

Sciences on the Route: an analysis of the “research, teaching and extension” trinomial

Ciências na Rota: uma análise do trinômio “pesquisa, ensino e extensão”¹

Ciencias en Ruta: un análisis del trinomio “investigación, docencia y extensión”

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Resumen: Research in Brazil has come a long way to its insertion in teaching and extension, and one of the objectives of this trinomial is the training of professionals attentive to contemporary social needs. Today, one of the fruitful themes for the Brazilian academy is the construction of the Bioceânica Route. With the objective of mapping what has been produced scientifically, an integrative literature review was carried out, using the virtual databases SciELO and Portal de Periódicos da Capes. As a complement, the Directory of research groups registered with CNPq was analyzed. The searches resulted in 66 articles and 02 research groups. The first article found on the subject was published in 2000 and, almost two decades later, in 2018, there was a boost in Brazilian productions. The magazine with the most publications was Interações, the groups that most published are part of the University Network of the Latin American Integration Route (UniRila), with a predominance of Brazilians. It was concluded that there is a concentration of publications in Mato Grosso do Sul, the State where the Route is being built and, internationally, studies are limited to the countries involved. The most discussed topics are related to tourism, territorial development and infrastructure. The gaps point to the lack of involvement of professors and students from other Brazilian states, the homogeneity in the components of the groups registered in the Directory, despite UniRila being active and demonstrating partnerships around the elaboration of investigations. There are also gaps related to other essential themes and absence of approaches inherent to extension, with emphasis on teaching and research. The review showed that the Network is still new and has a lot to work on, including science is one of the allies in the perspective of Mercosur's positioning in the Pacific, in international cooperation and in territorial development.

Keywords: research; teaching; extension; Bioceanic Route; universities.

Resumo: A pesquisa no Brasil percorreu um longo caminho até a sua inserção junto ao ensino e à extensão, sendo que um dos objetivos desse trinômio é a capacitação de profissionais atentos às necessidades sociais contemporâneas. Hoje, um dos temas profícuos para a academia brasileira é a construção da Rota Bioceânica. Com o objetivo de mapear o que tem sido produzido cientificamente, foi realizada uma revisão integrativa da literatura, utilizando as bases virtuais SciELO e Portal de Periódicos da Capes. Como complementação, analisou-se o Diretório de grupos de pesquisa registrados no CNPq. As buscas resultaram em 66 artigos e 02 grupos de pesquisa. O primeiro artigo encontrado sobre a temática foi publicado em 2000 e, quase duas décadas depois, em 2018 ocorreu uma propulsão nas produções brasileiras. A Revista com mais publicações foi a Interações, os grupos que mais publicaram fazem parte da Rede Universitária da Rota de Integração Latino-Americana (UniRila), com predominância dos brasileiros. Concluiu-se que há uma concentração das publicações no Mato Grosso do Sul, Estado aonde a Rota vem sendo construída e, internacionalmente, os estudos se limitam aos países envolvidos. Os temas mais abordados são referentes ao turismo, desenvolvimento territorial e infraestrutura. As lacunas apontam para a falta de envolvimento de docentes e discentes de outros Estados brasileiros, a homogeneidade nos componentes dos grupos registrados no Diretório, apesar da UniRila estar ativa e demonstrar parcerias em torno da elaboração das investigações. Há também hiatos relativos a outros temas essenciais e ausência de abordagens inerentes à extensão, sendo evidenciados o ensino e a pesquisa. A revisão demonstrou que a Rede ainda é nova e tem muito a ser trabalhado, inclusive a ciência é uma das aliadas na perspectiva do posicionamento do Mercosul no Pacífico, nas cooperações internacionais e no desenvolvimento territorial.

¹ Thematic area: Higher education today.

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Palavras-chave: pesquisa; ensino; extensão; Rota Bioceânica; universidades.

