PORTRAIT OF MEDIA LABS: a framework for creating university media labs in Brazil

RETRATO DOS *MEDIA LABS:* um framework para criação de laboratórios de mídia universitários no Brasil
RETRATO DE LOS *MEDIA LABS*: um framework para creación de laboratorios de medios universitarios en Brasil

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ABSTRACT
This article argues that media labs are a tool to generate innovation in both public and private sectors, as they act as spaces for experimentation and interdisciplinary practices. Through descriptive-exploratory research and semi-structured interviews with representatives of Brazilian university media lab, this article aims to characterize university media labs and identify human, physical and organizational conditions to create a media lab. The main result of the research is the proposal of a conceptual framework that portrays such conditions.

KEYWORDS: media lab; framework; university; media innovation.

Introduction

Contemporary society lives in a context of search for knowledge mediated by technology. Hassan (2014) points out that, at the same time, technology represents a differential and an obstacle, as current approaches to dealing with complex social challenges are not working. On the other hand, the author highlights that society is looking for social innovation, there is a large number of people engaged in change initiatives, resources are being invested in these initiatives and the costs of acquiring technology are decreasing. This scenario allows the reappearance of social learning laboratories.

According to Hassan (2014, p. 2) there are already technical laboratories to solve scientific problems, but what society needs is social laboratories to solve urgent social challenges. Such structures have already proven to be the key factor to better develop a culture of innovation at the industry to pursue new solutions (HAASE, 2000), working as important actors to stimulate teaching, research and extension, in universities, to

promote innovation, in private companies and, to encourage connection with stakeholders, in third sector initiatives.

Among the types of social labs, there are living labs, maker labs, hacklabs, fab labs and media labs, the latter being the object of study in this article. Media labs present themselves as egalitarian workspaces, where users put their resources and skills at the service of the community to develop experimental projects that otherwise would not be possible. Social laboratories can be academic, public and professional according to the classification of Aguiar et al. (2017). Media labs can be classified into industrial, artistic, university and citizen, according to Tanaka (2011).

Regardless of the format, the goal of a media lab remain the same: to articulate opportunities, interests and skills. In these spaces, creative work has priority over commercial interests and the social benefit is materialized in sustainability strategies (VILLA, MARULANDA E MOLINA, 2020, p. 232). Particularly in Brazil, academic media lab prevails. The survey by Pinto (2020) identified that based on 82 universities analyzed in the survey, about 32% have some type of media lab. Among these number, 4 are located in the South; 11 in the Southeast; 2 in the North; 5 in the Northeast and 4 in the Midwest. It was also found that university laboratories have a greater degree of maturity and articulation.

As aforementioned, this article investigates the practice of media labs in Brazilian universities as a way to solve problems in the regions they operate in. The objective is to propose a conceptual framework that lists the physical, human and organizational elements that must be considered for the creation of a media lab in the university context. The first part addresses the theoretical foundation on the theme of media labs, emphasizing the concept of university media labs; the second deals with the methodology used to develop the article, the descriptive-exploratory research and the third part contains the research results - obtained through semi-structured interviews with representatives of media laboratories in Brazilian universities - and the proposal of the conceptual framework.

Theoretical foundation: what is a media lab?

Media labs are a significant framework for innovation, but they cannot be replicated in essence as they incorporate local factors and are influenced by them. They may assume a myriad of forms, are located in industry and academia, are open, interdisciplinary and, more importantly, they focus on immediate innovation using user-centered innovation approaches (Mills and Wagemans, 2021, p. 1).

The original media lab was created at the Massachusetts Institute of Technology (MIT) in 1985, leading to similar initiatives elsewhere. Since then, according to Martín and Mellado (2016), they stopped being media and technology laboratories to become citizen mediation laboratories, mainly focusing on mediating interdisciplinary cultural practices. The most important characteristic of the media laboratory, especially those located in innovation environments, is the ability to be a laboratory centered on people (HAASE, 2000).

In this regard, Fonseca (2015) emphasizes that the social experimentation laboratories in this field are places where activities are carried out in frontier areas between cultural expressions and technology, between art and science, and between experimentation and the market. Nunes (2020) strengthen that these structures are characterized by adopting a broad concept of media and, thus, the challenges addressed can be the very diversified. This breadth is related to the adoption of the fundamental concept of what is meant by media.

