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EXPANSION OF E-LEARNING UNDERGRADUATE COURSES AT BRAZILIAN FEDERAL UNIVERSITIES

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Brazil has 115 public and 92 private universities, with 4,487,849 undergraduates enrolled in 18,000 courses. In the 69 federal universities there are 1,114,494 undergraduates (25%) in the 5,464 courses (30%). Federal universities have 5.8% of enrollments in the e-learning modality, while in the private network, it is 50.7%. The context of the covid19 pandemic demonstrated the potential of e-learning, resulting in the strategic project of the Ministry of Education (MEC): "Expansion of e-learning in Federal Universities." The MEC constituted the Strategic Guidance Committee and the Working Group. With the Center for Management and Strategic Studies (CGEE) support, the Committee and the Group prepared the documents: international benchmarking; e-learning panorama in Brazil; diagnosis and challenges for e-learning in Brazil; and the e-learning expansion plan. The project developed in 2020 and 2021 currently selects the universities and courses that will be part of the first pilot phase. This case involved around 50 specialist collaborators from all over Brazil. We share lessons learned: mechanisms for participation and follow-up; selection and negotiation with potential pilot universities; capture and allocation of public resources; and the adequacy of legislation.

Keywords: e-learning; federal universities; undergraduates

EXPANSIÓN DE CURSOS DE PREGRADO DE EDUCACIÓN A DISTANCIA EN UNIVERSIDADES FEDERALES BRASILEÑAS

Brasil tiene 115 universidades públicas y 92 privadas, con 4.487.849 estudiantes de pregrado matriculados en 18.000 cursos. En las 69 universidades federales hay 1.114.494 estudiantes de pregrado (25%) en los 5.464 cursos (30%). Las universidades federales tienen el 5,8% de las matrículas en educación a distancia (EaD), mientras que en la red privada es el 50,7%. El contexto de la pandemia del covid19 demostró el potencial del EaD, dando como resultado el proyecto estratégico del Ministerio de Educación (MEC): "Expansión del EaD en las Universidades Federales". El MEC constituyó: Comité de Orientación Estratégica y el Grupo de Trabajo. Con el apoyo del Centro de Gestión y Estudios Estratégicos (CGEE), el Comité y el Grupo prepararon los documentos: benchmarking internacional; panorama del EaD en Brasil; diagnóstico y desafíos para la expansión del EaD en Brasil; y el plan de expansión del EaD. El proyecto desarrollado en 2020 y 2021, actualmente selecciona las universidades y carreras que formarán parte de la primera fase piloto. Este caso involucró alrededor de 50 colaboradores especialistas de todo Brasil. compartimos lecciones aprendidas: mecanismos de participación y seguimiento; selección y negociación con potenciales universidades piloto; captación y asignación de recursos públicos; y la adecuación de la legislación.

Palabras clave: educación a distancia; universidades federales; pregrado

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1. Introduction

Over the years, e-learning has become an important part of the modern education system. A few of the factors responsible for shaping the growth of e-learning in the academic and corporate environment include fast-paced advancements in Internet technology including high-speed internet access, bandwidth expansion, 5G, artificial intelligence (IA), virtual reality (VR), and Learning Management System (LMS).

Virtual universities are primarily public in the global context, especially the Indira Gandhi National Open University (India) with 3 million students and the Open University of China with 2.7 million students. Distance learning tends to expand even more in undergraduate courses. It offers benefits such as flexible schedules for students, social inclusion, resource optimization; accessibility; convenience; and multiple communication channels.

In the census of Brazilian higher education carried out by INEP (2022) of the 342,526 vacancies offered by the federal system, 321,709 (93.92%) were on-site and 20,817 at e-learning (6.08%), while in the private network, were offered 3,238,469 vacancies, of which 1,277,790 were in person (39.46%) and 1,960,679 at a distance (60.54%). Of the 20,817 vacancies in the distance learning modality, 14,910 (71.62%) were for teacher training (degrees focused on the Open University of Brazil Program). Therefore, the tendency of reduction in the offer of vacancies in the distance modality in the federal system should be added, contrasted with its, and increased in the private network.

