

THE INTERNATIONALIZATION OF BRAZILIAN POSTGRADUATE PROGRAMS: A STRATEGIC APPROACH¹

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This paper looks at the reasons behind internationalization in Brazilian Higher Education Institutions (HEIs) and different mechanisms that can be used by the institutions themselves, financing agencies, as well as individual researchers to improve the international impact of their research and the production of quality alumni to solve problems posed by society. We question why institutions and researchers should consider the internationalization of research and teaching, and an operational approach is proposed. The need for strategic priorities and partnerships is highlighted as well as methods for monitoring and evaluating these methods. We also show that institutions should question how initiatives fit within the institution's mission and overall strategy, and how they can go about framing and deciding upon various forms of internationalization.

Keywords: internationalization of scientific institutions; financing for the internationalization of education; Brazilian institutes of higher education; South-South cooperation for education; North-South cooperation for education.

A INTERNACIONALIZAÇÃO DOS PROGRAMAS DE PÓS-GRADUAÇÃO BRASILEIROS: UMA ABORDAGEM ESTRATÉGICA

Este artigo analisa estratégias que podem ser utilizadas para melhorar a internacionalização das instituições científicas brasileiras. Examina as razões por trás da internacionalização nas Instituições de Ensino Superior (IES) brasileiras e diferentes mecanismos que podem ser usados pelas próprias instituições, agências financiadoras, bem como pesquisadores individuais, para melhorar o impacto internacional de suas pesquisas e a produção de ex-alunos de qualidade para resolver os problemas colocados pela sociedade. Questionamos por que instituições e pesquisadores devem considerar a internacionalização da pesquisa e do ensino, e uma abordagem operacional é proposta. A necessidade de prioridades estratégicas e parcerias é destacada, bem como métodos para monitorar e avaliar esses métodos. Mostramos também que as instituições devem questionar como as iniciativas se enquadram na missão e estratégia global da instituição, e como podem enquadrar e decidir sobre várias formas de internacionalização.

Palavras-chave: internacionalização de instituições científicas; financiamento para a internacionalização da educação; institutos brasileiros de ensino superior; cooperação Sul-Sul para a educação; cooperação Norte-Sul para a educação.

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LA INTERNACIONALIZACIÓN DE LOS PROGRAMAS DE POSTGRADO BRASILEÑOS: UN ENFOQUE ESTRATÉGICO

Este artículo analiza las estrategias que pueden utilizarse para mejorar la internacionalización de las instituciones científicas brasileñas. Se examinan las razones de la internacionalización en las Instituciones de Enseñanza Superior (IES) brasileñas y los diferentes mecanismos que pueden utilizar las propias instituciones, las agencias de financiación, así como los investigadores individuales, para mejorar el impacto internacional de sus investigaciones y la producción de alumni de calidad para resolver los problemas planteados por la sociedad. Se cuestiona por qué las instituciones y los investigadores deben plantearse la internacionalización de la investigación y la docencia, y se propone un enfoque operativo. Se destaca la necesidad de establecer prioridades estratégicas y asociaciones, así como métodos para supervisar y evaluar estos métodos. También mostramos que las instituciones deben preguntarse cómo encajan las iniciativas en la misión y estrategia generales de la institución, y cómo pueden enmarcar y decidir sobre las distintas formas de internacionalización.

Palabras clave: internacionalización de instituciones científicas; financiación a la internacionalización de la educación; institutos de educación superior brasileñas; cooperación Sur-Sur para la educación; cooperación Norte-Sur para la educación.

