

FROM RESEARCH GROUP TO KNOWLEDGE NETWORK: A COLLECTIVE  
CONSTRUCTION OF INTERDISCIPLINARY KNOWLEDGE

*DO GRUPO DE PESQUISA À REDE DE CONHECIMENTO: UMA CONSTRUÇÃO  
COLETIVA DO CONHECIMENTO INTERDISCIPLINAR*

*DE GRUPO DE INVESTIGACIÓN A RED DE CONOCIMIENTO: UNA  
CONSTRUCCIÓN COLECTIVA DE SABER INTERDISCIPLINAR*



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**ABSTRACT:** This article describes a project of formative research that was developed with a group of master's and doctoral students and professors from different higher education institutions of Brazil, Colombia, and the United States who are affiliated to the GERES research group. The purpose is to analyze the process from which the collective developed an investigation that led to the transition of the group towards the construction of an interdisciplinary network of knowledge. Using an inductive qualitative approach, the study observed and assessed systematically the dynamics that progressively emerged as they were structured and reflected upon as the activities in the group evolved. The findings show that the research conducted by a group of professionals from different fields with the common goal of generating a database from the selection and review of education journals has facilitated the growth and reorganization of the group as a knowledge network.

**KEYWORDS:** Knowledge network. Interdisciplinarity. Research group.

**RESUMO:** *Este artigo descreve um projeto de pesquisa formativa que foi desenvolvida por um grupo de mestrandos, doutorandos e professores de diferentes instituições de educação superior do Brasil, Colômbia e Estados Unidos pertencentes ao grupo de pesquisa GERES. O objetivo foi analisar o processo a partir do qual o grupo desenvolveu uma investigação que levou à transição do grupo à uma rede interdisciplinar de conhecimento. Com um enfoque qualitativo indutivo, a pesquisa observou e avaliou sistematicamente as dinâmicas que progressivamente foram surgindo à medida que se estruturavam e refletiam sobre as atividades no grupo. Os resultados mostram que a pesquisa, realizada por um grupo de profissionais de diversas áreas, a partir de um objetivo comum, além de gerar um banco de dados a partir da seleção e revisão de revistas da área de educação, facilitou a reorganização do grupo como uma rede de conhecimento.*

**PALAVRAS-CHAVE:** *Rede de conhecimento. Interdisciplinaridade. Grupo de pesquisa.*

**RESUMEN:** *Este artículo describe un proyecto de investigación formativa desarrollado con un grupo de estudiantes de maestría, doctorado y docentes de diferentes instituciones de educación superior de Brasil, Colombia y Estados Unidos adscritos al grupo de investigación GERES. El objetivo es analizar el proceso a partir del cual el colectivo desarrolló una investigación que propició el tránsito del grupo hacia la construcción de una red interdisciplinar de conocimiento. Con un enfoque cualitativo inductivo, la investigación observó y evaluó de forma sistemática dinámicas que progresivamente fueron emergiendo y estructurándose y reflexionando sobre ellas a medida que avanzaban las actividades en el grupo. Los resultados evidencian que la investigación desarrollada por un colectivo de profesionales de diferentes áreas con el objetivo común de generar una base de datos a partir de la selección y revisión de revistas en el área de la educación ha facilitado la evolución y reorganización del grupo como una red de conocimiento.*

**PALABRAS CLAVE:** *Red de conocimiento. Interdisciplinarietà. Grupo de investigación.*

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## Introduction

In education, as in any other professional field, teamwork is essential for the development and achievement of objectives and goals. Teamwork derives from a human collective committed to common objectives and interests that, supported by guiding principles and anchored in scientific knowledge, transform the space in which they develop and, with it, the personal and professional development of each member of the group (Mainardes, 2022). Therefore, the opportunity to be part of a work team allows all participants to learn and grow together. Experiences and learning are shared, and there is interaction, exchange and consolidation of knowledge.

Therefore, being a member of a work group, in the sense of having the privilege of growing and being part of a research group, is no different (Cabrera; Rebollo; Pérez, 2022). In addition, there is also the benefit of personal and professional growth; there is the advantage of opening up to collective construction and a critical analysis of reality – the group establishes interdependence in the division of tasks and begins to learn to plan and collaborate (Maximino; Liberman, 2015, p. 44).

Mainardes (2022), based on his studies on research groups in education, defines a research group as "a collective that promotes task interdependence, shared responsibility for results and cooperation in solving complex problems" (p. 3, our translation). Thus, education research groups constitute spaces for the construction and reconstruction of knowledge that contribute not only to the personal and professional qualifications of their members, or to the increase in productivity of researchers (Degn *et al.*, 2018). They also contribute to the improvement of education, which can occur both in teaching and learning processes and in educational management policies at different levels, from local to global.