The Brazilian Ministry of Education (MEC), through legislation, equates the modalities of face-to-face and e-learning courses. However, the degree diplomas issued do not mention the type of course.

The Universidade Aberta do Brasil (UAB) system is an articulating program between the federal government and federative entities that supports public higher education institutions to offer higher education and postgraduate courses through e-learning. Licentiate courses aimed at teacher training have priority in providing financial resources.

The UAB system was created in 2005 and instituted by Decree 5.800, on June 8, 2006, for "the development of the e-learning modality, to expand and internalize the offer of higher education courses and programs in Brazil". The Coordination manages it for the Improvement of Higher Education Personnel (CAPES), a foundation of the Ministry of Education (MEC).

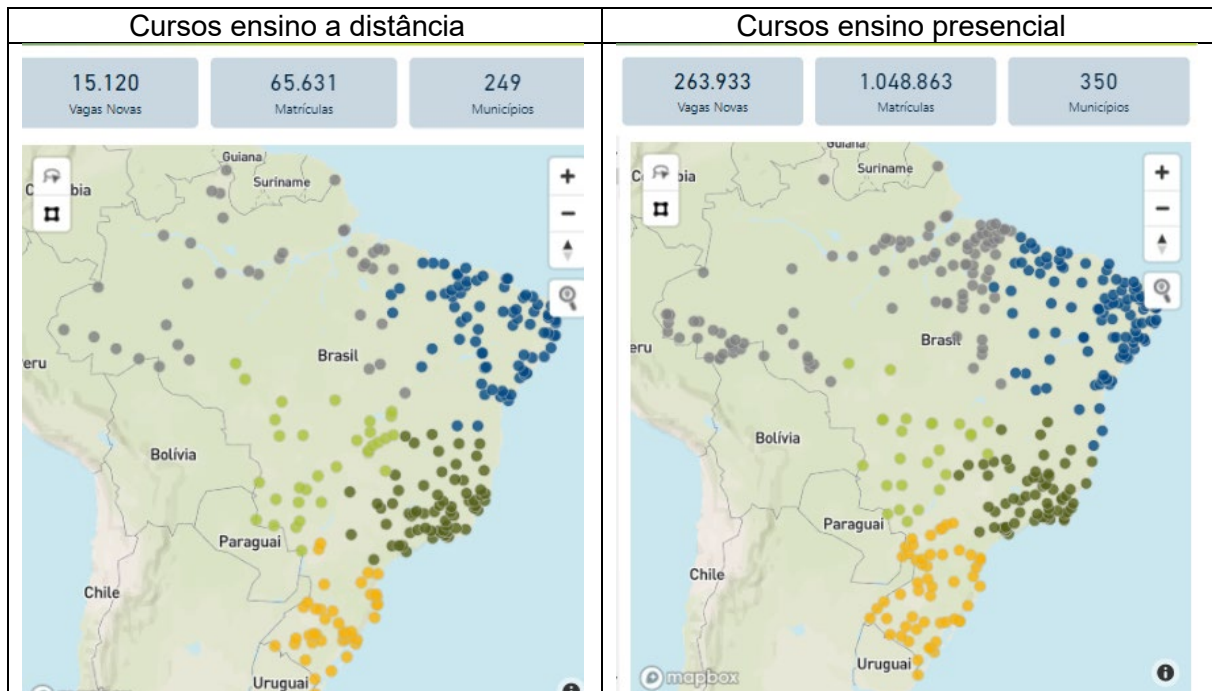
The art. 207 of the Federal Constitution of Brazil assures federal universities didactic-scientific, administrative and financial, and asset management autonomy, obeying the principle of inseparability between teaching, research, and extension, observing the legal dictates. Therefore, any actions promoted by SESu/MEC must have their adherence deliberate by the Superior Council of the federal university.

The "Painel Universidade 360" BI platform provides integrated data and academic, budgetary, and people management indicators from federal universities. For example, the Panel presents the vacancies offered, the number of enrollments, and the number of cities where federal universities offer undergraduate courses in face-to-face and e-learning (Figure 1).