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1 INTRODUCTION

Much has been written on internationalization of scientific institutions worldwide (Altbach and Knight, 2007; Qiang, 2003) and in Brazil (Finardi and Guimarães, 2020; Almeida et al., 2019; Neves and Barbosa, 2020) and it has become somewhat of a buzzword for Brazilian Higher Education Institutions (HEIs), frequently included in their mission statements (Guimarães et al., 2020). In Brazil, internationalization is primarily financed by federal funding agencies (McManus et al., 2020; McManus and Neves, 2021a). Research in this area is focussed on language policies (Finardi, 2019; Guimarães, Finardi and Casotti, 2019) or, in more recent years, the Brazilian Scientific Mobility or Science without Borders (SwB) program (Barbosa, Adefila and Garcia, 2022). This latter program lasted from 2011 to 2016 and was based in the Home Secretary's office (directly linked to the country's president) and aimed to send 101.000 students (mainly undergraduates) and higher education lecturers abroad. Although no systematic evaluation of the program has been carried out to date, results exposed fragilities (Conceição, Oliveira and Souza, 2023) in the Brazilian internationalization rhetoric, failure to meet the program objectives at several levels, such as preparation for studying abroad, language preparation, and insertion in top universities worldwide, among others. The actions were based primarily on mobility, with little attention paid to why the need to use internationalization as a means to meet the goals of the institutions involved, how to plan for this internationalization, and what methods

to use (beyond mobility). McManus and Nobre (2017) and Finardi, Guimarães and Mendes (2019) suggest that Brazil lacks principles and policies to guide the internationalization process in Brazil critically. It has also been seen that HEIs in Brazil tend to focus on undergraduate students, while science and postgraduate studies are left to individual researchers. Research internationalization is influenced by factors involving the individual faculty member, their discipline, their institution, and external factors, such as funding (Woldegiyorgis, Proctor and Wit, 2018). The Institutional Program for the Internationalization (Programa Institucional de Internacionalização – PrInt) of the Coordination for the Improvement of Higher-Level Personnel (Coordenação de Aperfeiçoamento de Pessoal de Ensino Superior – Capes), created in 2018, attempted to address this (McManus et al., 2021a) by transferring funding directly to universities to implement their strategic internationalization plans. Results still need to be evaluated, and the program was affected by the covid-19 pandemic and lack of funding for Brazilian science in recent years (Boggio, 2019). Except for the two programs mentioned above and the accompanying Language without Borders (Passoni, 2019; Brito, Borges and Martins, 2021) program, little has changed in how Brazilian HEIs have dealt with the question of internationalization and its institutionalization (McManus and Neves, 2021b). Brazil, with few exceptions, looks for a “one-size-fits-all” approach to financing internationalization, together with rhetoric for the reduction of inequalities and an increase in South-South collaboration (SSC) (Copropi, 2022; McManus et al., 2023).

The present paper outlines a comprehensive, detailed strategy with an operational approach for integrating Brazilian academic research and post-graduate studies more fully into the global community. We look at why internationalization is important for Brazilian HEIs, and how strategic approaches can be built to improve the actions’ impact. Actions include strategic partnerships, SSC, and evaluation and monitoring of actions.

2 WHY INTERNATIONALIZATION?

Internationalization carries multiple meanings: providing Brazilian researchers with the opportunity to interact with global partners (Gui, Liu and Du, 2019), enhancing the role of Brazilian research institutions in addressing critical global issues, attracting outside researchers to collaborate with Brazilian colleagues on issues of critical national and international interest, placing the Brazilian researcher more fully on the global stage, offering post-graduate students a productive international experience through exchange programs with outside academic and research institutions, and increasing the international content of post-graduate studies in the country. It also points to avoiding academic and scientific isolation of Brazilian institutions and researchers and helicopter research

(whereby researchers from some nations or regions collect samples and publish the results of research from another region, with little or no involvement from local scientists, and provide no benefit for the local community) (Adame, 2021). Such a vision of internationalization implies the necessity to promote among academic researchers and post-graduate students a culture of internationalism in which international networks, intercultural experiences, linguistic skills, and adherence to global standards of quality become accepted as part of the DNA/nature of the Brazilian researcher and student. This strategy statement lays out the policies, incentives, funding opportunities, and quality standards necessary to achieve this vision.

