

ARTICLE

**EDUCATION PROPOSALS WITH THE USE OF COLLECTIVE PORTFOLIOS IN
DIALOGUE WITH SCIENTIFIC RESEARCH****LILIANE SILVA DE ANTIQUEIRA¹**ORCID: <https://orcid.org/0000-0002-4002-2517>
<lilianeantiqueira@furg.br>**ELAINE CORRÊA PEREIRA¹**ORCID: <https://orcid.org/0000-0002-3779-1403>
<elainecorrea@furg.br>**MARIA DO CARMO GALIAZZI¹**ORCID: <https://orcid.org/0000-0003-0513-0018>
<mariagaliazzi@furg.br>¹Universidade Federal do Rio Grande (FURG). Rio Grande, RS, Brasil.

ABSTRACT: An overview of research on the use of portfolios in teacher education is presented, in order to identify propositions arising from the research and relate them to education proposals assumed in all of the public notices approved by Coordination for Improvement of Higher Education Personnel (CAPES) in Institutional Teacher Training Scholarship (PIBID) of a Higher Education Institution (IES) for the use of portfolios. PIBID is briefly presented, and the mapping of scientific articles is described in its three stages: identification, classification and analysis. The classification of articles according to geographic regions has enabled us to realize that the theme is spread across all Brazilian regions and that the same is observed in relation to international productions. The analysis stage consisted of a categorization in the light of Discursive Textual Analysis. The resulting categories addressed research on: the portfolio itself; the portfolio for teacher evaluation; the portfolio as a student's reflection; the portfolio as a record of the training network; the portfolio as an institutional artifact for certification; the discourse of the participants about the portfolios; and the bibliographic discourse on portfolios. It has been concluded that there is resonance between the education proposals assumed for the use of portfolios in PIBID of an IES and the categories of analysis, with the exception of the proposal on the epistemic potency of writing. Some categories resulting from the mapping did not appear as education proposals: the portfolio for teacher evaluation, the portfolio as an institutional artifact for certification, and the portfolio by itself.

Keywords: teacher education, literature review, portfolio.

APOSTAS FORMATIVAS DE PORTFÓLIOS COLETIVOS EM DIÁLOGO COM A PESQUISA CIENTÍFICA

RESUMO: Apresenta-se o mapeamento de pesquisas sobre o uso de portfólios na formação de professores, com o objetivo de identificar proposições oriundas das pesquisas e relacioná-las com as apostas formativas assumidas em todos os editais aprovados pela Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) no Programa Institucional de Bolsas de Iniciação a Docência (PIBID) de uma Instituição de Ensino Superior (IES) para o uso de portfólios. Apresenta-se brevemente o PIBID, e descreve-se o mapeamento de artigos científicos em suas três etapas: identificação, classificação e análise. Faz-se a classificação dos artigos em regiões geográficas, percebendo-se que a temática está espalhada em todas as regiões brasileiras e que o mesmo se observa em relação às produções internacionais. A etapa de análise consistiu em uma categorização à luz da Análise Textual Discursiva (ATD). As categorias resultantes abordaram pesquisas sobre: o portfólio em si; o portfólio para avaliação do professor; o portfólio como reflexão do estudante; o portfólio como registro da rede de formação; o portfólio como artefato institucional para certificação; o discurso dos participantes sobre os portfólios; e o discurso bibliográfico sobre os portfólios. Concluiu-se que existe ressonância entre as apostas formativas assumidas para o uso de portfólios no PIBID de uma IES e as categorias de análise, com exceção da aposta na potência epistêmica da escrita. Algumas categorias resultantes do mapeamento também não apareceram como aposta formativa: o portfólio para avaliação do professor, o portfólio como artefato institucional para certificação e o olhar sobre o portfólio em si.

Palavras-chave: formação de professores, levantamento bibliográfico, portfólio.

APUESTAS FORMATIVAS DE PORTAFOLIO COLECTIVO EN DIÁLOGO CON INVESTIGACIÓN CIENTÍFICA

RESUMEN: Se presenta el mapeo de investigaciones sobre el uso de portafolios en la formación docente con el objetivo de identificar las propuestas que surgen de la investigación y relacionarlas con las apuestas formativas asumidas en todos los anuncios públicos aprobados por Coordinación de Perfeccionamiento del Personal de Educación Superior (CAPES) en el Programa Institucional de Bolsas de Iniciación Docente (PIBID) de una Institución de Educación Superior - IES para el uso de portafolios. Se presenta brevemente el PIBID y se describe el mapeo de artículos científicos en sus tres etapas: identificación, clasificación y análisis. Se presenta la clasificación de artículos en regiones geográficas, percibiéndose que el tema se extiende por todas las regiones brasileñas y que lo mismo se observa en relación a las producciones internacionales. La etapa de análisis consistió en una categorización a la luz del Análisis Textual Discursivo. Las categorías resultantes abordaron investigaciones sobre: el portafolio en sí; el portafolio para evaluación docente; el portafolio como reflejo del alumno; el portafolio como registro de la red de capacitación; el portafolio como artefacto institucional para la certificación, el discurso de los participantes sobre portafolios y el discurso bibliográfico sobre portafolios. Se concluyó que existe resonancia entre las apuestas formativas asumidas por el uso de portafolios en el PIBID de una IES y las categorías de análisis, con excepción de la apuesta por el poder epistémico de la escritura. Algunas categorías resultantes del mapeo tampoco aparecieron como apuesta formativa: el portafolio para la evaluación docente, el portafolio como artefacto institucional para la certificación y la mirada al portafolio en sí.

Palabras clave: formación docente, levantamiento bibliográfico, portafolio.