Through Normative Ordinance, No. 742, on August 2, 2018, Brazilian legislation establishes that the offer of on-site activities in e-learning courses must observe the maximum limit of 30% (thirty percent) of the total course load. In addition, this legislation requires the existence of physical e-learning poles.

The Poles have the physical infrastructure, pedagogical support and are usually installed on university campuses or in public facilities made available through partnership agreements.

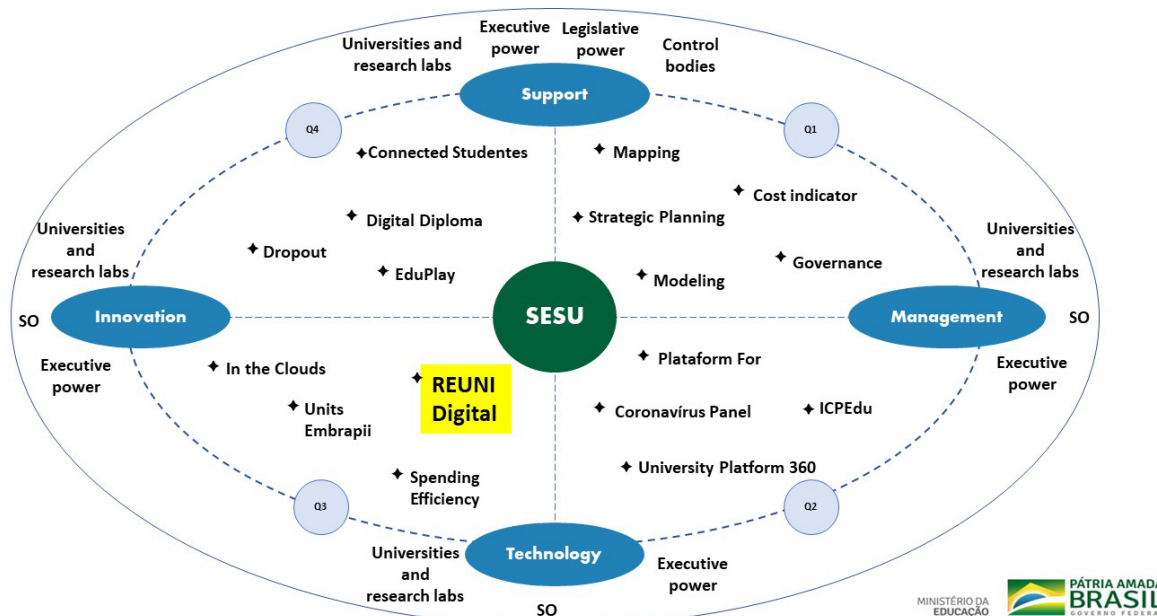
Figure 1: Courses offered by federal universities in the modalities of e-learning and face-to-face teaching



SESu/MEC established a strategic action to boost the expansion of higher education in Brazil by offering higher education courses in the e-learning modality through “REUNI DIGITAL”.

The REUNI DIGITAL project emerged, being developed at MEC by the Higher Education Department (SESu), included in the SESu innovation ecosystem (Figure 2).

Figure 2: Innovation Ecosystem



The "REUNI DIGITAL" alludes to the program for Restructuring and Expansion of Federal Universities (REUNI), instituted by Decree No. 6,096, of April 2007, at the undergraduate level, for better use of the physical structure of human resources existing in federal

universities. The program's goals were: to double, in ten years, the number of students enrolled in undergraduate courses (from 2008); gradually raise the average completion rate of face-to-face courses to 90%; achieve the ratio of 18 students to each teacher, and create opportunities for 680,000 more students to enter higher education courses. Adherence to the program by federal universities is "voluntary" and became official through a Goals Agreement signed between the federal universities and the MEC.

2. Project: REUNI DIGITAL

In Brazil, e-learning is regulated through Decree No. 9,057, on May 25, 2017. It provides for compatible monitoring and evaluation and develops educational activities in different places and times.

The scope of REUNI DIGITAL has two integrated actions: "studies to subsidize the expansion of distance education courses in federal universities" and "development of the first phase of the pilot project."