There is a conviction that knowledge, the desired result of research and scholarly activity, has no national boundaries, and most research problems are global. As such, the interests of any one researcher are also not constrained by borders. In reality, the structure of research activity is built upon “research communities”, the informal membership of which is often pre-eminently international. In any field in any one discipline, there are multiple research communities with participants from multiple countries. Furthermore, the dynamic interaction of research communities, facilitated by information technology, is fed by the unique contribution of each participant (Edmondson and Harvey, 2018). Knowledge is expanded when knowledge is shared.

Thus, research ideas, methods, and techniques are internationally distributed. Each country and each institution of higher education has its institutional capacity to support research and the expansion of knowledge. And each country, with its unique social, cultural, political, and environmental context, becomes a laboratory for research. However, institutional research capacity is not equally distributed, and some countries and research institutions have enjoyed strong traditional support and emerged as leading institutions with global reputations.

Brazil has a significant institutional capacity for research and the expansion of knowledge. Still, this capacity is not equally distributed across its system of higher education institutions nor all areas of knowledge and inquiry (McManus et al., 2021b; McManus, Neves and Maranhão, 2020; McManus and Neves, 2021a). The sharing of knowledge among global research communities is an opportunity to expand institutional research capacity in-country and to support the growth of research capacity in countries with less developed institutions. International research cooperation provides benefits to all through the sharing of knowledge.

In acknowledgement of this reality, there is a need to assert the following principles.

- Internationalization of the research capacity of higher education institutions through the support of researchers and post-graduate students is intrinsically desirable and a beneficial outcome.

- The internationalization of research capacity and post-graduate studies requires adopting an international culture within Brazilian institutions (Fabricius, Mortensen and Haberland, 2017), where international cooperation through research partnerships, institutional agreements, exchange opportunities, and linguistic skill development are seen as mainstream elements of a university's mission. This is not an inherently Brazilian problem, but it needs to be discussed frankly within institutions, as the rhetoric and reality are vastly different.
- The internationalization of institutions of higher learning (toward creating an international research “culture”) will require an investment of public funds in ways that maximize return to society.
- Internationalization through cooperation and collaboration follows heterogeneous and diverse pathways determined by the characteristics of each institutional partner and the larger research community. The nature of cooperation will vary according to these individual characteristics (Crăciun, 2018).
- The level of scientific excellence ultimately measures the impact of internationalization in terms of accepted international standards. Producing and disseminating scientific output should not be constrained by border, language or culture (Knight, 2018).
- All international cooperation with institutional partners is based on mutual academic respect, equal voice and participation, and sharing costs and benefits (Wit, 2017).

In financing internationalization, the overall mission is to attain the highest levels of quality research and scholarship through the support of Brazilian academic research institutions and their post-graduate programs across all fields (Cruz-Castro, Jonkers and Sanz-Menéndez, 2015). The mission aims for excellence in research that conforms to international standards and contributes to the expansion of knowledge on a global scale. Also, integral to this mission, is the continued enhancement of a Brazilian research capacity and scholarship that can support the sustainable development of the nation and assure a high economic and social return on public investment through informed decision making and effective problem-solving (Pohl, 2021).

The vision lies in expanding knowledge through research based on the core criterion of scientific excellence (Lasthiotakis, Sigurdson and Sá, 2013). Scientific excellence is the cornerstone of the vision and is its ultimate goal. Such excellence implies a continuous stream of research that meets accepted international standards, is available to the international community of scholars, involves

international partnerships and promotes Brazilian and global development. Building scientific excellence rests squarely on the shoulders of academic researchers in the post-graduate programs of Brazilian universities and research institutes. Scientific excellence is sought through a university structure (Robinson-Garcia and Ràfols, 2020) that conducts quality research and, at the same time, builds research capacity by training post-graduate students in the principles of the scientific method, exposing them to the culture of research, and supporting them in actual research activities that form the basis of dissertations and theses. At any point, a post-graduate program generates new knowledge through ongoing research while preparing the researchers of the succeeding generations (Möllendorff, Kugart and Speck, 2017).