In research groups there are common shared interests that are shaped by the research questions and areas of activity of their members, which define the possibilities in the development of research practices. This makes them communities of practice and, by extension, epistemic communities, since the production of knowledge takes place there (Feldman; Divoll; Rogan-Klyve, 2013).

The evolution of a research group into a knowledge network occurs with the development of research that encompasses problems, in this case education, which are interdisciplinary in nature, as they provide situations in society that are not isolated from other fields of knowledge. Today, specialized groups are essential to carry out scientific research and advance in specific areas of knowledge. On the one hand, the exchange of knowledge between

experienced researchers promotes critical and careful advances in the formulation of theories, methodological approaches, and conclusions. On the other hand, the participation of younger researchers in these groups is essential for their training, since research is not acquired only through theory. This reaffirms the concept that the investigator's skills are not just improved by manuals (Gatti, 2005).

Learning occurs through interaction in dialogues and participation in research groups, as well as the formation of networks that allow people to coexist and carry out research alongside mature researchers and experts. The diversity of fields of training and experience of researchers also enriches and provides different perspectives on the topics studied in education. This perspective is linked to a comprehensive view of the educational field, especially in the consolidation of knowledge about teaching and learning, aspects that cover different areas of training (Izquierdo Alonso; Moreno Fernández; Izquierdo Arroyo, 2008).

In this sense, this article is based on the experiences and reflections of an interdisciplinary and interinstitutional research group that reviewed a set of education journals to build a database that could be used by participants in different studies. Although there was no theoretical model that guided the objective, methods, data collection and analysis of results, the article develops a framework based on three themes that support the description and reflections on the experience of the research group. The research question that was proposed to be answered in this article is: How is knowledge produced from work in a research group? The three main themes are the deepening of knowledge, formative research and the reorganization of the research group into a knowledge network.

### **Knowledge Networks: From Individualism to Transdisciplinarity**

In the context of the so-called knowledge society (García Aretio, 2012; Unesco, 2005), the way of acquiring, sharing and applying knowledge is considered a differentiating factor in the competence of professionals, teachers, and researchers. At the same time, the production of knowledge necessarily requires moving from a particular perspective, restricted to local reality, to a holistic and integrative perspective. This is justifiable, since knowledge is created and increasingly interconnected in a globalized world; therefore, network learning is essential.

Thus, the transition to the construction of knowledge networks is considered the way to generate significant contributions, from a multidisciplinary and transdisciplinary, formal, strategic and creative perspective, which at the same time affects the personal and professional

development of those who participate in it. A research group or team becomes a knowledge network when it generates products (such as publications, presentations and doctoral theses), attracts new participants from different institutions and countries, allows students to complete their studies and find jobs in their areas of expertise and training, while continuing to participate in the group, generating and formalizing new dynamics (Chavoya Peña; González Hernández, 2012).

The process of creating and consolidating a network of knowledge requires, firstly, an epistemological perspective associated with the ability to manage this knowledge in the context of shared and interdisciplinary actions. From them, it is possible to reconcile the role of the researcher with the complexity inherent in the need to transfer it to solve a problem or transform a context. Thus, the knowledge network is understood as a formal structure in which, as Cordera and Ziccardi (2000) mention, complex developments occur as a result of reciprocity and constant feedback between its members who, from particular perspectives, construct new creative and comprehensive visions of reality.

Knowledge management is understood as a fundamental element of the network, taking into account, as mentioned by Gregán (2012), that it is associated with tracking sources, selection, systematization and transfer of information based on an integrated approach capable of to identify, organize and share the knowledge of a collective. From this perspective, knowledge management strengthens the consolidation of transfer networks based on the creation and exchange of knowledge necessary for the transformation and personal and professional development of all participants (Sánchez Ambriz; Pérez Balbuena; Picco Troncoso, 2014).

The network of knowledge as a construction of intersubjectivities between actors with different epistemological, theoretical or disciplinary positions, associated with their context, their expertise or their training, consolidates itself as a challenge at the same time. In this sense, Luna (2003) states that the synergy promoted by the knowledge network is based on its ability to identify the relationships, roles and contributions of the actors who participate in the process of creating and exchanging knowledge in the context of formal meetings and informal activities that the network encourages.