INTRODUCTION

The IES involved in this research participated in all the PIBID edicts and was approved in them. The first of them was the MEC/CAPES/FNDE PIBID Edict (CAPES, 2007), with incentives for teaching in the areas of Biology, Physics, Mathematics and Chemistry. In the other calls, all the IES' majors could be included. The PIBID/IES was organized according to the requirements of the calls for proposals, with an institutional coordinator, an area coordinator per subproject, supervisors working in basic education schools and undergraduate students. In the five approved calls, the PIBID/IES was developed in weekly meetings of the subprojects, one at the school and another at the university, and monthly meetings of the coordinators. In two calls, the project had an educational affairs manager, who was also a professor in one of the undergraduate courses. The CAPES website (2020, p. 1) states that

The PIBID is an action of the National Teacher Training Policy of the Ministry of Education (MEC) which aims to provide students from undergraduate courses a practical approach to the daily life of public basic education schools and the context in which they are inserted. The program grants scholarships to undergraduate students participating in undergraduate projects developed by higher education institutions (HEIs) in partnership with education networks. The projects must promote the initiation of the undergraduate in the school environment even in the first half of the course, aiming to stimulate, from the beginning of their training, the observation and reflection on the professional practice in the daily life of public basic education schools. The students are accompanied by a teacher from the school and a teacher from one of the higher education institutions participating in the program.

In all the calls approved in the PIBID/IES, one of the activities developed was the production of portfolios in all the subprojects, and from this resulted a set of more than a hundred portfolios. In this article, the arguments extracted from the calls for proposals for the use of portfolios are called formative stakes.

In order to identify propositions arising from the research on the use of portfolios in teacher education and relate them to the formative bets taken in all the calls for proposals approved by CAPES in the PIBID/IES, the mapping of research on the production of portfolios in teacher education was made. Initially, the methodologies of search and constitution of the corpus of the mapping carried out are described, based on Biembengut (2008). The distribution of articles in Brazil and in the world and the diffusion of portfolios as a formative artifact are highlighted.

Next, it is presented how the portfolio was proposed and developed in the project over ten years. Then, the formative stakes assumed for the development of portfolios at the beginning of PIBID/IES are addressed. Finally, the articulation between these formative stakes and the analysis categories resulting from the mapping is performed.

SEARCH METHODOLOGIES AND CONSTITUTION OF THE CORPUS

To constitute the corpus of analysis, we employed the mapping methodology grounded by Biembengut (2008), used in research by Antiquiera (2018), Cruz et al. (2019) and Maurell, Machado and Pereira (2019), among others. In the scope of educational research, mapping allows one to form images of reality and make sense of the many pieces of information, capturing relevant features and characteristics, representing and explaining them to whom

such construction may be of interest, even with a view to acting and intervening in that reality (BIEMBENGUT, 2008).

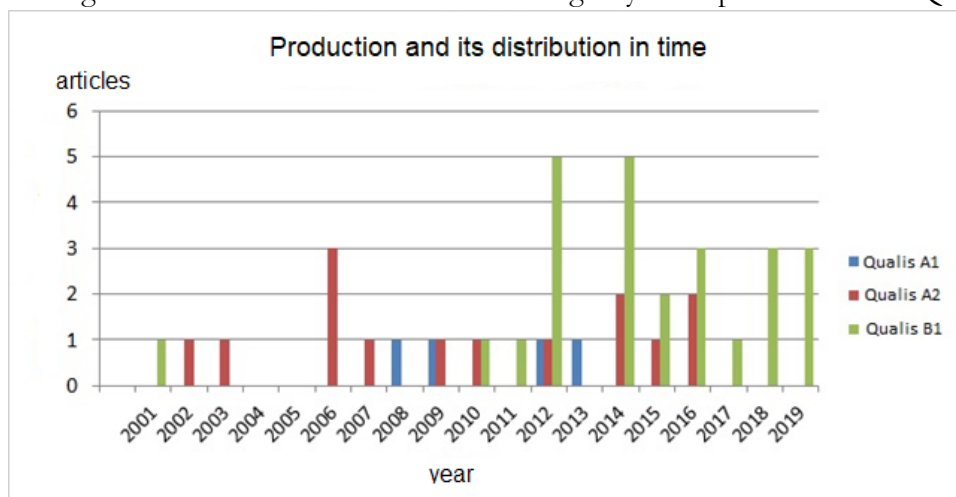
Mapping has its procedures organized in three steps: identification, classification/organization and recognition/analysis (BIEMBENGUT, 2008). With regard to the identification process of national articles, initially, the search for national journals was conducted through the Sucupira Platform, and the following options were selected: classification event "classifications of journals quadrennium 2013-2016", assessment area "Education" and classification A1, A2 and B1. Based on these criteria, a list of 121 Qualis A1 journals, 380 Qualis A2 journals, and 542 Qualis B1 journals was obtained.

Subsequently, the websites of these journals were accessed, in the part called "Search", when available, searching for the word "portfolio" to be found in the search scope "all", i.e. in title, abstract, indexed terms and full text. In some sites, there was only the option "Search", or a magnifying glass icon, and the same search was made for the term "portfolio" to be found in the journal content. This survey resulted in 147 articles, 69 of which were Qualis B1, 11 Qualis A1, and 67 Qualis A2. The international articles had another search procedure.

After that, the abstracts were read, and, when necessary, the full text was consulted. The objective was to select articles referring to the use of portfolios in teacher education, excluding those in which, for example, the term "portfolio" appeared only in the references, or in the context of another area of knowledge. After the identification stage, 43 national articles were selected, distributed as follows: 25 Qualis B1 articles, four Qualis A1 articles and 14 Qualis A2 articles.

Figure 1 shows the distribution of these articles according to the year of publication and Qualis; it can be seen that the production of knowledge about the use of portfolios in teacher education in Qualis A1, A2 and B1 journals resulting from the search appeared in Brazil in 2001. It is also noted that the years with the highest number of publications were 2012 and 2014, with seven productions in each year. In 2004 and 2005, there were no publications in the specified Qualis.