Through its internationalization strategy, the Brazilian financing agencies and HEIs should intend to expand their role in the global academic community while promoting a more outward and forward-looking dimension of the meaning of higher learning among these institutions. Specifically, a strategy of internationalization is designed to:

- provide the Brazilian scholar exposure to new ideas, international research standards, and international networks;
- provide international academic opportunities for collaborative research, new research venues, and interaction with Brazilian post-graduate students;
- enable participation in international communities of scholars around specific areas of knowledge;
- contribute Brazilian expertise to global research challenges (neglected diseases, food security, climate change etc.); and
- create programs of long-term institutional partnerships across borders.

3 OPERATIONAL APPROACH

A strategy of internationalization must recognize important vectors of variability that will affect an operational strategy of internationalization. First, it must be coherent with the reality of Brazilian universities. There is significant variability in the level of scientific excellence and the quality of post-graduate programs across the landscape of Brazilian institutions of higher learning. A second source of variability is found within any university or research institution where the professional faculty (*corpo docente*) vary according to rank, experience, and scientific output. A third factor of variability is the nature of international partnerships that form the core of a internationalization policy. The conventional distinction is between North-South partnerships in which Brazilian institutions cooperate and collaborate with partners in North America, Europe, Japan, Korea,

Australia – considered to have more advanced research institutions (Ozkaya, Timor and Erdin, 2021) but also invest in science abroad. The South-South partnerships tend to be among institutions in Latin America or with those located in Africa and parts of Asia (Wit, 2020). But even among the South-South partnerships, there are those characterized more or less by equal levels of institutional capacity (e.g. Brazil-Argentina) and those where the institutional capacity is imbalanced (e.g. Brazil-Angola). These sources of variability must be addressed and incorporated into an operational strategy of internationalization.

As a fundamental point of departure, governmental programs, e.g. p.ex. in Capes, have adopted, by intent, a philosophical and operational approach that is “researcher-driven” and “bottom-up”. Rather than being driven by political winds and priorities, researchers are encouraged to identify new opportunities and directions in any research field consistent with the advancement of science (Wit, 2020). The time-honoured tradition of academic freedom requires this essential flexibility and the effective participation of researchers in formulating a national policy of internationalization. These programs (except for PrInt) also focus on mobility and ignore other forms of internationalization as a means to an end rather than an end. According to McManus et al. (2021a), knowledge gained through international mobility is not efficiently disseminated throughout the university structure except on a *laissez faire* basis.

In light of this, research-focus financing agencies, as institutions that support research and post-graduate studies throughout the country, the policy of strategic internationalization should begin with the individual university proposals that outline how the institution of high learning will adopt a strategy of internationalization. According to its overall academic mission, financing agencies are positioned to promote an internationalization strategy by evaluating post-graduate programs and incentives linked to its financial support program (as in the PrInt call).⁵ The evaluation criteria and the funding incentives can stimulate individual universities to initiate their internationalization programs.

4 STRATEGIC PRACTICES TO PROMOTE INTERNATIONALIZATION

The following strategic practices describe how governmental agencies can achieve their goals of scientific excellence through an enhanced commitment to internationalization. Funding agencies should understand the level and processes of internationalization within HEIs to enact policy that favours constructing plans that can help in their implementation (Stukalova, Shishkin and Stukalova, 2015). As a first step to address the variability that characterizes the body of researchers in Brazil, the following classification is offered.

5. Available at: <https://www.gov.br/capes/pt-br/acao-a-informacao/acoes-e-programas/bolsas/bolsas-e-auxilios-internacionais/informacoes-internacionais/programa-institucional-de-internacionalizacao-capes-print>.

