Implementation of an Institutional Digital Repository for Managing the Information and Communication of the Technical and Scientific Output of Faculdade Pernambucana de Saúde

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ABSTRACT

Context: The advancement of scientific knowledge has always been intrinsically linked to fostering research development and to the environment in which that knowledge is disseminated. In this context, Institutional Digital Repositories (IDRs) offer a key alternative for promoting scholarly communication and managing an institution's scientific output. Purpose: This study aimed to describe the development and implementation stages of an IDR at the Faculdade Pernambucana de Saúde (FPS). Methodology: Creating the Repository involved a series of political, legal, educational, cultural, and technical activities. The initial stage focused on researching IDRs and identifying a suitable platform for the institution, alongside forming the project team. In the second stage, the chosen repository software was installed. The third stage involved implementing the repository and launching the platform. Results: Following implementation, the team produced a technical report and an instructional video to promote the Repository and highlight its importance to the institution's academic community. The video was subsequently made available on the institution's website and social media platforms. Conclusion: This research underscores the importance of actions designed to organize and facilitate the retrieval of the institution's technical-scientific output. The resulting tool helps bridge the gap between in-person and remote academic engagement.

Keywords: institutional digital repositories; technical-scientific production; DSpace.

INTRODUCTION

The advancement of research, together with technological innovation, has significantly influenced the emergence of Institutional Digital Repositories (IDRs) and the dissemination of technical-scientific production. In the 1990s, initiatives such as the Open Archives Initiative (OAI) and the Open Access Movement (OAM) made it possible to ensure free access to diverse content within standardized frameworks governed by rules that guarantee the reliability of published materials (Xavier, 2019; Murakami; Fausto, 2013).

In Brazil, as in other Latin American countries, investment in research has grown within academic institutions, and one of the most common channels for disseminating such content has been the implementation of IDRs (Afonso et al., 2011).

By centralizing the storage, dissemination, visibility, and accessibility of scientific output, IDRs act as tools of informational mediation, connecting institutions and authors through the sharing of technical-scientific production. The educational assets of a higher education institution can therefore be managed and accessed by a wide range of users through these repositories (Murakami; Fausto, 2013; Gama; Carvalho, 2017).

Implementing an IDR within an institution also encourages external researchers to engage with its graduate programs and expands access to its academic resources (Xavier, 2019; Gama; Carvalho, 2017).

In the health sciences, such as in the institution examined in this study, IDRs are essential for preserving scientific memory, fostering the production and dissemination of technical-scientific output, and strengthening specialized education (Paredes-Parada, 2018).

The Faculdade Pernambucana de Saúde (FPS), a higher education institution specializing in health, maintains a university library that provides a range of services, including the organization, cataloging, preservation, and dissemination of the institution's technical-scientific production.

The Professor Ary Diniz Library is responsible for organizing, cataloging, providing access to, and disseminating all institutional technical-scientific output. According to Caribe (2017), the objectives of specialized libraries must align with the mission, vision, and strategic goals of the institutions they serve.

Gutiérrez, Ibarra, and Montoya (2014) emphasize that "making information available" extends beyond creating or disseminating materials or open resources – it entails ensuring that these resources are effectively used by the community, thereby generating value, fostering development, and promoting knowledge exchange.

IDRs play a crucial role in transforming scientific communication by expanding access to research, reducing the dominance of academic journals, lowering institutional costs, and enhancing the visibility of the institutions and libraries that maintain them. They are even considered indicators of institutional quality, as they reflect the scientific, social, and economic relevance of research and confer visibility, status, and public value upon the institution (Freitas, 2015).

Although journal publication remains the most sought-after dissemination channel due to its prestige and impact, it often involves lengthy submission processes and high costs (Freitas, 2015). In this context, dissemination channels such as IDRs play an important role in broadening the reach and impact of scholarly output at both national and international levels (Leite, 2018).

It is therefore essential that institutional technical-scientific materials, once validated and registered, be made available online—whether through open or restricted networks—and, ideally, be integrated into IDRs (Leite, 2018; Shintaku; Vidotti, 2016).