Figure 1: Distribution of articles according to year of publication and Qualis

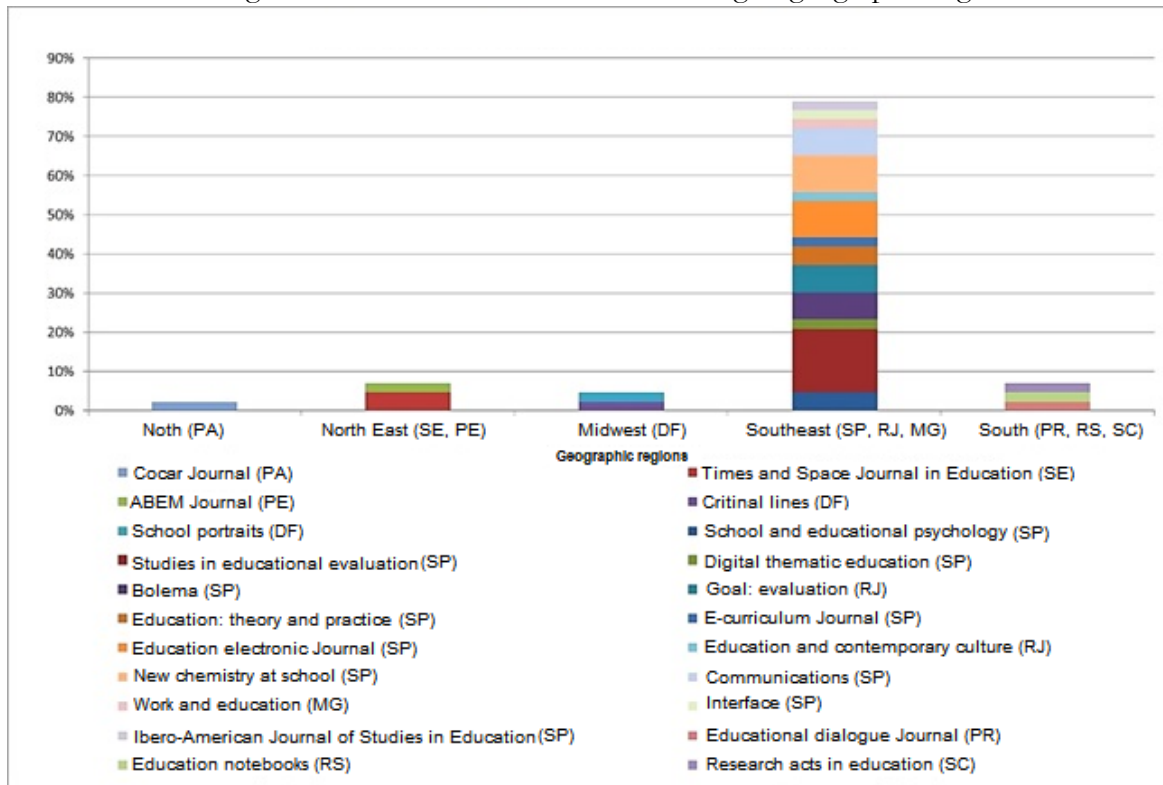


Source: Prepared by the authors

There are variations in the number of articles produced; however, in the years 2012 to 2019, this production had greater growth compared to previous years, which suggests the permanence of interest in the theme by researchers. It is important to observe, considering the

Brazilian geographic regions, the distribution in the journals in which these articles were published, as observed in Figure 2.

Figure 2: Distribution of articles according to geographic regions



Source: Prepared by the authors

As can be seen in Figure 2, the Southeastern region concentrates most of the articles published on the theme in focus, totaling 34 articles, which corresponds to 79% of the production. The distribution of articles occurs in journals from three states: São Paulo, Rio de Janeiro and Minas Gerais.

In the Southeast region, the state with the largest number of published articles is São Paulo, with 29 articles in 11 periodicals, of which the following are included: *Estudos em Avaliação Educacional* Journal (Studies in Educational Evaluation Journal), with seven publications, or almost 20% of the total, *Revista Eletrônica de Educação* (Electronic Journal of Education) and *Química Nova na Escola* Journal (New Chemistry at School Journal). The last two have four publications each, equivalent to 9% of the total. Chart 1 presents these journals, the name of the authors, the year of publication of the article, the institution to which the authors are affiliated, the location of the institution and the title of each of the articles.

Chart 1 - Journals, authors, year of the article, institution, location of the institution, and title of each article

Journal	Author (year) - Institution, City	Title of the article	%
Studies in Educational Evaluation	Benigna Villas Boas, 2003, UNICAMP, Campinas	Rethinking the assessment in the Pedagogy course: the portfolio as a possible practice	20
	Zilda Araujo and Georfravia Alvarenga, 2006, UEL, Londrina	Portfolio: an alternative for the management of teaching and learning situations	
	Zilda Araujo and Georfravia Alvarenga, 2006, UEL, Londrina	Portfolio: bridging knowledge and experience	
	Zilda Araujo and Georfravia Alvarenga, 2006, UEL, Londrina	Portfolio: basic concepts and guidelines for use	
	Lina Nunes, 2007, Universidade Estácio de Sá, Rio de Janeiro	The Portfolio in Learning Assessment in On-site and Distance Education: the hypertextual alternative	
	Vânia Vieira e Clarilza Sousa, 2009, UNIUBE, Uberaba, PUCSP, São Paulo	Contributions of the Portfolio for the college student's assessment	
	Lucilene Nascimento and Giselle Rôças, 2015, IFRJ, Rio de Janeiro	Portfolio: an integrated assessment option for science teaching	
Revista Eletrônica de Educação	Eliane Tinoco, 2012, UFU, Uberlândia	Portfolios: another fad in education?	9
	Maria Serrazina, 2012, School of Education of the Polytechnic Institute of Lisbon, Portugal	Mathematical knowledge for teaching: the role of planning and reflection in teacher education	
	Gabriela Rios and Enicéia Mendes, 2014, São Paulo State University "Júlio de Mesquita Filho", UNESP, Universidade Federal de São Carlos, UFSCar, São Carlos	The use of blogs in education: A brief overview of Brazilian scientific production in the last decade	
	Adelayde Oliveira, Roseane Amorim and Laura Pizzi, 2018, Federal University of Alagoas (UFAL), Maceió	Teaching Profession Discipline in a Pedagogy course: trajectories, experiences and innovations in teacher education	
Química Nova na Escola Journal	Mario Barro, Ariane Baffa and Salete Queiroz, 2014, UFSCAR, UNESP, USP - São Carlos, São Paulo	Blogs in the Initial Training of Chemistry Teachers	9
	Fernanda Albuquerque and Maria do Carmo Galiazzi, 2014, FURG, Rio Grande	Contributions to the Undergraduate Curriculum from Classroom Stories. The PIBID of Chemistry at FURG	
	Márcia Firme and Maria do Carmo Galiazzi, 2014, FURG, Rio Grande	The Experimental Classroom Recorded in Collective Portfolios: Training Enhanced by the Integration between Undergraduates and Elementary School Teachers	