- 1) Consolidated researcher: the consolidated researcher is an established, leading principal investigator with a track record of significant research achievements over the last 10 years. These principal investigators should be exceptional leaders in their field whom their peers widely recognise. In international partnerships, this researcher assumes a leadership role in the team.
- 2) Consolidating researcher: the consolidating researcher has shown the ability to create an active research team and has demonstrated a track record of scientific production over 7-12 years since completing the PhD. This researcher is considered a colleague of equal stature on an international cooperation team.
- 3) Initiating researcher: this talented, high-potential researcher in the initial phase of her career has shown the ability to work independently and develop a research program. In an international collaboration, this researcher may lack experience relative to other team members, and a mentorship relationship with other researchers is expected to build capacity, experience, and confidence. These partnerships are most effective when longer-term collaborations are pursued.

The following is a set of strategic practices designed to achieve effective internationalization outcomes based on lessons learned from prior experiences with international cooperation.

- 1) One core strategy for international cooperation is a Brazilian scientist's extended presence (e.g., a year or more) in a university outside Brazil, for example, in the United States or Europe. Different levels of Brazilian professionals should be allowed, from initiating to consolidated researchers. Most international universities welcome into their departments with open arms a dedicated, competent researcher, regardless of the level of seniority, because the department perceives potential benefits in terms of scientific advancement, the unit's reputation, improved grantsmanship, etc. Thus, inherent incentives are present. However, the basic relationship is a research partnership between Brazilian and local researchers. Unfortunately, prestigious foreign universities may consider this relationship unbalanced – i.e., the foreign university is considered to be providing a service to the Brazilian researchers and their institution. Such a perspective of unequal exchange leads the university to consider the relationship regarding monetary advantages.

Thus, lessons learned:

- a) programs of international institutional cooperation must be carefully planned and built around individual partnerships between Brazilian and local researchers and labs, not around the “opportunity” for a Brazilian researcher to have exposure to a foreign research institution. The relationships should be well structured; and
 - b) relatedly, in the case of post-docs or even part-time (bolsa sanduíche) post-graduate students, the principal goal of the activity should be research negotiated with a host university partner or mentor. There is less confidence in the lasting scientific impact of a student who spends a year at a host university taking two computer science, finance, or anthropology classes. The purpose of the year away – either post-graduate student or post-doc – should have a mutually agreed upon scientific outcome.
- 2) A second core strategy is the development of joint research programs between teams of Brazilian and foreign researchers either inside or outside Brazil or in both venues. The creation of international research teams in critical global issues – such as sustainable development goals, global change, biotechnology, race and inequality, etc. – can be facilitated by financing agencies in several ways:
- a) facilitate linkages among universities where interest in such issues is already present;
 - b) support post-graduate student research on such issues;
 - c) support travel between the partner institutions;
 - d) looks towards the appropriation of knowledge acquired and incorporation of the internationalization experience rather than simple mobility (Morosini and Corte, 2018);
 - e) invest in the necessary infrastructure in Brazil (e.g. labs) to enable the research activity; and
 - f) help to sponsor international conferences (in Brazil) around the issues.

Such joint research programs are desirable because they can involve post-graduate students and junior and senior researchers. They are structured around sharing the financial cost across the network of partners. The important condition, however, is that each participating partner must have a certain level of in-house expertise and a clear commitment to the issue as an institutional priority.

- 3) A third core strategy is a research partnership based on a foreign scholar hosted at a Brazilian university. This is the visiting professor, visiting researcher modality. This partnership can engender benefits on both the instructional and research side. It is most effective when the visiting scholar has strong current interests in Brazil and where her scholarly interests coincide with members of the host department. It is of reduced value when a visiting scholar is unsure of interests in Brazil and “hopes” to identify a research interest during the time period.
- 4) Strategic planning, areas of knowledge, goals and partners. This involves actions within agencies, universities, and the science and technology community in Brazil as a whole.