This reciprocity between professionals from different areas, contexts, cultures and organizations who interact around a common interest in knowledge binds them personally and professionally. Likewise, it reinforces the importance of understanding the construction of knowledge in a network as an act of generosity and integration that transcends individualism,

relativity and disarticulation that characterize the construction of knowledge in different areas. In this sense, Probst, Raub and Romhardt (2001) emphasize the ability of knowledge networks to create new knowledge that, when shared, facilitates learning and problem solving.

In this sense, based on the experience described in this article, there is a transition from a research group to the consolidation of a network of knowledge in discovering the members' ability to carry out research work. Such work, although it responds to the macro interest of the group's project, also generates important advances in particular lines of work. When advances from each line of research are shared within the learning community, they increase the richness of the group by socializing knowledge and experiences with colleagues representing different interests, areas, disciplines, cultures and research experiences.

From this perspective, the reconfiguration of the GERES research group (Group of Studies Related to Students), now, as a knowledge network, from its context as a learning community, also implies advancing the collective's self-perception by reflecting on their own experiences and different views on the problems studied. In other words, ideas are shared and new paths and approaches are jointly identified based on the documentation of experiences. It is important to mention that the group of researchers that make up the network shares objectives aimed at promoting continuous reflection on different aspects of the educational field, the projection of actions aimed at strengthening teaching and learning processes and the generation of coherent deliberations with the heterogeneity of communities and training contexts where research questions arise.

## **Methodology**

The present study was motivated by the need to create an open database that would allow exploring, at any time, the different topics of interest studied by members of the GERES group, initiated at La Salle-Canoas University, in Brazil. The objective was to identify and systematize academic journals in the area of education by specific thematic areas related to each participant and, to some extent, the entire group. The objective was to facilitate access to references/titles through a database to which all participants contributed by identifying, analyzing and systematizing the selected materials. At the same time, it becomes a transdisciplinary and complex exercise due to the multiplicity of areas in which its members are involved. Morin (1999), in *The Seven Necessary Knowledge for the Education of the Future*, indicates how the multidimensionality of problematic situations requires perspectives that

transcend the disciplinary to move towards scenarios of global understanding, from which it is possible to reveal the relationships and interactions of cohesion and questioning between phenomena and the context. This is justified because among the 20 members of the GERES group there are students and researchers from different undergraduate backgrounds, such as mathematics, pedagogy, literature (in Portuguese), dentistry, history and administration, which enriches discussions and reflections in the group, making it possible to look at an object from different perspectives.

This article was written taking as an epistemological perspective the hermeneutic paradigm between the interrelationship between the object of study and the researcher's ability to construct new understandings from the information collected and which, when shared, reveal the meanings surrounding the theme (González, 2005; Lincoln; Guba, 1985). The documentary sources consulted facilitate the understanding of the overlap between education research and the educational reality of a social context. This type of research makes it possible to identify emerging issues in the field of knowledge production, as well as recurring themes that are the subject of educational research. This confirms the importance of carrying out bibliographic reviews of research products contained in education journals indexed in categories A1 and A2 in Brazil (FAPEMIG, 2022).

Qualitative research responds to the interest of studying the field of knowledge production in education, observing its interdisciplinary and transdisciplinary character, given by the professional training, interests and areas of training of the participants. In this sense, the documentary research method responds to the objective of expanding and deepening knowledge of the nature and characteristics of research processes valued as publishable in Brazil (Lincoln; Guba, 1985).

The metadata and other information from the scientific articles were organized in a folder on Google Drive, which made it possible to create, organize and systematize classification matrices. The design of matrices became more detailed in order to respond to the needs of deconstructing themes for analysis.

The literature review exercise developed by the GERES group of researchers was carried out through a progressive and dynamic process of analysis, synthesis, induction and deduction of meanings, which were observed in the scientific articles studied, through *emic* and *etic* categories (Lincoln; Guba, 1985). They were refined based on the research interests of group members which facilitated the formation of working subgroups. The procedures presented below show the dynamics experienced in each of the six subgroups in the initial

process of systematizing information. The subgroups scheduled their meetings according to their needs and agendas, while the general group met once a month for two or three hours.

### Systematization of periodicals and articles

A total of 113 journals in the education area were identified in the 2019 CAPES list and classified as A1 and A2, in addition to publications from 2020 that were screened. The systematized information was compiled into a spreadsheet on Google Drive, which was shared with all members of the research group. Each subgroup added information from publications under its responsibility. From this filter, five categories emerged that allowed the periodicals to be grouped into the following themes: Education and Politics, Mathematics Education, Education and Languages, General Education, and various themes such as Education and Psychology, Education and Health, among others (see Table 1).