Journal	Author (year) - Institution, City	Title of the article	%
	Andréia Afonso et al., 2016, UFJF, UFSCar, Juiz de Fora, São Carlos	The Contribution of Reflective Writing to the Re-elaboration of Knowledge: Looks from Undergraduates Participating in the Chemistry PIBID (Institutional Teaching Initiation Scholarship Program)	

Source: Prepared by the authors

The *Bolema* and *Comunicações* journals also contributed to the productions in the state of São Paulo, both with three articles, each corresponding to 7% of the total.

Still in the state of São Paulo, the Journal *Psicologia Escolar e Educacional* and the Journal *Educação: Teoria e Prática* had two publications each, totaling 9% of the total production. The articles published in *Educação Temática Digital*, *E-curriculum Journal*, *Interface Journal*, and *Ibero-American Journal* also integrated the production of this state, which resulted in four articles and 9% of the total production. This information can be seen in Chart 2, which also shows the authors, the institution to which the author is affiliated and the title of the article.

Chart 2 - Authors, year, institution and title of each article per journal

Journal	Author (year)	Title of the article	%
Bolema	Maria Mondoni and Celi Lopes, 2009, UNICSUL, São Paulo	The Assessment Process in Teaching and Learning Mathematics	7
	Roberto Oliveira and Celi Lopes, 2012, UNICSUL, São Paulo	Reading and Writing in the Construction of Mathematical Knowledge in High School	
	Aline Bona and Marcus Basso, 2013, IFRS, Osório, UFRGS, Porto Alegre	Mathematics Portfolio: a tool for analyzing the learning process	
Comunicações (Communications)	Eliane Costa and Albêne Monteiro, 2014, UFPA, Belém	The Pedagogy of Alternating Cycle in the Undergraduate Degree in Rural Education in Portel	7
	Clarissa Haas and Graciela Rodrigues, 2015, UFRGS, Porto Alegre	Blogs, special education and continuing teacher education: expanding the learning contexts through the web	
	Mari Nascimento, Raquel Barbosa and Anelise Oliveira, 2017, UNESP, Marília, Assis, Marília	Teacher training: contributions from the diversification of assessment tools	
Psicologia Escolar e Educacional (School and Educational Psychology)	Vânia Vieira, 2002, UNIUBE, Uberaba	Portfolio: an evaluation proposal as a reconstruction of the learning process	5
	Vanessa Moretti, 2014, UFSP - São Paulo	Teaching learning in teaching activities in mathematics club	
Educação: Teoria e Prática (Education: Theory and Practice)	Amanda Marques and Maria Almeida, 2011, IFECT, USP, São Paulo	Recording practices and teacher education: reflection, memory and authorship	5
	Mariane Freitas and Kelen Junges, 2019, UFFS, Chapecó, UNESPAR, União da Vitória	Initial teacher education in the context of PIBID and the work with portfolios	

Journal	Author (year)	Title of the article	%
Educação Temática Digital (Digital Thematic Education)	Rita Rausch and Ana Sadalla, 2008, Blumenau Regional Foundation, Blumenau, UNICAMP, Campinas	Promoting reflexivity in initial teacher education: the role of the research-oriented teacher	2
Revista E-curriculum (E-curriculum Journal)	Maria Vieira and Maria De Sordi, 2012, UNICAMP, Campinas	Possibilities and limits of using portfolios in pedagogical work in higher education	2
Interface	Rosângela Cotta and Glauce Costa, 2016, UFV, Viçosa	An instrument of evaluation and self-evaluation	2
Revista Ibero Americana (Ibero-American Magazine)	Stephânia Vitorino and Sonia Grego, 2016, UNESP, São Paulo	of the reflective portfolio: a theoretical-conceptual construction	2

Source: Prepared by the authors

Following in the Southeast region, the state of Rio de Janeiro had four articles published in two journals: *Revista Meta-Avaliação* (Meta-Evaluation Journal), with three articles (7% of the total production) and *Revista Educação e Cultura Contemporânea* (Education and Contemporary Culture Journal), with one article (2% of the total production).

Finally, in the state of Minas Gerais, *Revista Trabalho & Educação* (Work & Education Journal) had one article published, that is, 2% of the total production. The information about authors, institution to which the authors are affiliated, and title of the articles published in these two states are presented in Chart 3.