5 STRATEGIC PARTNERSHIPS

There is a need to tailor partnerships to each institution’s specific characteristics, strengths, and priorities – Brazilian and foreign. One does not propose an English literature partnership with the California Institute of Technology (CalTech) (Goodstein, 2020). Governmental agencies should set priorities regarding institutional partnerships not necessarily on the institutional reputation of the Massachusetts Institute of Technology (MIT) but on the likelihood of effective research partnerships. The overriding criteria should be: i) the shared research interest/expertise between the Brazilian and foreign university departments; ii) the full acceptance of the principle of equality and sharing of costs; and iii) the understanding that these partnerships are not created to enhance the finances of the host institution. While it is true that pockets of expertise are not equally distributed over Brazilian and, say, American universities and that a junior Brazilian researcher will “learn new things” from exposure to a foreign research system, there should be no doubt that the benefits flow is bi-directional.

5.1 South-South

There is an expanding future for South-South international cooperation (Waisbich and Mawdsley, 2022). Some partnerships occur between countries with a similar institutional research capacity as Brazil, and these relationships, in most cases, vary little in substance from cooperation with institutions from the United States and Europe. They tend to be based on equality and mutuality regarding costs and benefits. The goals are to enhance knowledge through exchange and collaborative research that derives full advantage of complementary levels of expertise (Mawdsley, 2019).

Commonly, however, South-South partnerships involve cooperation between institutions with unbalanced levels of research capacity (Engel, 2019).

There is a substantial distinction between scientific excellence and development goals, and agencies do not have an international development mandate. For example, most Lusophone African universities show that their research capacity is hindered by a lack of research infrastructure (labs etc.), lack of research funding, integration into broader research networks, lack of organization, and lack of research experience. So as partnerships are “tailored” to local contexts, many South-South relationships, especially in sub-Saharan Africa (South Africa excepted) pose more structural challenges.

There are mutual benefits to be derived from imbalanced SSC (Bergamaschi and Tickner, 2017). Brazilian scholars have advanced scientific goals from researching African sorghum varieties or Shangaan linguistics in Mozambique. That scholar can be nominally hosted in a local university with little collaboration with local researchers. On the other hand, to create a joint research program involving local university researchers’ participation and activities *in situ*, the above-mentioned constraints become binding. One possible solution to achieving scientific excellence goals is through the creation of partnerships with organizations, private and public, that do have a development mission related to science, technology, and higher education (McManus et al., 2023). The potential benefits of scientific collaboration in Africa are tremendous, and the return on the investment dollar could be very high as African research institutions and universities enter a rapid development phase. Thus, there is great potential for agencies to foster scientific achievement through partnerships, but with creative partnerships.

Current SSC supported by Brazilian agencies—such as the Graduate Agreement Student Program (Programa de Estudantes-Convênio de Pós-Graduação – PEC-PG) – finances post-graduate students from foreign countries in Brazilian universities. The benefits that accrue to these students are clear and significant, but the long-term impacts on Brazilian scholarship are less in evidence. It is intended that these students will return to their home countries and eventually contribute to developing a community of researchers. Still, such an outcome is not guaranteed, and there are no follow-ups or evaluations of the alumni.

6 MONITORING AND EVALUATION

There is a need to systematize the implementation process of international cooperative at the front end and back end. At the front end, more structured negotiation of the nature of international partnerships are needed so that both roles and goals are mutually understood and the principles of mutuality and reciprocity are incorporated into the agreements. At the back end, there is a need for a structured, comprehensive monitoring and evaluation system based on sets of clear and robust indicators that demonstrate scientific achievement.

Agencies should be working on this, which should be a core part of international cooperation policy.

Overall, the current tools of evaluation for agencies may be too limited. In the desire to meet international standards, the dominant criterion for evaluation emphasized the quantity and quality of scientific publication in recognized academic journals, including international journals. Publication in international venues remains significantly restricted by language difficulties, especially in English (Ahmad, 2016). Concerns over the quality of Brazilian research on a global stage may result from the language barrier rather than the scholarly potential or value of the research.