Resumen: La investigación en Brasil ha recorrido un largo camino para su inserción en la enseñanza y la extensión, y uno de los objetivos de este trinomio es la formación de profesionales atentos a las necesidades sociales contemporáneas. Hoy, uno de los temas fructíferos para la academia brasileña es la construcción de la Ruta Bioceánica. Con el objetivo de mapear lo producido científicamente, se realizó una revisión integrativa de la literatura, utilizando las bases de datos virtuales SciELO y Portal de Periódicos da Capes. Como complemento, se analizó el Directorio de grupos de investigación registrados en el CNPq. Las búsquedas resultaron en 66 artículos y 02 grupos de investigación. El primer artículo encontrado sobre el tema fue publicado en 2000 y, casi dos décadas después, en 2018, hubo un impulso en las producciones brasileñas. La revista con más publicaciones fue *Interações*, los grupos que más publicaron son parte de la Red Universitaria de la Ruta de la Integración Latinoamericana (UniRila), con predominio de brasileños. Se concluyó que existe una concentración de publicaciones en Mato Grosso do Sul, Estado donde se está construyendo la Ruta y, a nivel internacional, los estudios se limitan a los países involucrados. Los temas más discutidos están relacionados con el turismo, el desarrollo territorial y la infraestructura. Los vacíos apuntan a la falta de involucramiento de profesores y estudiantes de otros estados brasileños, la homogeneidad en los componentes de los grupos registrados en el Directorio, a pesar de que la UniRila se muestra activa y demostrando alianzas en torno a la elaboración de investigaciones. También existen vacíos relacionados con otros temas esenciales y ausencia de enfoques propios de la extensión, con énfasis en la docencia y la investigación. La revisión mostró que la Red aún es nueva y tiene mucho por trabajar, incluyendo a la ciencia como uno de los aliados en la perspectiva del posicionamiento del Mercosur en el Pacífico, en la cooperación internacional y en el desarrollo territorial.

Palabras llave: investigación; enseñanza; extensión; Ruta Bioceánica; universidades.

1 INTRODUCTION

Brazilian research has not always been linked to higher education. Until the eighteenth century, higher education was aimed at training professionals with notorious status among the ruling classes and agrarian elites. In the 19th century, with the possibility of state governments taking over higher education, new schools (mostly private) were created, which maximized the educational system. At the beginning of the twentieth century, the possibility of dialogues on the incorporation of research in teaching spaces existed; in this period, the emphasis was on the training of liberal professionals so that the courses followed the economic moment of the country. However, documents from the Brazilian Education Association already argued that extension and research were the basis for teaching (Moita; Andrade, 2009). In later years, more specifically in 1934, the University of São Paulo (USP, in Portuguese) was created, which was markedly the pioneer in the transposition of research to the university. It is worth saying that in this period, scientific production was already latent in São Paulo institutions, which came to merge with the newly founded USP; however, professionals from abroad were still brought in and self-taught were present (Moita; Andrade, 2009), which demonstrated the disbelief in internal science, especially regarding the human sciences. In 1937, Carlos Chagas had taken over the chair of biological physics at the National Faculty of Medicine (FNM, in Portuguese) of the UB, now the Federal University of Rio de Janeiro, promising in his speech the inseparability between teaching and research, would later found the Laboratory of Biophysics, changing the necessary contexts for doing science, such as the staff involved, the creation of the position of specialized technician, the invitation to interested young people, national and international technical cooperation, and the transformation of the laboratory into an institute. The pillars of entry for research into higher education were consolidated, which still included among its student and teacher staff those who had more financial resources (Almeida, 2012).

It was only in the second half of this century that the middle class entered the so-called "universities", given that the country's industrialization required specialized labor, so professionals

were trained for the market. In the same period, the construction of the university city in São Paulo and the spread of research institutes took place.

The 1968 Reform proposed, among other points, the creation of departments as a locus for teaching and research. The teaching-research-extension trinomial was consolidated later, when in 1988, amid the effervescence of democratic movements, the defense of free quality education, and the role of higher education institutions as proponents of services aimed at reducing social inequities, especially in the surrounding communities, an amendment was added to the Brazilian Constitution of 1988, which in Article 207 guided administrative, management, and pedagogical autonomy, and universities should follow the principle of inseparability between teaching, research, and extension. The Law of Guidelines (LDB, in Portuguese) and bases, in turn, see the extension promoted in higher education, the participation of an exchange established with the population, and the dissemination of scientific knowledge (Brasil, 2005). Boaventura de Sousa Santos (2010) problematized the fact that the decontextualized curricula of universities do not always meet the needs of populations, advocating that universities be present in the reflection of ways to reduce social exclusion and discrimination, supporting vulnerable groups in solidarity. For the author, universities must demand from the state the financial and institutional conditions for their operation, but they must also pay attention to social responsibility.