Chart 3 - Journals, authors, year, institution and title of each article per state

State	Journal	Author (year)	Title of the Article	%
Rio de Janeiro	<i>Meta: Avaliação</i> (Meta-Evaluation)	Elisa Lisi, 2010, UNED, Madri	The Elements of the Portfolio in the Intervention Stage	7
		Delcy Oliveira and Ligia Elliot, 2012, CESGRANRIO, Rio de Janeiro	The Portfolio as a Tool for Learning Assessment in Montessori School	
		Liziane Mena and Crisna Bierhalz, 2019, UNIPAMPA, Dom Pedrito	Evaluative Conceptions in the Construction of Portfolios	
	<i>Educação e cultura contemporânea</i> (Education and Contemporary Culture Journal)	Maria Oliveira and Kátiuscia Antunes, 2014, UNIFESO, Teresópolis UFJF, Juiz de Fora	Breaking disciplinary boundaries in the training of pedagogues	2
Minas Gerais	<i>Trabalho & Educação</i> (Work & Education)	Juliana Soares and Maria Oliveira, 2015, PUC/Minas	Policies for teacher training for professional education: special program for pedagogical training of teachers	2

Source: Prepared by the authors

The region with the lowest percentage of articles is the North region, with only one published article, or 2%. The journal in which it is published is the *Cocar* Journal.

According to Figure 2, shown above, it can be observed that the Northeast and South regions have the same percentage of production, i.e., both with 7% of the total. In the Northeast region, three articles were published, distributed in different states (Sergipe and Pernambuco). The related journals are *Revista Tempos e Espaço em Educação* (Time and Space in Education Journal) (with two articles) and *Revista da Associação Brasileira de Educação Musical* (ABEM) (Journal of the Brazilian Association of Music Education), with one published article.

In the South region, there was one publication in each state (Paraná, Rio Grande do Sul and Santa Catarina). The *Revista Diálogo Educacional*, *Cadernos de Educação* and *Atos de Pesquisa em Educação* (Educational Dialogue, Education Notebooks and Education Research Acts) contributed to this production.

The Center-West region contributed with two publications in the Federal District, resulting in 5% of the total. The journals listed were *Linhas Críticas* and *Retratos da Escola* (Critical Lines and School Portraits Journals). The name of the authors, the title of each article from the North, Northeast, South and Center-West regions and the institution to which the author is affiliated can be seen in Chart 4, as well as the percentage of production from each region.

Chart 4 - Authors, institution and title of articles per region

Region	State	Journal	Author (year)	Title of the Article	%
North	Pará	Revista Cocar (Cocar Journal)	Ricardo Baratella and Vania Vieira, 2016, UNIUBE, Uberaba	The portfolio in DE: a study of the social representations of undergraduates in biological sciences	2
Northeast	Sergipe	Revista Tempos e Espaço em Educação (Time and Space in Education Journal)	Isabela Girardi and Rita Rausch, 2019, FURB, Blumenau	Contributions of PIBID to Initial Teacher Education: an Autobiographical View	7
			Claudete Rempel et al., 2016, UNIVATES Lajeado	Experiences of Teachers Participating in the Qualifica Project/Univates/Lajeado/RS with Active Methodologies	
	Pernambuco	Revista da Abem (ABEM's Journal)	Teresa Mateiro and Silani Pedrollo, 2018, UESC, Ilhéus	The sky is falling: music, drama and imagination	
South	Paraná	Revista Diálogo Educacional (Educational Dialogue Journal)	Thierry Karsenti and Simon Collin, 2010, Université du Montreal, Canadá	Eduportfolio: a tool for foreign language teachers	7
	Rio Grande do Sul	Cadernos de Educação (Education Notebooks)	Mírian Raposo and Marilda Silva, 2012, UNB, SEEdDF, Brasília	Evaluation in high school: the portfolio as a proposal	
South	Santa Catarina	Atos de pesquisa em educação (Education Research Acts Journal)	Celso Menezes, Edson Schroeder and Vera Silva, 2012, SEMED, FURB, Blumenau	Science clubs as a space for scientific literacy and eco-training	7
Center-West	Distrito Federal	Linhas Críticas (Critical Lines Journal)	Rita Bruzzi et al., 2001, UnB, Brasília	Self-evaluation in higher education: a mirror called Portfolio	5

Region	State	Journal	Author (year)	Title of the Article	%
		Revista Retratos da Escola (School Portraits Journal)	Francisco Mestre, Marli Quartieri and Jacqueline Silva, 2018, SMED, Guaporé, UNIVATES Lajeado	Reflective Portfolio: evaluating and evaluating oneself	

Source: Prepared by the authors

The information discussed is not surprising, as the journals are linked to organizations, graduate programs and societies located in larger numbers in the Southeast region of the country, with greater tradition in graduate courses. When we look at the institutions to which the authors of the articles are affiliated or where they do graduate studies, we see that the theme is spread throughout the states, more intensely in the South and Southeast regions, as shown in Chart 5, but is present in all Brazilian geographical regions.

Chart 5 - Authors' institutions of origin by region

Region	City/Institution
Center west	Brasília/UNB, SEDDF
Northeast	Ilhéus/UESC; Maceió/UFAL
North	Belém/UFPA
Southeast	Belo Horizonte/PUCMINAS; Campinas/UNICAMP; Juiz de Fora/UFJF; Marília/UNESP; Rio de Janeiro/CESGRANRIO, Universidade Estácio de Sá, IFRJ; São Carlos/ UESP Júlio Mesquita, UNESP, UFSCAR; São Paulo/USP, UNICSUL, UFSP; Teresópolis/UNIFESO; Uberaba/UNIUBE; Uberlândia/UFU; Viçosa/UFV
South	Blumenau/FURB, SEMED; Chapecó/UFFS; Dom Pedrito/UNIPAMPA; Guaporé/SMED; Lajeado/UNIVATES; Londrina/UEL; Osório/IFRS; Porto Alegre/UFRGS; Rio Grande/FURG; União da Vitória/UNESPAR

Source: Prepared by the authors

Regarding the identification process of international journals, in order to broaden the understanding of the contexts in which the portfolio in teacher education has been researched, we used the CAPES Periodicals search tool. The unfiltered search was made with the term "portfolio" anywhere in the text at different time intervals.