**Table 1** – Systematization of the titles of the journals found

Stage	Activity	Meet
First	Identify A1 and A2 journals	113 Journal titles
Second	Organize journals into a table with specifications	Journal Title Impact factor ISSN Country of publication Access type Email address
Third	Categorize journals by topic	Education and Politics (16 titles) Mathematics Education (16 degrees) Education and languages (12 titles) General Training (39 degrees) Miscellaneous Topics – Education and Psychology, Education and Health etc. (30 titles)

Source: Prepared by the authors

The thematic categories led to an exploratory, delimiting reading to identify the type of access (open or subscription). We only work with open access journals. The matrix was then fed with metadata of authors, year of publication, title, abstracts and keywords.

The first category chosen by the group to begin the detailed analysis of degrees was General Training. In the access analysis, it was found that eight journals required a subscription and were excluded in the following phases. Of the 31 remaining titles from national and foreign journals, 10 focused on specific themes that were distant from the study interests of the group's researchers, gender and race. They were also deleted. Thus, the resulting collection for analysis was composed of 21 journal titles and 678 articles. The themes found, according to the interests



of the group members, are listed in Table 2 (tabulated from R1 to R21), which also includes the number of articles found in each journal.

**Table 2** – Periodicals, number of articles and topics in the General Education category

Journal	Articles	Theme
R1	89	Teaching and learning; teacher training; graduates
R2	15	Basic education; Graduates; teaching and learning; University education; Teacher training
R3	1	Teaching and learning
R4	23	Teaching and learning
R5	43	University education; Teaching English Language; Teacher training
R6	7	Child education; teaching and learning; mathematics
R7	22	Child education; internship; inclusive education
R8	82	University education; teacher training; Child education; High school
R9	66	Basic education; High school; University education; learning
R 10	26	University education; teacher training; Teaching/Internship
R11	32	Assessment; teaching and learning; University education; teacher training; public policy; Knowledge and practices
R 12	54	Assessment; curriculum; early childhood education, postgraduate studies; University education; teaching and learning; teacher training; knowledge and practices; Educational Policies
R 13	58	Assessment; teaching and learning; education; education and citizenship; basic education; inclusive education; youth and adult education; teaching practices; types of schools; cultural studies; University education; Graduates; COVID-19; Student Wellbeing
R 14	29	Assessment; Child education; teaching and learning; teacher training; Educational Policies
R 15	28	Assessment; teaching and learning; teacher training; Knowledge and practices
R 16	33	Curriculum; University education; teaching and learning; teacher training; English language
R 17	8	General evaluation of the courses; Graduates; teaching and learning; teacher training; PIBIC; PROUNI
R 18	11	Child education; University education; student; Teaching Practice
R 19	12	Curriculum; Child education; teacher training; teaching profession; Pedagogy-Humanism

R20	30	Learning; didactics; methodology; University education; mathematics education; assessment; Teacher training
R 21	9	Teacher work and training; learning; inclusive education; Textbooks

Source: Prepared by the authors

The 678 articles from the 21 Journals were saved in a Google Drive folder shared with all members who, in subgroups, read the articles related to their work categories. In the general folder, subfolders were created for each of the thematic categories to facilitate searching. Furthermore, the articles served to build the literature review for other projects and studies, both for the six initial subgroups, other subgroups that may be formed in the future and for each member in their individual projects. This dynamic built in the group makes it possible to outline a form of collective construction of knowledge that will be explained below. The formation of research groups, with common objectives and individual and group projects, generates benefits and is relevant, among other things, for promoting leadership skills, collaboration and belonging among members; develop skills in trainee researchers; leverage the work of members and the group; increase the quality and impact of academic production; increase the group's recognition and visibility; access research funds and expand their influence by linking alumni to other organizations (Altopiedi; Hernández-De-La-Torre; López-Yañez, 2015).

### **From formative research to the knowledge network**

As mentioned in the introduction, the question that was asked to guide this article was: How is knowledge produced from work in a research group? In this research guided by a collective interconnected and articulated through tasks, not only was a bank of articles built with different themes that could serve as a basis for different research projects, but the maturity of the working group was also highlighted, which allowed it to fulfill your commitments and continue to actively participate in the group. Maturity has been evidenced in the group discussions and reflections that arise during these discussions, which has allowed strategies and processes to be redesigned as the project evolves. The research group is made up of research professors from the five regions of Brazil, professors from Colombia and the United States, doctoral students, master's students and undergraduates, who have developed different research practices, which makes it a community of practices, an epistemic community. This research

group, registered (CNPq <sup>4</sup>in 2017), began in 2012 as a study group and was consolidated as a learning network in 2022, a knowledge network that is consolidated through formative research.