2.1 Studies to support the expansion of distance education courses at federal universities

In the context of REUNI Digital, it is worth mentioning the publication of Ordinance No. 433, on October 22, 2020, and Ordinance No. 434, on October 22, 2020, by SESu/MEC. Which respectively establish the Strategic Guidance Committee (COE) and the Working Group (WG) to subsidize the discussion, elaboration, and presentation of strategies to expand the offer of higher education courses, in the distance education modality.

The members of the GT and COE are representatives of the universities, which represent the five regions of Brazil; of the associations and organizations of the third sector, among them the Brazilian Association of Distance Education (ABED), the University in Network Association (UniRede) and the Center for Management and Strategic Studies (CGEE).

The studies developed by the GT and COE (deliveries) were documented (Table 1).

Table 1: Deliveries of the studies developed

| Studies | Description |
|-----------------------------------|--|
| Diagnosis of e-Learning in Brazil | This document focuses on the current scenario of e-learning in our country. At first, the report registers a series of distance education indicators for the Brazilian public and private institutions that will guide the following stages of the project. Then, objectively, the analysis registers the possibility of expanding distance learning in the public network since the number of enrollments in distance education in the private network of higher education is still significantly more expressive. Subsequently, the report also reveals the regulatory scenario of distance learning in the country and brings practical cases of the experience of distance higher education in three institutions. |
| International Benchmarking | The objective of benchmarking is to reveal the policies, strategies, and tools in distance learning of some countries to contribute to the orientation of future practices in the Brazilian Expansion Plan. In addition, the document encompasses a set of recommendations, trends, and current perspectives from three of the leading European organizations, namely: UNESCO, EDEN - European Distance Learning, and EADTU - European Association of Distance Teaching Universities. |

| | |
|---|--|
| Analysis of the challenges to the expansion of e-learning in Brazil | Guided by the documents “survey of e-learning in Brazil” and “international benchmarking,” the WG identified the challenges: promoting the institutionalization of e-learning in federal universities; developing a strategic plan for offering distance learning courses to meet local and regional demands; promoting policies to expand higher e-learning; encourage investments in technology and infrastructure for federal universities; and investing in technological support for students, especially those in situations of social vulnerability. |
| Expansion Plan | Developed from the efforts and collaborative work of the teams of SESu/MEC, the Center for Management and Strategic Studies (CGEE), experts invited by the CGEE, the members of the GT, and the COE. The document contains: <ul style="list-style-type: none">• the challenges;• the responsibilities of the actions (in the contexts of management, pedagogical and technological) attributed to SESu/MEC and the Federal Universities;• the mission (or missions), objectives, goals, and articulated actions, with the definition of responsibilities, deadlines for execution, metrics and expected results (indicators), and the sources of resources and partnerships that will contribute to its fulfillment. |
| Proposal for Monitoring and Evaluation of the e-learning Expansion Plan in Federal Universities | The document focused on the unfolding and results of Reuni Digital within the scope of Federal Universities. Among its primary objectives, the monitoring document aims to define a proposal for monitoring the indicators proposed in the Expansion Plan to overcome the identified challenges and define new recommendations and guidelines that may support future actions. The monitoring proposal should also consider existing instruments such as the National Higher Education Assessment System (SINAES) and the Institutional Development Plan (PDI). |

In 2001, the Center for Management and Strategic Studies (CGEE) was created in the context of a set of measures that sought to modernize the National Science, Technology, and Innovation System (SNCTI). It works with the increasing complexity and sophistication of the ST&I environment. It strengthens the country's capacity to formulate and conduct strategic policies and programs focused on increasing the competitiveness of economic sectors, with emphasis on energy, agriculture, health, and space, from vertical studies and analysis. The studies are transversal in human resources training (and their relationship with the labor market), regional development, financing, and innovation strategies, among other possibilities. The demands for the Center's primary skills are current, where ST&I and education assume even greater importance in the face of the pandemic that set in at the beginning of 2020.

The CGEE, through its competencies, developed an initial proposal for the studies described in Table 1. These studies were presented to the Working Group (WG), which analyzed the documents proposed changes that were reviewed and agreed upon, culminating in a final document presented and approved by the Strategic Guidance Committee (COE).