The planning, creation, and management of an IDR require the collaboration of a multidisciplinary team composed of librarians, information analysts, archivists, departmental administrators, and institutional researchers. Such cooperation ensures the recognition, participation, and support of the academic community. Without these prerequisites, a repository—whether institutional or thematic—is unlikely to be sustainable over time (Ribeiro-Junior *et al*., 2012; Leite, 2009).

Thus, IDRs systematize the technical-scientific output of an institution or field of study and offer a wide range of benefits not only to researchers but also to other institutions and scientific societies. They enhance the visibility of research results and contribute to preserving institutional scientific memory (Almeida, Oliveira & Rosa, 2019).

In light of these considerations, this study sought to implement an IDR to support the dissemination and management of technical-scientific information in the field of health at the Faculdade Pernambucana de Saúde. To this end, it describes all the stages involved in the creation and implementation of an IDR, along with the essential requirements for its establishment and maintenance.

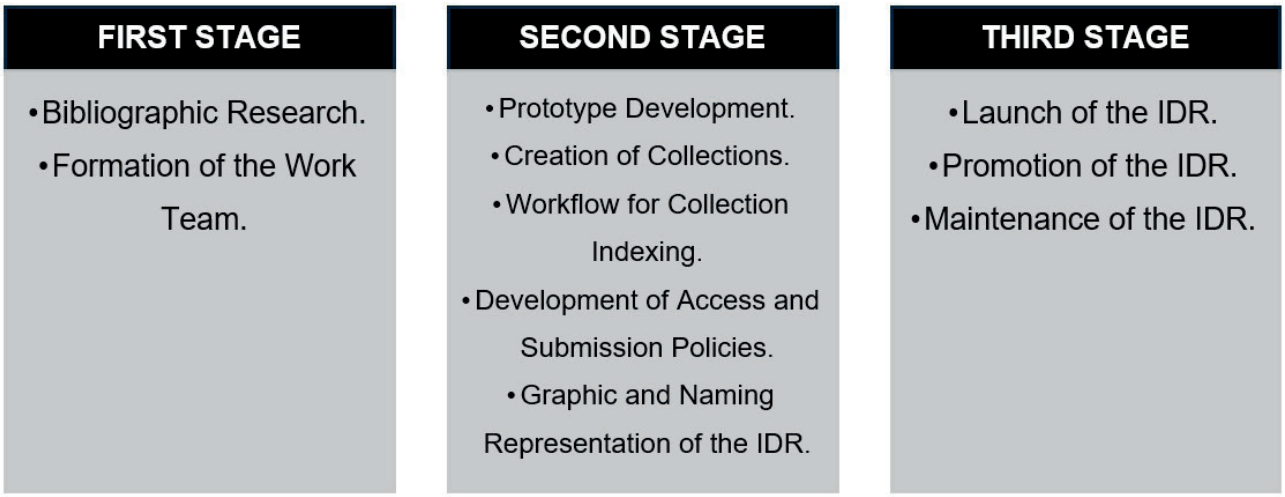
MATERIALS AND METHODS

This study constitutes a technical production classified as a product development project. It was carried out at the Faculdade Pernambucana de Saúde (FPS), a private, nonprofit higher education institution maintained by the Associação Educacional de Ciências e Saúde. FPS was founded on August 30, 2005, through a partnership between the Instituto de Medicina Integral Professor Fernando Figueira (IMIP) and Faculdade Boa Viagem. It is located at Av. Mascarenhas de Morais, 4861, in the Imbiribeira district of Recife, Pernambuco (FPS, 2020).

The research was developed by the coordination team of the Biblioteca Professor Ary Diniz at FPS, also located in Recife. The pilot project for the Institutional Digital Repository (IDR) was conducted between 2019 and 2021. The planning and execution timeline was divided into three stages, as illustrated in the flowchart below (**Figure 1**):

To carry out these stages, a method adapted from Leite (2009) and Baggio (2016) was applied, as illustrated bellow:

Figure 1: Organizational flowchart for the implementation of the IDR



Source: Adapted from Leite (2009).