Considering the high number of articles, two clippings were made and articles with the expression "portfolio" in the title and in the topic "Teacher Education" were selected. We chose to survey articles published in any year to understand the use of portfolios over time. Thus, 137 articles were selected, three of which could not be accessed in the search for full articles. The set of full international articles was 134, in a search conducted in December 2019. Chart 6 shows the distribution of the journals and their classification.

Chart 6 - Number of articles in journals and classification

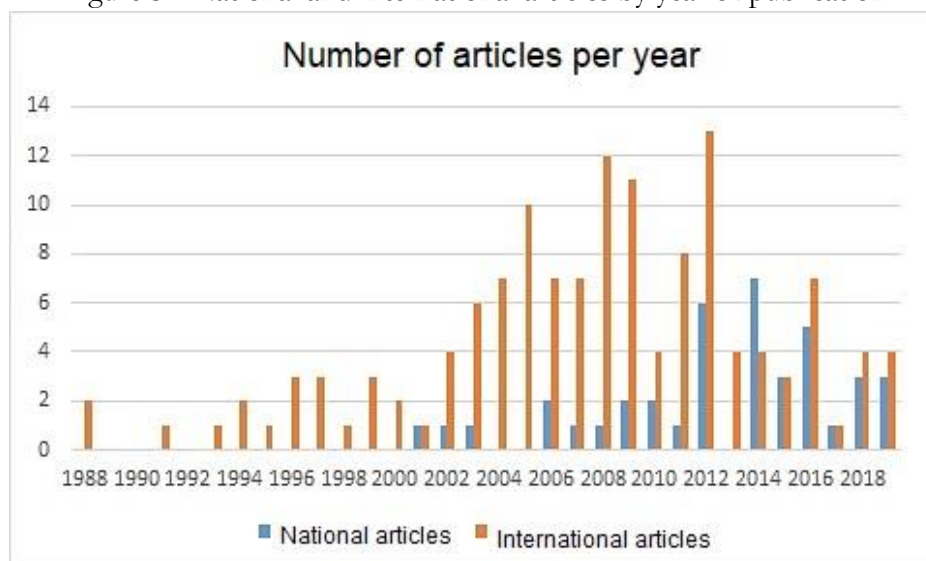
Scimago Quartile ¹	Journal Name - (Number of articles)
Q1	Journal of Computing in Higher Education (3); Foreign Language Annals (2) Journal of Teacher Education (2)
Q1	Assessment & Evaluation in Higher Education (6); European Journal of Teacher Education (3); Journal of Research on Technology in Education (4); Scandinavian Journal of Educational Research (2); Studies in Educational Evaluation (2); Teaching and Teacher Education (5); Technology, Pedagogy and Education (2)
Q2	Tech Trends (1)
Q2	Action in Teacher Education (4); Journal of Early Childhood Teacher Education (2)
Q4	Turkish Online Journal of Educational Technology (4)

Source: Prepared by the authors

Analyzing the themes to which the journals refer, one notices the diversity of areas in which the portfolio in teacher education has been researched. We also noticed that most of the articles were published in journals whose ratings correspond to Q1 and Q2.

The distribution of national and international articles, by year of publication, can be seen in the graph depicted in Figure 3.

Figure 3 - National and international articles by year of publication



Source: Prepared by the authors

The distribution by year of publication shows that the national production on portfolios in teacher education is later than the international production.

With the two sets of articles, 43 national and 134 internationals, and the constitution of the corpus of 177 articles, the mapping proceeded with the classification/organization stage.

¹ The quartile is obtained by dividing the total number of journals in a category by 4, allowing its classification into Q1, Q2, Q3 and Q4. The quartile ranking helps the comparison of a journal with others within its category, based on the Scientific Journal Ranking (SJR). If a journal belongs to Q1, it means that it performs better than at least 75% of the journals evaluated.

For Biembengut (2008, p. 93), at this stage, "it is not just a matter of surveying existing research and reporting it as part of a linearly worked historical sequence. The author adds that it is about "identifying the relevant or significant points that can serve as a guide to understand the segments already researched and expressed in a way that allows us to develop a system of explanation or interpretation" (BIEMBENGUT, 2008, p. 93). With this in mind, we built a research map, as mentioned by Biembengut (2008), which is an exercise to understand the facts, ponder them, compare them, reject some, keep others, gathering elements that may become a basis for the researcher.

Initially, the abstracts were read, focusing on identifying: the objectives of the research presented in the article; the objectives of the use of the portfolios analyzed and their contexts; the research methodologies and the results achieved.

The recognition/analysis stage, according to Biembengut (2008, p. 96), should provide the researcher with "essential answers to formulate precepts, unveil their causes or effects in a plausible way, appreciate the merits of each research. And a more careful analysis makes it possible to conceive new experiences and new ideas to support the research. The data were examined according to ATD, a methodology of phenomenological and hermeneutic nature, developed especially in three movements: the unitarization, categorization and production of metatexts (MORAES; GALIAZZI, 2016).

The unitarization of the texts was performed according to the chosen focuses (research objectives, objectives of the use of portfolios, methodology and results). This was followed by categorization into recursive and inclusive processes. The recursive categorization process, from the 237 meaning units, gave rise to 57 initial categories, which, by approximation of meanings, resulted in 17 intermediate categories. These categories, in a new sense approximation, originated the seven final categories: look at the portfolio itself; the portfolio for teacher assessment; the portfolio as student reflection; the portfolio as a training network; the portfolio as an institutional artifact for certification, the participants' discourse on portfolios; and the bibliographic discourse on portfolios.