The interdependence of tasks and co-responsibility in carrying them out for the good of the subgroups and the group as a whole showed the growth of the group as a team. This was seen in members' ability to make decisions and solve complex problems. For example, the general group and subgroups, despite the existence of strategies described in the literature to identify, select, analyze and classify publications in order to create catalogs or databases of titles in research, such as systematic literature reviews, had to work collaboratively to carry out the processes that best served the purposes of the participants and the group (Sánchez; Flores, 2013; Trabadela Robles; García García, 2019). In this case, we sought to select the most relevant titles from a group of periodicals, classify their content and create a database by categories, in order to serve as a resource for the development of individual projects (such as master's dissertations and doctoral theses) and collective research projects. Several productions resulted from the work of the general group, subgroups and participants: three articles published in qualified journals of the Brazilian journal system, two articles in the process of being evaluated in journals and four in the writing process (see Table 3). In addition to these productions, master's and doctoral students used the material for literature review in their projects. In this regard, Degn *et al.*, (2018) highlight how collaborative and group work favors increased productivity of researchers.

**Table 3** – Articles published, under evaluation and under construction

Published	Under Evaluation	Under construction
KUCYBALA, F. dos S.; FELICETTI, VL; ROBAYO, A. del RP The transition between early childhood education and primary education: a literature review. <b>Times and Spaces in Education Journal</b> , [ S. l. ], vol. 15, no. 34, e18086, 2022. DOI: 10.20952/revtee. v15i34.18086.	Analysis of strategies of 3rd year elementary school students in solving mathematical problems in the additive field: transformation situations with unknown initial state (submitted to Zetetike Journal)	Training teachers in the early years of elementary school for mathematics education: systematic literature review
BEZERRA, FJS; FELICETTI, VL Graduates from La Salle Manaus college: impacts of graduation. <b>Educação Em Páginas Journal</b> , [ S. l. ], v.1, e11193,2022. DOI: 10.22481/redupa. v1.11193.		Research on early childhood education in Journals classified as Qualis A1.

<sup>4</sup> National Council for Scientific and Technological Development . *Student Related Studies Group (GERES)*

<p>FELICETTI, VL; VEIGA, C. de FR da. Bilingual-English in Postgraduate Education Programs in Brazil and Colombia. <b>Babel: Electronic Journal of Foreign Languages and Literatures</b>, [ S. l. ], v.12, e14095, 2022. Available at: <a href="https://www.revistas.uneb.br/index.php/babel/article/view/14095">https://www.revistas.uneb.br/index.php/babel/article/view/14095</a>. Access in: 10 dic. 2023.</p>		<p>Study with graduates and its importance in doing research</p>
<p>FELICETTI, VL; BATISTA, GCTM; KUCYBALA, F. dos S. Prouni when entering university: initial disadvantages and future perspectives. <i>Eventos Pedagógicos Journal</i>, [ S. l. ], vol. 14, no. 1, p. 205–221, 2023. DOI: 10.30681/rebs.v14i1.10504.</p>		<p>Higher Education: emerging issues in A1 publications in 2020.</p>

Source: Prepared by the authors

In addition to productivity, the meetings that try to direct the entire process, from the identification of journals to the construction of articles, show the maturity of the group and an organic multidisciplinary articulation around common training themes in synergy with the interests of researchers, the which consolidates a more demanding development with research. This research exercise in the group allowed us to strengthen the study themes, not only for the professionals who were part of the group, but also for the students who graduated during this period and continue as researchers. They are no longer students at the university where the group started, but researchers in their workplaces, which expands the set of educational institutions involved in the network and contributes to increasing the diversity of levels and regions. Likewise, the network arouses the interest of researchers from other countries and institutions in participating in the projects, which makes it grow even further and become a learning network, a knowledge network.

This article, then, illustrates the process of strengthening and evolving the group into the network, which is currently in charge of building a new collective project. This project will encompass new, smaller projects carried out by researchers who are part of the network.

## Conclusions

This article presents a formative research experience carried out in the *Group of Studies Related to Students* (GERES) with the participation mainly of students and teachers from a university institution in Brazil. With the initial task of building a database of articles from a select group of journals in the field of education to serve as a resource for various studies, the research group developed a series of individual and group activities, meeting several years ago, with a pre-established frequency that have served as collective learning experiences in research

using a qualitative strategy. Participants demonstrated commitment and responsibility in carrying out the assigned tasks and supported each other in completing this project and their individual investigations.

As members found new job opportunities, they continued to participate in the project and invited new students and colleagues to join GERES. This expanded the participant base and dynamics of the original research group into a research network based on the collective construction of knowledge and the development of a learning community around education.

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