Universities do indeed have a responsibility not only to their surroundings but also to the micro and macro realities of where they are. Science has long been discussed as being limited to academic walls, when in fact the core of research and extension is mainly in giving answers to different problems, which can change realities or give answers to a community. Science is conducted in favor of something and directed at someone. There is no neutral science because all science is science of something; all scientific research has some interest; all extension occurs with certain groups, and the resources that allow them to occur come mostly from development agencies, which, regardless of any government that is in power, have an obligation to citizens, so for them, the answers must be redirected.

The Bioceanic Route is contemporary, and key questions about its construction have reached national and international universities, inciting movements around this tripod (research, teaching, and extension). Based on the above, the present article aims to know how many and which groups are formally registered in the directories of the National Development Agencies, with the objective of working on issues concerning the Bioceanic Route. In addition, a review will be carried out in virtual scientific bases to map what has been scientifically produced in universities around research, teaching, and extension related to the theme.

2 METHODOLOGY

The research is configured in basic, exploratory type, with a qualitative approach. For Minayo:

The qualitative method is suitable for studies of history, representations and beliefs, relationships, perceptions, and opinions, that is, the products of the interpretations that humans make during their lives, the way they build their material artifacts and themselves, feel and think" (2008, p. 57).

As for the procedure, considering the objective and the research question, we opted for bibliographic research, guided by integrative review (IR). Derived from Evidence-Based Practice, IR

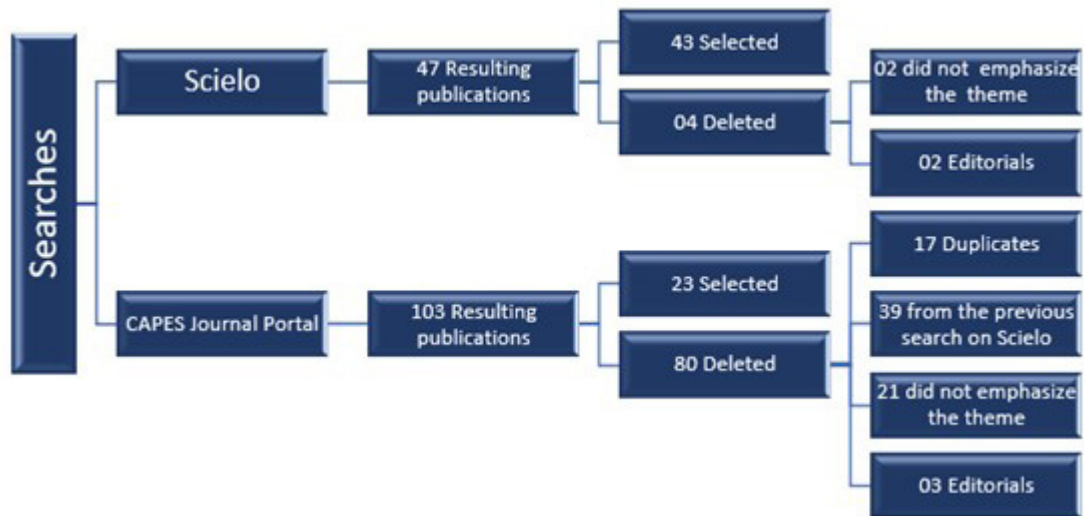
came as an option for the promotion of reviews with rigor and methodological criteria, integrating study results with data from the theoretical and empirical literature, capable of detailing concepts, identifying gaps and synthesizing current knowledge on a given theme (Souza; Silva; Carvalho, 2010; USP, 2015). It is divided into 06 phases, ranging from the elaboration of the guiding question to the discussion and presentation of the results), with the 2nd and 3rd subsidizing the others through the search in databases and extraction of the selected articles. Thus, the virtual databases chosen for the research were SciELO and the Portal de Periódicos da Capes. The Scientific Electronic Library Online (SciELO) was idealized in 1997 and has expanded, mainly among Latin American countries, being a database considered of high quality, publishing texts and peer-reviewed articles, in open access. The Capes Journal Portal has more than 39,000 full-text journals in its collection, linked to 396 databases of various contents, was created to gather scientific materials from Brazilian researchers, also adopting partnerships with other countries for the subscription of editorials. The option to carry out the review in these databases occurred because they emphasize the productions of the Brazilian community (carried out nationally or in international partnership), because of their recognition, because of open access and because they are not limited to a specific area or theme. The integrative review took place in July 2023 and followed the search criteria: (Bioceanic Corridor) OR (Bioceanic Route) OR (Latin American Integration Route) OR (University Network of the Latin American Integration Route). There were no limitations regarding the year of publication, country, or language. In the same period, a search was conducted in the Directories of Research Groups of Capes and CNPQ (in Portuguese), using the terms: "Latin American Integration"; "Bioceanic"; "Bioceanic"; "Latin American Network", "RILA", " UniRila" and "IIRSA (Initiative for the Integration of South American Regional Infrastructure)".