FIRST STAGE

The first stage involved research on IDRs, identification of the system best suited to FPS, and the assembly of the project team. The team comprised the following professionals:

- One librarian, responsible for organizing, describing, and indexing materials in the IDR;
- One library assistant, who supported document entry;
- One Information and Communication Technology (ICT) professional, responsible for providing software implementation support;
- One visual designer and one marketing professional, responsible for layout design;
- Two researchers, who coordinated the project and oversaw its technical and methodological development.

Following Baggio's (2016) recommendations, a Management Committee was established, composed of members of the IDR management team and institutional leadership, to oversee the process and define policies formalizing the activities carried out by the working group. This Management Committee, appointed through an official directive, included the Institution's Director and Academic Coordinator, the Coordinators of the Lato and Stricto Sensu Graduate Programs, the Librarian, the ICT Manager, and one staff member designated by the Secretariat.

SECOND STAGE

Developing the IDR required a series of political, legal, educational, cultural, and technical actions, carried out concurrently with bibliographic research between November 2019 and May 2021.

During this stage, the software selected for creating the IDR was installed. The *DSpace* system was chosen because it met the essential requirements for archiving publications, managing access levels, indexing content for search engines such as Google, and supporting the upload of multiple document formats (Gonçalves, 2013).

As an open-source platform, *DSpace* offers several advantages, including reduced development time and lower human and financial resource demands, allowing greater investment in customization (Gonçalves, 2013). It supports open-access repository implementation and has the largest community of users and developers worldwide. Fully customizable, it accommodates a wide range of content types and formats, including books and book chapters, theses, dissertations, photographs, artworks, audio recordings, and videos. After selecting the platform, the next step was designing the user interface and adapting the features available in *DSpace*.

The research began with a survey of other institutional repositories. To refine the search criteria, parameters were defined to identify relevant examples. For national IDRs, the study focused on those using *DSpace* and maintained by institutions that had achieved scores of 7 or 8 in the most recent four-year evaluation conducted by CAPES (CAPES, 2019).

For international repositories implemented in *DSpace*, the selected examples were drawn from the *Ranking Web of Universities: Webometrics ranks 30,000 Institutions* (2025). This ranking was chosen because it includes institutions that promote online publication, open access to scientific research, and the dissemination of academic materials.

Among the national and international IDRs analyzed, the following aspects were prioritized: layout customization, field organization, collection structure, search bar placement, adherence to institutional standards, repository naming conventions, accessibility of usage policies and informational materials, and the types of accessibility tools and resources available.

These analyses were conducted between December 2020 and February 2021 with the collaboration of FPS's Distance Learning, Information and Communication Technology (ICT), and Marketing departments

After this research phase, the feasibility of adopting DSpace for the IDR's implementation was assessed through the development of a prototype repository. This prototype enabled the verification and adjustment of specific aspects related to content submission and administrative control. It also recovered the institution's scientific production history by reviewing previous undergraduate thesis projects, leading to the creation of the *Repositório de Trabalhos de Conclusão de Curso da FPS*[1].

Once the platform and its functionalities were validated, the next step was to define the standard content for the institutional IDR. DSpace organizes indexed content hierarchically into communities, subcommunities, collections, and subcollections. Communities represent the highest informational level within a repository and do not directly contain digital content, while subcollections correspond to the final level, potentially nested within multiple structural layers.