Having reached the final set of categories for the analysis, we highlight below some findings supported by the number of meaning units distributed in national and international articles. There were 57 meaning units in national articles and 180 in international articles, that is, the corpus had the contribution of 24% in national articles and 76% in international articles, as indicated in Table 1.

Table 1 - Final categories and their meaning units

Final Categories	Meaningful Units				
	Nac.	Inter.	Total	Nac. (%)	Inter. (%)
Portfolio as teacher evaluation	7	18	25	28	72
Portfolio as reflection	7	23	30	23	77
Portfolio as a training network	25	38	63	40	60
A look at the portfolio itself	-	23	23	-	100
Theoretical and bibliographic discourse on portfolios	4	9	13	31	69
Participants' discourse on portfolios	14	39	53	26	74
Portfolio as an institutional artifact	-	30	30	-	100
Total	57	180	237	24	76

Source: Prepared by the authors

Looking at Table 1 and considering the focus on pedagogical aspects revealed in the three categories - the portfolio for teacher assessment, the portfolio as student reflection and

the portfolio as a record of the training network - the importance given to portfolios as an expression of the training network stands out, making up 40% of the meaning units in national articles. Also, this importance is highlighted in the international articles, totaling 60% of the meaning units.

The category "A look at the portfolio itself" expressed aspects about methodologies for portfolio construction and research, challenges and portfolio evaluation. It was constituted only by units of meaning in international articles.

It was also observed a set of articles that analyzed the discourse about portfolios, having no empirical information. This final category was named "Bibliographic discourse about portfolios". From the set of meaning units, 31% of national articles and 69% of international articles looked at the bibliographic production of knowledge about portfolios.

Another finding is about the significant set of research carried out from the production of information by questionnaires, individual interviews, focus groups about the use of portfolios and other procedures produced from the questioning of those who developed the portfolios, usually undergraduate students. The distribution of meaning units between national and international articles was 26% and 74%, respectively, composing the final category "Participants' discourse about portfolios".

From the set of meaning units coming from international articles, it was found that there was, especially in the United States of America (USA), but not exclusively, the use of portfolios as documents for the approval and certification of students by the educational institution. From this set, the meaning units pointed to the indication of models and guides for portfolio production and development, and the portfolio as a presentation document in the job search. These meaning units made up the final category "Portfolio as an institutional artifact for certification". Next, the proposition of the portfolio in PIBID/IES and its formative stakes are described.

THE PORTFOLIO IN PIBID/IES AND THE FORMATIVE STAKES

Since the first call for proposals in 2007, the production of portfolios in the different subprojects of PIBID/IES has been based on the epistemic principle of knowledge production through writing (MARQUES, 1997; WELLS, 1999; 2001; GALIAZZI, 2003). Related to the epistemic emphasis was also the training wheel as a mode of knowledge production (WARSCHAUER, 1993; 2001).

At the time, the intention of producing portfolios was based on Sá-Chaves (2005), Villas-Boas (2005), Warschauer (2001) and Dias (2005), and the orientation was of a weekly writing done by one of the participants of the subproject, with a register about the activities developed in the schools and in the weekly meeting at IES. The portfolios circulated weekly among the participants of the same subproject. The proposal was based on recording the activities carried out, on writing, and on reading in the group, considering that from this writing and this writing, learning about teaching could result. The content of the writing was not evaluated, but it was considered an activity in the subproject and, therefore, mandatory.

Initially, the portfolios were collected monthly by the institutional coordinator, who read the information contained in them and wrote to the fellows. After the second approved public notice, the orientation of the writing in the portfolios became the responsibility of the area coordinating teachers. The portfolios were delivered to the institutional coordination during the PIBID/IES Institutional Seminars, at the end of each year of the project. From 2009 to 2018, more than a hundred portfolios resulted.

The first formative bet was the epistemic power of writing, that is, to develop, inextricably, the subject that produces and uses the cultural artifact of writing. Galiazzi (2003), supported by Marques (1997), argues about the importance of writing to think. Similarly, Wells (1999) proposes formative processes of peer writing and reading in the classroom as a strategy for teacher development.

The second formative wager was the formative network, in which everyone is possible, and everyone benefits from participating in writing portfolios, with their ways of writing in their different languages. Firme (2011), when researching the portfolios of this PIBID, sustained the writing in portfolios especially in Villas-Boas (2005), Sá-Chaves (2005), Dias (2005) and Araújo (2007). Villas-Boas (2005) maintains that all students can benefit from the use of portfolios because they can present their productions in different ways. The use of other forms of language favors student participation and their constitution as teachers, while they assume their responsibility for the execution of the portfolio.

The exposure of classroom challenges was the third bet, based on writing for the students to deal, especially, with the adversities of the classroom. The portfolios were mostly written by students in the process of their formation. According to Sá-Chaves (2005), the elaboration of a portfolio enables the formation of teachers who become capable of responding to situations of uncertainty and unpredictability present in the contexts of contemporary teaching. Warschauer (2001) proposed records in the training rounds as a possibility to face the challenges that the classroom presents.

Mediation by the teacher trainer was the fourth formative focus of the portfolios. The elaboration of a portfolio is a strategy to show the flow of processes underlying the personal way in which each one uniquely appropriates information, reconstructing their previous personal knowledge. This allows the teacher/trainer to understand and carefully intervene in these same processes (FIRME, 2011; SÁ-CHAVES, 2005).

The portfolio as an artifact of student reflection was the fifth formative bet. Sá-Chaves (2005) argues that the reflective portfolio favors perceiving the prejudices, the convictions, the knowledge of those who produce it, and can thus be an instrument for expanding contextualized understanding. The reflective portfolio, although being a process of intense individual reflection, needs interaction with others. An important contribution to the understanding of the production of portfolios in PIBID/IES, at its inception, was based on Dias (2005), as he believes in recording reflections so that they can be thought over and reinvented in recursive reflection processes.