The initial idea was to find out what has been produced on the Bioceanic Route based on some elements, namely: who are its authors, what areas are they from, where do they speak, in which journals have they published, in which universities or institutions are they inserted, how are they articulated, which themes have been most frequent so far, and which gaps can be observed. The results were gathered and analyzed based on some elements, which will be presented below. To this end, the Dialectical Hermeneutic Analysis was used, which, according to Guerra (2014), reveals the links between the objects under study and their historical perspectives as a way of representing reality. In the Dialectical Hermeneutic Analysis, the author exposes to the readers the synthesis of the material found without giving up the partialities, since neither he nor those who wrote such productions remain outside human reality. Minayo (2008) states that the assumptions of this form of analysis refer to a praxis and the constraints of an intellectual production whose understanding of the object is carried out by non-neutral tools and instruments, and both the researcher and the researched scenario are within models crossed by interests, powers, conceptions, and pre-judgments.

3 RESULTS AND DISCUSSION

In the SciELO database, the search returned 47 articles and after exclusion for not belonging to the theme, 43 remained. In the *Portal de Periódicos da Capes* (CAPES Journal Portal), of the 103 articles, 23 resulted that made up the theme, totaling 66 publications of the sum of the two bases, which underwent the subsequent analysis. The details of the search are shown in figure 1.

Figure 1 – Representation of the search and selection of publications in the databases used



Source: Authors.

Both in SciELO and in the Portal of Periodicals of Capes, with the exceptions of 04 exclusions that were Editorials of presentation of the texts contained in the Periodicals, all the others were articles. The oldest is from the year 2000, the author, from the University of Bío Bío (Chile) sought to discuss the impacts of the Bioceanic Route in the territorial spaces where the construction will pass, with the possibility that some regions will feel its influence more (Daher, 2000). It is believed that there will be a change of scenery, which will culminate in the rupture of dependence on Santiago and the strategic repositioning of other ports and cities due to the global economy and Mercosur. This study shows that even in 2000, when publications were much scarcer than today, in terms of debates on the consolidation of the Route, one of the first questionings came to think geographically about the development and disaggregation of territories that have representativeness in the flow of people and in the Chilean market.

After this study, another, now at the National University of San Luis, was published in 2003, with a view to reflecting on Argentina's investment conditions, the creation of a Federal plan and the involvement with the neighbors of Chile and Brazil, so that they could improve the border regions (Martínez, 2003). There seems to have been a gap in production that lasted for the next 10 years, with few studies, even from neighboring countries in 2012, 2014 and 2017. The year 2018 marked the "turning point" in searches for Brazilian productions (and not only limited to them). The peak of productions on the Route occurred in the years 2019 and 2021, and these two years together corresponded to 50 publications (76% of the total), with 31 (47%) in 2021 and 19 (29%) in 2019.

The journal with the largest number of publications on topics inherent to the Bioceanic Route so far is the Brazilian *"Interações – Revista Internacional de Desenvolvimento Local"*. Founded in 2000 by the Doctoral and master's Program in Local Development of the Dom Bosco Catholic University (Mato Grosso do Sul, BR), it is hierarchically linked to the Pro-Rectorate of Research and Post-Graduation. Local Development is addressed through *stricto sensu* research reports, reviews, and translations, going through two lines of research: I) Culture, Identity and Diversity in Territorial Dynamics; II) Public Policies and Innovation Dynamics in Territorial Development.