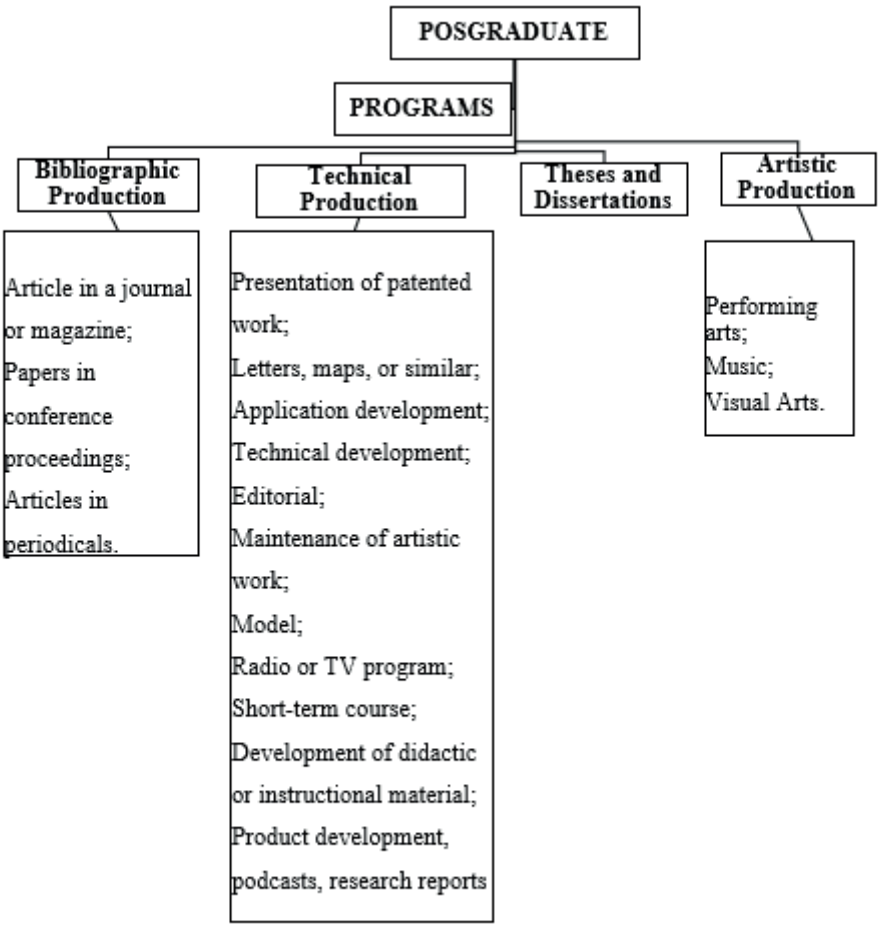
1 Available at: https://tcc.fps.edu.br/.

The IDR developed in this study adopted an academic organizational structure. Accordingly, FPS's institutional publications and its *Stricto* and *Lato Sensu* graduate programs were designated as the main communities, while the respective graduate courses formed the subcommunities.

To establish the collections, a mapping of cataloguing instruments from national funding agencies was conducted, following the Manual de Utilização e Preenchimento do Currículo Lattes available on the Plataforma Lattes of the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (Luvizotto, 2011).

The fields for the defined subcollections were based on the technical-scientific production categories found in the Currículo Lattes structure on the Plataforma Lattes for each community of the IDR. This structure was proposed for the graduate program communities, as shown in the figure below:

Figure 2: Structure of the composition of communities, subcommunities, collections, and subcollections of the Lato and Stricto Sensu Graduate Programs.

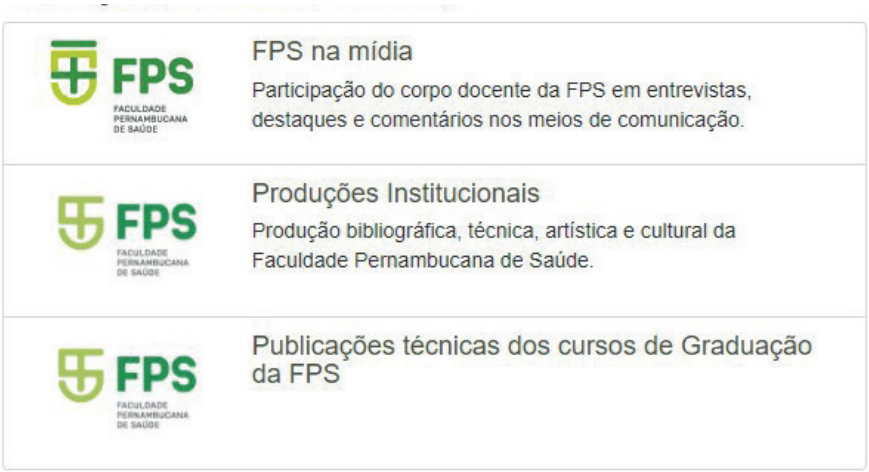


Source: Prepared by the authors, 2021.