Agencies are institutions that promote innovation and creativity – out-of-the-box thinking such as transdisciplinarity and interdisciplinarity. Brazil needs better university-company integration, encouraging investments by reducing tax increases and granting tax incentives. It also needs to think about alternative forms of financing, prevent contingency, and create public-private funds, encouraging philanthropy, crowdfunding, and co-funding, among others. Other innovation areas can be developing “citizen science” platforms, which are growing in scope in the United States. Although many universities abroad charge tuition, this is not possible for public universities in Brazil, but a law (Brazil, 2019) was recently enacted allowing universities to open endowment funds. There are other regulations that universities can use: for example, the Good Law (Law No. 11.196/2005) (Brazil, 2005); Law No. 11.774/2008 (Brazil, 2008); Informatics Law (Law No. 13.674/2018 (Brazil, 2018); Innovation Law (Law No. 10.973/2004) (Brazil, 2004) and Regulatory Framework for Innovation (Brazil, 2016), among others. A Brazilian citation costs half that of a Portuguese citation and 1/12th of a Qatar one (Neves, McManus and Carvalho, 2020), so that money is well invested.

Nevertheless, the understanding of what these laws allow or do not depend on the guidance of public expenditure control bodies and the norms of the public administration in general – Court of Accounts of the Union (Tribunal de Contas da União – TCU); General Counsel of the Union (Advocacia-Geral da União – AGU); Judiciary Branch of the Union (Procuradoria Jurídica da União – PJU) –, as well as entities representing the judiciary responsible for defending interests, such as the Public Ministry, which may be affected by acts of public managers. These entities behave bureaucratically and with minimal sensitivity to the peculiarities of research management in universities and other academic institutions (Almeida, Lima-de-Oliveira and Schneider, 2014), especially concerning international collaborations. They also operate with a greater focus on control than on results, focusing on “what is allowed is only what the law says” (Meirelles, 2005).

Changes should not only be limited to agencies but must occur within research institutions supported by these agencies. This involves language training and infrastructure for receiving visiting scholars, among others. An increase in virtual mobility and internationalization at home or of the curriculum is necessary. Looking for external funding is also essential. Sites such as jointsdgfund.org, Science.org,⁶ European Commission,⁷ Open Education Database,⁸ and scientificRESEARCH,⁹ among others, show opportunities beyond national limits for funding scientific research.

Online experiences such as COIL,¹⁰ Knowledge Engineering,¹¹ Virtual reality,¹² (for example, Google Expeditions,¹³ MEL Science,¹⁴ Floreo¹⁵), augmented reality,¹⁶ gamification,¹⁷ Chatbox,¹⁸ online study groups and tours,^{19,20} are examples that can be followed and adapted. Sites such as AuthorAid²¹ can help to begin the internationalization experience for new researchers. In particular, the increased use of social media (Wilkinson and Weitkamp, 2013) to expand the dissemination of research and call attention to research groups can help attract interest in collaboration. Platform platforms such as ResearchGate (O'Brien, 2019), Academia.edu (Ovadia, 2014) and identifiers such as Orcid (Haak et al., 2012) and ResearcherID (Martín-Martín et al., 2016) are also encouraged.

The pandemic transformed the perception and practice of internationalization. It transcends and redefines the idea that internationalization is identical to mobility. It incorporated the virtual modality and, with that, potentialized the possibilities of internationalization at home (the intentional integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments) (Beelen and Jones, 2015) and online modalities and, therefore, of democratizing the reach of benefits and the general impact both in teaching and in research. In this scenario,