It is assumed that the number of publications correlates with the Thematic Dossiers, which in 2019 and 2021 invited scholars to submit papers on "Integration Challenges on the Bioceanic Route" and thus consolidated a strong group of researchers who had studies in common. In previous editions, it is observed that these academics came together to produce and sometimes appeared in both editions. The second journal with the most publications on the subject so far is *Confins: revue franco-brésilienne de géographie*, corresponding to 4 studies. *Confins* also has a connection with Brazil, being a Franco-Brazilian Journal, from OpenEdition Journals, being a portal of electronic resources in humanities and social sciences. *Confins* works with publications mainly in Geography.

The university groups with the most publications were those of UniRila and those formed by partnerships between Brazilian universities, mainly local, such as the Federal University of Mato Grosso do Sul (UFMS, in Portuguese), State University of Mato Grosso do Sul (UEMS, in Portuguese), Dom Bosco Catholic University (UCDB, in Portuguese), Federal Institute of Mato Grosso do Sul (IFMS) and University for the Development of the State and the Pantanal Region (UNIDERP, in Portuguese). The Network of Latin American Universities is formed by the National University of Asunción, in Paraguay, the Brazilian ones already highlighted, the Catholic University of the North and the University of Antofagasta, from Chile and the National University of Salta, National University of Jujuy and Catholic University of Salta, all from Paraguay, responding to one of the working groups set up by the Ministries of Foreign Affairs, which provides for the exchange between students and professors of university institutions in the Southern Cone, representing a strategy for collaborative research, studies and extensions (South-South) (Maciel *et al.*, 2019). The authors and members pointed out 03 guiding axes: the first is sustainable development, the second is local development and the third is internalization and academic potential. It was proposed to create a common page for all and a directory for the incorporation of scientific knowledge and publications. Still on the countries and institutions and/or universities to which the authors are linked, there is a predominance of Brazilian Universities, and, currently, production is concentrated in Mato Grosso do Sul, with a small participation of professionals and researchers from São Paulo, Brasília, Paraná, Mato Grosso, and Rio de Janeiro. A second marker points out that leaving Brazil, the densification of authors is in Chile, Argentina, Bolivia, and Paraguay, that is, the countries that feel or will feel the direct effects of construction. There is one author in the Brazilian group who is linked to West Virginia University, which may justify a future trend of interest from American (from The USA) groups on the subject.

Regarding the topics most addressed in the publications, 16 spoke of the tourism potential and the possibilities of leveraging the arrival of tourists from the Route. The Brazilian Ministry of Foreign Affairs itself pointed out the dynamization of the economy from the union of the member countries, which must consider strategic plans to: create coordination bodies for the Corridor, which have the permanent participation of local governments; Promote innovative policies to serve different audiences, meeting the needs of adventure, gastronomic and fishing tourism, considering inclusion and diversity; Seek approximation with technologies; stimulate exchange between countries, the development of green tourism and the visibility of small and medium-sized companies (Castro, 2019). The Ministry sees in the Universities the interconnection with the sector from specialization offers, technical and language courses open to the population and the offer of short-term internship programs, for nationals of the countries that are part of the Route, with tourism agencies, hotels, and restaurants in the regions, so that future professionals know