For the Institutional Publications community, subcommunities were created to represent the typologies of institutional publications.

The community titled Institutional Publications of FPS had its subcommunities defined according to the types of collections based on the formats of materials produced by the institution and/or by FPS faculty members, as shown in the figure below, which presents a section of the IDR platform.

Figure 3. Structure of the composition of the Institutional Publications of FPS community and its subcommunities.



Source: Prepared by the authors, 2020.

Once these structures were consolidated, document submission began. To organize the content, all academic works were selected and arranged by program, class, and year, using records provided by the FPS Academic Secretariat archives. These were stored in a shared network folder organized by course, and files were named after the respective students.

As a result, a standardized workflow for submitting new works to the Biblioteca Professor Ary Diniz was established. In addition, an embargo period was defined, granting full access to deposited materials in the IDR two years after submission.

Regarding technical productions, defined here as videos, manuals, courses, forms, technical reports, and other materials produced by FPS faculty and students, their inclusion was a crucial step, as it provided institutional recognition for these materials and their educational value. This type of production is a requirement for the Mestre degree in Professional Master's Programs (Mestrado Profissional – MP) in the field of education, regulated by CAPES Ordinance No. 17/2009 (CAPES, 2019).

A workflow was also developed for incorporating these productions. Authors must submit their materials to the Library, requesting registration with the appropriate regulatory bodies according to the specific characteristics of each product. Two types of registration are applicable at FPS:

The International Standard Book Number (ISBN) is a unique numerical identifier that standardizes bibliographic and technical publications. It encodes information such as title,

author, country, and publisher, distinguishing editions of the same work. The International ISBN Agency coordinates this system and delegates responsibilities to national agencies; in Brazil, this role is performed by the Câmara Brasileira do Livro (ISBN, online).

A patent is a registration granted by the Instituto Nacional da Propriedade Industrial (INPI), a federal agency linked to the Ministério do Desenvolvimento, Indústria e Comércio Exterior. Law No. 9.279/96 regulates patents in Brazil, classifying them into two main types: Patente de Invenção (PI) and Patente de Modelo de Utilidade (PMU). The former protects novel inventions and technical solutions created by individuals, while the latter covers improvements or adaptations to existing processes or products (Brasil, 1996).

As a result of this process, faculty advisors and authors were able to submit their productions for ISBN or patent registration. Moreover, this practice increased awareness among researchers and the broader academic community of the importance of such registrations.

The materials included in the Institutional Publications community enabled FPS faculty, committed to their profession and to providing health services to the academic community, to gain visibility for their teaching, outreach, and service activities in health education. This community includes faculty interviews, media commentaries, participation in academic events, published works, institutional manuals, and videos, among others.

The next step involved defining the policy and workflow for future document submissions to the IDR. This was one of the most complex and demanding phases, as it required aligning policy development with the submission process for technical-scientific production.

The IDR Management Group conducted extensive discussions on the procedures involving students, graduate candidates, faculty members, and institutional departments. From these analyses and refinements, a new submission workflow was established:

- Email notifications are sent to specific groups according to the program or department responsible for certification, ensuring that multiple institutional stakeholders can confirm receipt of submissions;
- Cataloguing records are now created by librarians rather than graduate students, streamlining the process and reducing procedural steps;
- Stricter control over the completed Deposit Terms was established to facilitate easier access to embargoed works. To achieve this, a library staff member received specific training and capacity building. The entire workflow was documented, tested, and finally implemented in December 2020 in the form of Regulatory Documents, which were designed to provide a foundation and guidance on the legal procedures for depositing academic and technical productions as a whole.

This control process was essential for establishing digital curatorship of submitted documents and ensuring copyright compliance, as outlined in the IDR's usage policies. Because copyright issues often raise concerns among researchers due to their complexity, it was necessary to develop documents providing legal and procedural support for the repository's publication process (Freitas, 2015).

After all workflows were tested, documented, and finalized, the IDR's submission and usage policies were officially enacted in December 2020 through Regulatory Documents intended to clarify procedures and guide the legal deposit of academic and technical works.