The documents are in the consolidation phase for later publication and dissemination. The elaboration of the documents took place through about 20 meetings with the Working Group (WG). Before the GT's online meetings, SESu analyzed the documents generated by the CGEE and resolved the differences.

The GT, considering the total and alternate members, was made up of 19 people to ensure the representation of the main stakeholders. As a result, the documents were analyzed and discussed by more people, resulting in the extension of the deadline to complete the studies.

At the COE, was held fewer meetings and faster decisions, as it has 10 full and alternate members.

SESu's project management office played a central role in coordinating and monitoring all activities planned for the project.

The main risks are:

- 180 days (beginning October 22, 2020) is not enough to deliver the expected documents. To ensure the participation of the WG members and the analysis and discussions of the documents resulted in two extensions of the extension of Ordinance No. 434, on October 22, 2020, culminating in the deadline on April 30, 2022;
- contents not recorded in the documents. The WG meetings allow the presentation and analysis of proposals, if approved, they are included in the document;
- GT members leave (named in Ordinances 433 and 434). The Ordinances have the position of an alternate who participates in all meetings.

2.2 The first phase of the pilot project

SESu is responsible for promoting and implementing the REUNI DIGITAL expansion plan with the Federal Universities. SESu is working to establish the Pilot Project of the program, also focusing on achieving expansion goals and mitigating the structural problems of education higher education, such as dropout and retention, that permeate this education range.

It is an experimental proposal of the REUNI DIGITAL model, through the receipt of proposals, by the Federal Universities, for higher education courses offered entirely in online mode.

The purpose of the pilot project is to carry out a temporary effort to test and evaluate the offer of comprehensive distance education courses in Brazilian public higher education.

To operationalize the proposal, this first phase of the pilot project of REUNI DIGITAL has to invest US\$ 5,700,000.00, initially planned for the year 2022.

The Higher Education Secretariat (SESu) is responsible for documenting, monitoring, and evaluating the results of the first phase of the REUNI DIGITAL Pilot Project.

The 69 federal universities were asked to respond by filling out an electronic form with basic information about Distance Education (DE), with a focus on verifying whether IFES offers or intends to offer undergraduate courses in the distance modality.

From the 69 IFES, we received responses from 52 IFES (75%). For the selection of potential e-learning undergraduate courses, we used as criteria:

- the undergraduate course must not be offered within the scope of the Universidade Aberta do Brasil (UAB) system since the UAB is operated by the Coordination for the Improvement of Higher Education Personnel (Capes), under MEC Ordinance No. 318 April 2009;
- have "forecast to offer an undergraduate course in e-learning modality in 2022", which implies that the course is already approved or in the final phase of approval (maximum period 2nd semester of 2022), limitation established by the project schedule established in the Support Program for the Expansion of Online Education in Federal Universities;
- have at least one pilot course per geographic region of Brazil, as we would be contemplating regional specificities and diversities in this pilot project;

- undergraduate course, having a "high quantity of vacancies offered per edition" and "innovative characteristics", as a "pilot project" has the outcome of testing the viability of an idea in a systematic, planned, and controlled way, enhancing discoveries through lessons learned, allowing to improve future actions to expand e-learning in IFES.

The analysis of the proposals sent by the federal universities, using the established criteria, resulted in:

- UFMS (Technology in Management Processes; Information Technology; Technology in Data Sciences);
- UFMT (Science and Technology - Interdisciplinary Bachelor's Degree);
- UFCA (Digital Media Design; Development for Mobile Devices; Public Administration and Social Management; History and Public Heritage Management);
- UNILAB (Bachelor in Computer Science);
- UFAM (Technology in Environmental Management);
- UFCG (International Relations; Indigenous Intercultural Degree);
- UFPI (Technologist in Renewable Energies; Technologist in Data Management);
- UFRA (Agronomy; Computing; Information Systems);
- UFAM (environmental management technologist; agribusiness; regional development);
- UFRJ (Bachelor of Accounting Sciences);
- UFRRJ (Special Education Degree);
- UNIFAL-MG (Environmental Management and Sustainability);
- UNIFEI (Bachelor of Science and Technology - BCT);
- UFPR (Cultural Management).