the work and potential along this route (De Castro, 2021). The first Brazilian publication found in this search, problematized in 2018 the flows, transport and infrastructure on the Route, and then the others began to explore the issue of tourism, so it is one of the main and oldest themes when thinking about the academic dialogues inherent to Brazil and the other countries involved in the construction of the Bioceanic Route. In addition to tourism, the second most discussed topic was territorial development, followed by infrastructure, with a focus on the environment, sustainability, international relations, education, industrialization and the economy, public policies and social issues, governance, indigenous, cultural, archaeological issues and, finally, health. The newest studies, in total 03, date from the present year (2023) and mention the dynamics in the port, as an articulating structure of the borders (with a vision based on the case of Arica, Chile) (Dilla Alfonso; Cabezas; Contreras, 2022); Portray Mato Grosso do Sul on the Route, from the perspective of images (Pereira *et al.*, 2023) and, reflect international cooperation, according to the example of similar situations in other countries (Álvarez; Amigo; Alfonso, 2023). It can be deduced that there is no thematic pattern so far, and it will be necessary to follow this trend in the future. Among the 68 articles selected in the search, 03 addressed research, extension, and university teaching from the perspectives of the Bioceanic Route, and 01 emphasized the need to think about the training and qualification of professionals able to work in this new scenario. All of them were published in the thematic calls of *Revista Interações*, 02 in 2019 and 02 in 2021. In 2019, researchers from UniRila itself (representing universities in Chile, Argentina, Paraguay, and Brazil) informed readers about the constitution, its potential, and its challenges (Maciel *et al.*, 2019). The other 2021 articles were written by different groups. The first, written by a group of researchers from the Dom Bosco Catholic University (Brazil), presented the cultural relations and relationships established in the border territory between Brazil and Paraguay, thinking about the possibilities of union in the face of the construction of the Corridor, scheduled for 2022–2023. One of the initial points concerned the specificities of each government around the Route; while in Brazil, more specifically in Mato Grosso do Sul, it will enhance agro-industry, facilitate imports, reduce values, and favor tourism, in Paraguay, it will favor infrastructure and the interconnection of the Chaco Region with the rest of the country. Symbolic borders separate the two municipalities: Porto Murtinho and Carmelo Peralta; however, daily flows promote cultural exchanges between their peoples (Shiota *et al.*, 2021). In Porto Murtinho, the exchanges are not only economic, but they are also gastronomic, musical, religious, and folkloric. Being a municipality sought after for a long time by Paraguayans who settled "outside their country, on the other side of the river," the bridge comes as a materialization of the deepening of these cultures (Shiota *et al.*, 2021). The University Network has the responsibility to disseminate culture, which overflows when talking about territorialism, identity, and symbolic borders, and many works will come in this direction because invisible bridges are already consolidated on the borders, even before the physical bridges, it will be up to analyze these dynamics when they are solidified. The second article of this period was written by three professors from the National University of Asunción, Paraguay, who undertook to reflect on how university integrations can comply with the Sustainable Development Goals of the 2030 Agenda. Enrique, Barrios e Sánchez (2021) state that education can contribute to sustainability when talking about university education as a citizen, egalitarian, quality possibility, and dissemination of knowledge and skills needed by the community. The link between Latin American universities can boost the growth of Mercosur and its positioning against the Pacific if it is considered that there are experts in social and academic spaces capable of disseminating

science and technology and agreeing dialogues with society in a fair and cooperative way; There is no lack of qualified professionals and creativity in Latin American countries, and cooperation for the production of sciences that consider their needs can generate synergy between the market, public, and private institutions. The countries have already begun to disseminate their knowledge; it is now up to them to develop research, carry out market studies, assess impacts, and mitigate environmental, economic, and social risks, all in line with the Working Groups on the Bioceanic Corridor (Enrique; Barrios; Sánchez, 2021). The new reality also brings new profiles of professionals, and the preparation of human resources, according to Oliveira, Reynaldo and Castilho (2021), can occur by offering fast-track courses, qualification, re-qualification, initial and continuous training courses, or even technical courses, each aligned with the realities of their municipalities. It is known that these courses feed other educational levels; that is, courses of this type require professionals trained for mediation, tutoring, and management, thus mobilizing the needs in higher education. It is then that education is one of the essential pillars of Rota because the improvement of the educational level can reduce social disparities, producing economic development (Oliveira; Reynaldo; Castilho 2021).