Still within the second stage, the IDR was given a name. The project team reflected on a theme that would connect the repository's purpose with its symbolic meaning. The chosen name was Salus, in reference to the Roman goddess of health, cleanliness, and well-being, associated with disease prevention and the preservation of a healthy life (Wikipedia, online).

THIRD STAGE

The third stage involved the effective implementation of the IDR, including the planning and execution of the platform's launch. An instructional video was produced to formally introduce the repository and emphasize its relevance to the institution and its academic community.

This video was created as one of the technical outputs derived from the project. It was made available on the FPS website and the institution's social media channels upon completion of the implementation schedule.

The IDR was primarily disseminated through this instructional video, which aimed to promote the repository during pedagogical training sessions for faculty and orientation activities for students organized by the institution. Its purpose was to inform users about the workflows and available tools that support the technical-scientific production developed at FPS.

The figures below illustrate the initial and transitional layouts of the platform.

Figure 4 - Initial layout of the IDR

Source: Screenshot of the FPS Digital Repository, 2020.

FIGURE 5 - Transitional layout of the repository

Source: Screenshot of the FPS Digital Repository, 2021.

DISCUSSION AND RESULTS

The findings revealed that the processes involved in developing and implementing the Institutional Digital Repository (IDR) were directly linked to the activities of the Biblioteca Professor Ary Diniz at FPS, although these processes had not previously been fully developed, systematically structured, or properly documented.

This study underscored the importance of establishing an IDR at the Faculdade Pernambucana de Saúde within an innovative framework for access to and dissemination of its technical-scientific production, promoting open access to information, knowledge dissemination, and the advancement of scientific understanding. The study was exploratory and bibliographic in nature, with data collected through research on other IDR implementation experiences. It also encompassed processes of digital curation, management, and preservation of the institution's technical-scientific output by its faculty and students.

The Salus FPS repository marked a significant step forward by enabling the communication and dissemination of the institution's entire technical-scientific production, thereby enhancing the visibility of both FPS research and the professional activities of its faculty members.

All research objectives were achieved through the completion of each stage of the project. A multidisciplinary team and a Management Group were established, the *DSpace* platform was selected for repository management, and its communities and hierarchical levels were defined following prototype testing. Access policies were created based on an analysis of prior submission workflows. The IDR was then named with careful consideration of its thematic identity and formally launched within the academic community.

During implementation, the study identified the need for several adjustments both during and after deployment. The main challenges involved workflow design and customization of the official repository, as numerous procedural revisions required prior authorization from the FPS administration before any platform modifications could proceed. For a time, the team was instructed to use only the default functionalities available in *DSpace*, with minimal layout standardization.

At this stage, improvement proposals were submitted to FPS's legal representatives. The most impactful customization was later approved and implemented, expediting the project's completion.

Beyond storing, organizing, preserving, and disseminating the institution's intellectual and technical-scientific output, the Salus FPS IDR also stands as a symbol of FPS's growing recognition among major higher education institutions that maintain digital repositories. It aligns with the standards established by research funding agencies such as CAPES, which emphasize the importance of such systems in the scientific knowledge production process.

The technical outputs developed through this research not only support similar future initiatives but also promote the repository within the academic community, extending its visibility to external users.

The IDR has also become an additional communication channel that publicizes the institution and its publications, enhancing their visibility and relevance for users. It is accessible through the FPS website and can be independently reached via any browser on multiple devices (computers, smartphones, or tablets).

The dissemination of the Salus FPS repository has enabled the institution to monitor access metrics, assess user engagement, and evaluate platform visibility. To ensure that the repository's development and maintenance remain a priority—given its central role in information dissemination and impact—the project team maintains an ongoing commitment to platform upkeep and improvement. The team continues to monitor updates and remains dedicated to providing an optimal navigation experience within the institutional environment. Data entry will be continuous, accompanied by periodic updates to the platform's layout to maintain dynamism and user relevance.

Finally, this study reinforced the importance of actions that foster the organization and retrieval of scientific and technical information produced at FPS, demonstrating that the repository serves as a valuable tool bridging the gap between on-site and remote academic engagement within the institutional community.

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