6. Available at: <https://www.science.org/content/page/where-search-funding>.

7. Available at: https://research-and-innovation.ec.europa.eu/funding/funding-opportunities_en.

8. Available at: https://oedb.org/librarian/100_places_to_find_funding_your_research/.

9. Available at: <https://www.scientifyresearch.org/all-funding-opportunities-for-researchers-worldwide/>.

10. Available at: <https://coil.suny.edu/>.

11. Available at: <https://www.sciencedirect.com/book/9780323853804/intelligence-science>.

12. Available at: <https://www.britannica.com/technology/virtual-reality>.

13. Available at: <https://sites.google.com/tcsnc.org/tcs-g-expeditions/google-expeditions-app>.

14. Available at: <https://melscience.com/US-en/vr/>.

15. Available at: <https://www.floreotech.com/>.

16. Available at: <https://www.economist.com/the-economist-explains/2016/04/14/the-difference-between-virtual-and-augmented-reality>.

17. Available at: <https://www.economist.com/business/2022/11/03/how-to-think-about-gamification>.

18. Available at: <https://www.commbio.io/what-is-a-chatbot-how-it-can-help-your-business/>.

19. Available at: <https://www.baylor.edu/prehealth/index.php?id=970982>.

20. Available at: <https://www.labanimaltour.org/>.

21. Available at: <https://forums.authoraid.info/forum/research-collaboration-space-4/>.

virtual exchange programs for students with intercultural skills, online activities and assignments related to culture and teaching should be considered. Physical and virtual mobility must not be in opposition. So, the challenge is how both can be best practiced? Knowledge must be understood as a structure, not a personal asset. The public nature of networks should be remembered as an integral part of their inclusion. It allows individuals looking for resources to connect to a community they would otherwise not have found and those who may not be group members to listen to topics of interest or advocate these groups.

7 CONCLUDING REMARKS

Various factors affect the transformation of the university system (Auranen and Nieminen, 2010), such as adverse reactions from actors (policymakers, universities, researchers) who integrate the system, changes in rhetoric and policy goals before practices change, and even the effect of past decisions. Therefore, it is necessary to have long-term strategic planning and frank discussions on the issues raised here between the Ministry of Education, other ministries, and the post-graduate university system for Brazil to advance in terms of long-term scientific and social development.

It takes courage to enter the internationalization game because it changes the rules and increases the need for quality (Auranen and Nieminen, 2010). But we must, in this experience, see things from a more positive perspective. If we arrive on the other side transformed, being more efficient, and planning who we are and where we want to go, it will be for a good cause. Institutions should question how initiatives fit within the institution's mission and overall strategy and how institutions go about framing and deciding upon various forms of internationalization (see footnotes 10 through 21). The construction of internationalization policies (Croom, 2012) shows the need for five key stages: i) identifying the problem; ii) building a political mandate; iii) exploring policy options; iv) executing the policy; v) evaluating the policy; and vi) enforcing the policy. Research conducted to prepare or evaluate these policies can be carried out at all these stages, effectively reducing public policy costs. Still, research shows they are usually limited to moments 5 and 6 (Hastak, Mazis and Morris, 2018). PrInt was an exception (McManus et al., 2021a), with *ex ante* evaluation research conducted to plan this public policy containing dimensions of opinion, structure and installed capacities.

Advancing towards excellence in each of these fields requires internal decisions that can be responses to external stimulation or a result of a conviction in the face of the mission and institutional commitments themselves to society and the community. As Wit (2020) points out, due to the increase

in this knowledge economy, there is a need for a strategic approach to internationalization in higher education.

Strategic objectives in internationalization include:

- establish a strategic framework that gives government, industry, business and the wider society the assurance of research excellence conducted within Brazilian institutions of higher education;
- identify discipline-level areas of research strength and areas where there is an opportunity for the development of Brazilian universities and research institutions;
- link programmatic priorities to emergent research areas that address the complex development challenges within Brazilian society;
- promote a culture of internationalization within Brazilian institutions of higher education that encourages strong ties of international cooperation, exchange, and research collaboration and partnership; and
- create a transparent and agile system of monitoring and evaluation that assures program accountability while maintaining the highest standards of excellence.

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