, despite having one action in common, each one follows a different path.

It is worth emphasizing that the experiences of collaborative research networks brought here corroborate Gallo (s.d.) for proposing that the articulation of knowledge is not dependent on academic/scientific discursive processes.

Another perceived highlight is that although collaborative research networks are expanding, there is still a shortage of studies that propose to explain and describe their purpose and how their operations take place.

Final Considerations

At the end of this article, we could not fail to discuss some issues around the creation, training and adherence of collaborative work in research networks. From a critical analytical point of view, we evidence the existence of conflicting processes and, at the same time, complementarity. The first aspect is linked to the academic, materialized in the websites that describe the research networks, linked to the website of the university institution where the group is located. The emphasis given to this aspect would characterize a network of a more representative nature in institutional terms.

The second aspect is related to the scientific, and is materialized in the products that the network has been producing (collective authorship resulting in theses, dissertations, articles, books, etc). The emphasis given to this aspect would characterize a network of a more scientific nature, with more experience in research, or the named centers of excellence.

The third aspect identified concerns the resources that finance research, and this is precisely the aspect that calls our attention, since, if on the one hand, researcher collaboration in a network provides:

> [...] the numerous collaborative initiatives between individual researchers and research groups has served several objectives such as for more inexperienced centers to interact with centers of excellence in order to broaden the multidisciplinary scope of research by researchers from various fields coming together, to strengthen the relationship between science and technology, seeking greater impact of research in economic sectors or social public policies, or even to increase the level of international exchange between research centers from different countries. (MENDES; TANNÚS-VALADÃO; D'AFFONSECA, 2016, p. 5)

On the other hand, however, it is forced to structure itself on a scientific hierarchy that is not always established exclusively by scientific or academic criteria, but by economic criteria. This perspective responds to a crucial question, which is not explicit, but which constitutes the *raison d'être* of many research networks, as it would express itself as a facet of the Brazilian university financial crisis; a research entity that needs to align the institution, through networks, with external funding sources. In our view, this reverberates in the conditions of historical and ideological production that support the constitution of the so-called research networks, influencing the criteria that constitute them.

Weighing the aspects raised above would not be ethical on our part, but we would like to reiterate our conviction of the importance of networking, basing ourselves on the words of Magalhães (2021, p. 9), upon stating that:

> [...] collaborative and network research have an essential role that says how the field will assert itself in the scientific field. Its researchers have this responsibility. We know that the field of educational research, at least here in Brazil, faces the difficulty of being recognized. Works are not considered as scientific. This is an aspect that can be overcome when the production is collective, since it goes through the expanded scrutiny of rigor and relevance of several researchers who chose to have this debate.

Magalhães (2021, p. 9) also clarifies that the link to the network allows the researcher to acquire "[...] new knowledge, based on a critical dimension, rigor and work methods, with a clear explanation of how the data were systematized"'. The author understands that this aspect is emblematic for the field of graduate studies, as an expressive amount of research "[...] does not show the presence of epistemological logic and interpretations based on solid theories that dialogue with each other". (MAGALHÃES, 2012, p. 9).

Therefore, our defense of the training aspects of research networks and of the possibility of expanding production through publications can corroborate the growth of Graduate Programs and also expand contact networks in order to internationalize the Programs.

Based on the general objective that we delimited in this investigation, we verified, as a conclusion to this text, and in terms of general characteristics of the national scenario of interaction between research groups belonging to networks, that Brazilian research networks, within the selected sample, are the actors who seek and initiate partnership relationships in most cases. It was also found that informality in the networks is still present, as well as low adherence to actions developed within them, as it was possible to be seen in the unfolding of cooperative activities carried out in networks.

The activities developed in cooperative actions are concentrated between applied research in products and processes and activities resulting from specific public notices and financed mostly by national development agencies.

However, it is observed that, given all the dynamics undertaken towards the consolidation of more robust research networks, there is a mutual effort to maintain research groups. These groups, in order to together form a network, need to mobilize themselves to mitigate the circumstances. According to Carlos Drummond de Andrade (1977, p. 55), let's make a network, "let's go hand in hand".

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