The portfolio allows access to the meanings that students attribute to what they decide to record. Thus, the undergraduate, when preparing a portfolio, will be able to observe and analyze their training paths, since reflection is between thinking and doing, between knowing and acting.

The appropriation of theoretical references about teaching was the sixth formative focus. According to Sá-Chaves (2005), it is important for the undergraduate to appropriate theoretical references of the realities in question, of action methodologies and procedures in the classroom teaching work. By appropriating theoretical references, the teacher has the possibility to reflect on the problems of the practice, contextualized with the social, cultural, political, and ideological environment, and to better understand his/her teaching work.

The collective portfolio was the seventh formative bet. The writing in the collective portfolio enables the development of group work, the sharing of ideas, and the construction of the responsibility of each participant in the elaboration of this portfolio, favoring self-training and the transformation of those involved. The portfolio, as a possibility of group formation, depends on the commitment of each participant who writes, reads and rewrites it,

providing the discussion of the experiences lived in school and in face-to-face meetings at the HEI, during the initial and continuing education process, in the articulation between the university and basic school. Warschauer's (2001, p. 190) words are enlightening in this regard: "The writing of the experience, when it is read by others, takes us out of ourselves to be able to share our thoughts, causing the passage from the implicit to the explicit [...]. It is a formative movement because it is distancing: our look receives another reflection".

MAPPING AND FORMATIVE STAKES

This section presents the similarities and differences between the proposals for the use of portfolios in teacher education arising from the research raised in the mapping and the formative stakes. Since the purpose of the article is to articulate research results with formative stakes in a training process, the category "Participants' discourse on portfolios" was not analyzed.

The second formative bet is articulated with the category "Portfolios as a record of the formation network", because portfolios record the collaboration among participants, thus establishing a collective process in which everyone benefits from the writing. This same category is close to the third formative bet, in which the students' uncertainties and their decisions are registered when facing the unpredictability and dynamics of the classroom.

One can also perceive an approximation between this category, in which articles addressing research on portfolios as a record of the teaching and learning process, including peer and teacher mediation, and the fourth formative focus, were gathered. Considering that, through the development of collective portfolios, one learns to work as a group, to pay more attention to one's classmates and to be responsible for one's own formation and also for the formation of classmates, this category is close to the seventh formative wager. In this category, however, of all the works analyzed, only one had a collective portfolio, and only one had interaction among the portfolios, aspects that present themselves as a power in the training network and deserve more attention.

Approximations were perceived between the category "Portfolio as student reflection" and the fifth formative bet, as the use of portfolios was supported because they document students' understandings about their activity in the classroom, which promoted dialogues about these understandings. Although this bet has been endorsed by scientific research, there is much criticism of the way reflection has been addressed in portfolios and in teacher education (ZEICHNER; WRAY, 2001; PIMENTA, 2002; LIBÂNEO, 2002).

Finally, another perceived approximation was between the category "Bibliographic discourse on portfolios" and the sixth formative bet, in which it was important the theoretical appropriation regarding the issues raised in the records for the undergraduates to expand and substantiate the arguments about the profession and the activities it involves.

In conclusion, of the seven formative bets, the literature was the basis for six of them. From the experience of the authors of this article, since the implementation of the first approved edict - as a student of one of the undergraduate courses, later accompanying the subproject coordinator as a volunteer, as disciplinary and interdisciplinary area coordinator, and as institutional coordinator -, the first formative wager, the epistemic power of writing, was intensely developed in the PIBID, not only in the portfolio, but also in other activities. In view of the mapping categories, there was no research in which student writing was proposed as an epistemic artifact inherent to teacher education. This aspect was reinforced in Antiquiera (2018) when conducting research in one of the subprojects, with a focus on writing.

Regarding the distances, one of the categories that did not resonate in the formative stakes was the one called "Portfolio as an institutional artifact for certification", because in this category are a set of researches that focused on the production of portfolios as a mode of institutional certification for teaching. The research in this category intended to provide models, orientation guides, and courses on how to work with portfolios. Still, portfolios appeared as a document in the search for employment, moving this category away from the stakes discussed.

Further away from the formative stakes was also the category called "Portfolio for teacher evaluation." The portfolio was not used for evaluation of the participating students or supervising teachers in any of the editions in PIBID/IES.

The category "Look at the Portfolio itself", which gathered research regarding methodologies for the construction of portfolios, challenges presented in the development of portfolios, evaluation of portfolios and research methodologies on portfolios, also had no similarity with the formative bets, because, in the approved edicts of the PIBID, there was no detail on the orientation of the writings to be requested from the students, nor evaluation of portfolios or research on portfolios.

FINAL CONSIDERATIONS

We presented in detail the mapping of research on portfolios in teacher education, which showed its profusion around the world. The mapping also allowed us to establish the articulation of a significant set of categories arising from the mapping with the formative bets present in the PIBID/IES for the use of portfolios. Six of the formative bets were shown to be based on three of the mapping categories. In relation to the formative focus on reflection, it is recommended that the proponents have conceptual clarity about the reflection requested.

On the other hand, there was an absence of research in the mapping that focused on the epistemic function of writing, considered to be the organizer of the PIBID/IES, thus opening up an important and urgent aspect for research.

There was also the distancing of formative stakes from categories focusing on certification and evaluation. As for certification, it was considered that requiring the portfolio as a certification document instrumentalizes the formation process. Regarding portfolios for teacher evaluation, it was pointed out the need for conceptual clarity in relation to evaluation.

On the other hand, based on the propositions arising from the scientific articles, whoever takes on portfolios in teacher education should consider research on portfolios themselves during the production process, so that the analysis carried out concomitantly with the production provides information supported theoretically and empirically in its implementation.

Lastly and importantly, although it can be considered that the scientific research has shown that portfolios record the formation network, the portfolios requested and analyzed, for the most part, were individual. Thus, collective portfolios are suggested as artifacts of teacher education.

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