The federal universities and their potential courses were communicated by e-mail, and the negotiation process began for their participation in the first phase of REUNI DIGITAL.

SESu is negotiating with the 14 selected federal universities. The resources available by SESu are vacancies for new professors and financing of costs and fixed assets. Each negotiation is unique because each university has different needs to develop the courses proposed in the distance learning modality. Negotiations began on January 14, 2022, and ended with the Dean and Secretary of SESu's signature of an agreement that should take place by March 31, 2022.

Representatives from SESu and the selected universities held at least three online meetings for negotiations, which mainly involved the courses offered, the number of vacancies, and the demand for financial resources.

Preliminary results suggest that of the 14 selected federal universities, 10 should join the first phase of the pilot project. These pilot universities must offer, in the e-learning modality, approximately 5,000 new vacancies per year in 14 different courses.

The risks are mainly limited to:

- the deadline (government actions are limited to June due to elections in Brazil). Emphasized deadlines in the media with universities;
- the limit of the available budget. Were controlled total costs during the negotiation meetings with each university (federal universities tend to request more resources);
- not meeting the goals agreed by the universities. Semi-annual follow-ups have been established mechanisms.

3. Lessons learned

Implementing a public policy in Brazil is a complex, extensive process and requires the participation of several stakeholders to produce the effect. Consequently, the formation of the

COE and the GT denotes a necessary action capable of strengthening the process of discussion, planning, and implementation of the proposal.

The project management office coordinated and actively participated in the two integrated actions.

The design of the working groups in carrying out the studies involved the various stakeholders, especially in the WG, this participation had the benefits of incorporating the various perspectives, but conflicts had to be consensual. Moreover, as the guests represented institutions, they submitted the analysis of the documents to other people, demanding more time for the analysis but making it broader.

Stakeholder participation resulted in the extension of the deadline for the WG to deliver the studies.

The GT has several specialists in distance education with high academic backgrounds and experience, their invitation and appointment as representatives of their organizations and their status brought attitudes of participation and commitment.

The CGEE, through its technical competencies, developed the documents that were analyzed and improved by the GT.

The GT surveyed federal universities that identified high diversity of e-learning courses. Some had incipient structures, dedicated academic units, recent infrastructures, others federal universities were obsolete, most of the teachers trained, others with few teachers, some with several regulations, others with few, e-learning is one of the strategic actions, in others, it is not. It was evident that the expansion of e-learning in federal universities is a complex project due to the diversity identified in the regulatory, technical, cultural, strategic, pedagogical, training and infrastructure aspects. Thus, establishing a cost for the student of e-learning courses in this diversified context becomes a future challenge after reducing this dispersion.

Indeed, the complexity of distance education expansion is significant, mainly due to legal, cultural, pedagogical, and technological barriers at different stages in Federal Universities. The regulation of Brazilian higher education is conventionally associated with regulatory styles that deserve to be observed, studied, and modernized. The studies conducted in the context of REUNI DIGITAL are the tip of the iceberg of this modernization.

4. Conclusions

The existence of documented studies, with the participation of various stakeholders, in the context of the wide diversity of internships in federal universities, is essential to guide the actions of SESu and federal universities to expand e-learning courses. In addition to subsidizing fundraising with the Brazilian government.

Federal universities have as a principle the quality of teaching in the covid-19 pandemic, information and communication technologies were the means to execute academic activities. The academic community of federal universities “experienced” the potential of e-learning, and we will undoubtedly have a new university after the covid-19 pandemic.

The pilot courses of some federal universities provide the opportunity to explore the results, analyze the successes and opportunities for improvement, and provide the possibility for young people to have access to graduation at a federal university.

Studies and negotiations with federal universities with the potential to participate in REUNI DIGITAL suggest the need for coordination, which enhances the optimization of resources to expand undergraduate vacancies through e-learning courses.

A country like Brazil, with a high territorial area and socioeconomic disparities, has the e-learning teaching modality as one of the alternatives for accessing public higher education. Thus, democratic management with social reference enhances the teaching and learning processes in the e-learning and face-to-face modality, offering valuable materials, training and technology to the federal university community.

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