Research Directory: official records on Brazilian research on Rota

So far, the main elements of the review of publications on the Bioceanic Route have been presented. As a complement and strengthening of this study, which consists of reflecting on research, teaching, and extension, with the Route as a favorable field for this, information was also sought on the groups registered in the CNPq directory. This directory is characterized as an inventory, which contains the lines of research, universities or institutions of higher education, science, technology, or related specialties of knowledge, and people registered in studies that continue to be carried out. Considering the current base and the consultation by groups, by inserting in the search terms the option "all words" and, in the selection of the fields "name of the group", "name of the research line" and "keyword of the research line", only 02 groups that have deepened investigations on the subject were reached. The first, entitled "Interdisciplinary Observatory of Local Development – OIDL" is responsible for a researcher at the Dom Bosco Catholic University, dates from 2022, is around concentration of scientific dissemination, in the research line "culture, identity, and diversity in territorial dynamics", aggregates 10 teachers and 13 students, 05 of whom are undergraduates, 05 of whom have doctorates, and 03 of whom have master's degrees; among the teachers, 08 have a doctorate, and 02 are masters. It is stated in the description that the group is aligned with the purposes of UniRila, inserted in the Postgraduate Program in Local Development, which seeks to train human resources and systematize knowledge in interface with history, culture, economics, education, law, tourism, language, etc. The group has as a partner the Federal Institute of Mato Grosso do Sul. An older, second group called "Observatory of the Bioceanic Route," registered in 2017 by a researcher from the State University of Mato Grosso do Sul (UEMS), linked to the rectorship, has as predominant areas: Linguistics, Letters, and Arts; Linguistics. There is not much information about it, although it has undergone a more recent update and even has a website. As members, there are 14 researchers, all with a doctorate, 01 high school student, 01 without information, 02 with undergraduate degrees, and 01 with a doctorate. The researchers registered in these groups are from different areas: tourism, economics, linguistics, letters, collective health, and psychology.

The groups are still homogeneous in their registered compositions, not adding many teachers or students from other institutions, despite an increasing production that cites UniRila as a viable way to think about sharing knowledge for joint interventions.

4 CONCLUSION

The Brazilian scientific outreach around the Bioceanic Route is relatively new and still expanding. While researchers from the other countries involved marked the scientific production right at the beginning of the meetings of the heads of state on the construction of an integration corridor, the search showed that Brazil still took a few years to start organizing itself in this direction. However, in 2017, the first research group was registered, which coincided with the emphasis on publications, so it can be said that the "timid" movement has gained strength in the last 5 years and since then, has been reinforcing the potential of the theme. It is assumed that the more concrete the theme has become within national reality, the more studies have sought to understand this dynamic. In fact, this hypothesis is consolidated when it is observed that the productions have contemplated a niche for local universities. In other words, although the Corridor will impact Brazil in large proportions, there is a scientific concentration in the state where the work began: Mato Grosso do Sul. And yet, the academic communities that have come closest to the national ones that analyze the contexts of the Route are those from neighboring countries, which have also begun to feel some impact or whose territory is already experiencing the work.

The agreements are essential in terms of research, teaching and extension and, of the 66 articles resulting from the search, the 03 that spoke about higher education, delved into UniRila. Even the authors who published the most were from the Network. The Network is capable of generating a joint dialogue in several spheres and sometimes the Universities gained weight in the speeches of the authorities involved, such as the representative of the Ministry of Foreign Affairs in Brazil, who sees this junction as powerful in the positioning of the bloc in relation to the Pacific and, for this, it is necessary to join forces for investigations, for the union with public and private initiatives and for a dialogue that considers the specificities of the populations and territories involved. Teaching, research, and extension, if well executed, can work in a triple way: assessing needs, producing knowledge and training people to give this feedback (in the territories).

It is noteworthy that although the productions have focused on the Integration Network between Latin American Universities, the research groups registered in the directory of the main national development agency have not yet diversified the composition of their members, with scholars from other countries and even from other Brazilian states. It is essential to raise academic awareness within the country itself, since the Bioceanic Route is not a project for a single state and science does not occur isolated. The precursor institutions have the mission to disseminate knowledge and open spaces for dialogue to raise awareness of the theme and possible anticipation of upcoming events.

Other gaps found were the incipience of investigations corresponding to other themes that are fundamental in these perspectives and the gap occupied in extension actions; there is talk about teaching and research, but extensions have not yet been made official in publications. As a limitation of this study, the review was carried out in only two virtual bases, which may reduce the possibility of finding more specific articles, however, in this first moment the emphasis was

really on what has been addressed in a generalist base, which is even contemplated in several other search engines. It is hoped that the points listed will serve as support so that other publications can soon answer the following questions: What are the sociodemographic profiles of the populations residing in the territories where the Route will pass? How have its benefits and impacts been communicated to the populations? What elements of the Bioceanic Route can be contemplated by the Engineering disciplines? What are the most prevalent health problems in the populations that are part of the Route's territories, and what is the impact of the work on health determinants? Which economic impacts and projections can be consolidated based on the flow of people and products in the first years of the Route's consolidation? What can be thought about university extensions based on the Bioceanic Route?

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