According to Perassi (2019), the media is composed of two dimensions, the first is the technical-physical dimension because the media is a technology that allows communication, which means, the media is the physical part of information that acts in a system that fulfills support, vehicle and channel functions. The second dimension is the sociocultural dimension, because the media configures a set of associated protocols or sociocultural practices that grow around technology (PERASSI, 2019, p. 62). This means that the "media" part of these laboratories is no longer focused on the concept of mass media, but on mediation (Martín and Mellado, 2016; Perassi, 2019).

The mediation laboratories are therefore framed in the structure of digital culture. Tanaka (2011) explains that media labs can materialize in different ways and, throughout the years, might have emerged in different places worldwide. What unites these various approaches is the principle of experimenting within a community setting; even though the focus is usually on technology, media labs usually focus on collaboration and creativity.

In addition, there are industrial laboratories, which are based on the research and development model supported by the industry; art and media labs use technology for artistic experimentation; university laboratories, on the other hand, are created in the university environment with a focus on innovation and entrepreneurship; while the so-called civic or citizen labs are focused on local communities and are socially involved in citizen participation with a do-it-yourself philosophy. Thus, the rapid democratization of technology transformed the media labs, which no longer have a technological profile, but a social perspective (TANAKA, 2011).

Pinto (2020), with the definitions of the aforementioned authors about the universe of media labs, conceptualized them as spaces for research and experimentation of interdisciplinary teams to solve a collective problem, whether from a perspective of digital culture, of human relationship -machine, the circulation and consumption of information and the mediation itself. To reach this goal, Information and Communication Technologies (ICTs) are used. Thus, this is the definition of media lab that will be used in this article.

Theoretical background: the university media lab

Contemporary media labs have their primary origins in universities as they make room for experimentation. However, media labs can be found in different spaces of cooperation, in private companies and in communication vehicles. This is because "its scope is as diffuse as its focus can be, and its formal and format specifics are as dispersed as its borders". However, the integration between research, the market and experimentation remains a common feature between these structures (NUNES, 2020, p. 119).

Villa, Marulanda and Molina (2020) state that media labs play an essential role in education due to their didactic potential for the development of an active view of the student during learning processes. Another important point is that media labs present themselves to the academic community as platforms for reflection and action on the future of university education. With a casual style, they take advantage of the possibilities offered by open and connected digital environments to seek more open, flexible and inclusive spaces.

For ESPM SP (2021), the university media lab is a laboratory that investigates, through basic and applied research, the main changes in contemporary communication and digital culture. It is a space that produces original studies for different segments of society and a hub of knowledge that brings together the academic and market universes. For the purpose of conceptual clarity, the ESPM definition of university media lab will be used in this article.

These platforms: (1) open a great door to learn and make it easy for students to access media content as part of their education, (2) earn knowledge to build initiatives with which "we seek to learn by learning", (3) offer spaces to hit and miss, to innovate, design, research and develop new products and (4) present significant examples of methodological progress in educational environments, where technology is seen as an

ally to share and work collaboratively for the benefit of search for social solutions (VILLA, MARULANDA E MOLINA, 2020, p. 237-239).

Pinto's mapping (2020) helps to analyze the Brazilian university scenario according to media laboratories. The research identified that from 82 analyzed universities, 32% have a media lab and 50%, despite not having a media lab, have another type of innovation lab. Moreover, of the 15 best universities classified in communication courses according to the Folha University Ranking (RUF) 2019, 8 have a type of media lab. This survey is significant for this article because it provides input for choosing the non-probabilistic sample of the semi-structured interview, a methodology used in the article - which will be further explained in the Methodology.

According to Pinto (2020), the media laboratories of the analyzed universities have some characteristics in common, such as: problem-oriented, little or no boundaries between areas of knowledge and focused on social impact. The author analyzed the lines of research, projects and activities of the media laboratories from 26 universities that have such environments and developed a geographical conceptual map related to the type of research developed and the Brazilian region, as shown in Figure 1.

Figure 1 Conceptual map of media labs research practices divided by region in Brazil.

Mapa conceitual por região brasileira

Source: Pinto (2020).

It is noticed that the keywords "social networks" is present in the five Brazilian regions and concepts such as virtual reality, augmented reality, games, digital humanities, virtual communities, big data, communication, audiovisual, contemporaneity, smart cities, immersion, journalism, technology and design. Also, they appear in more than one region. Thus, it is possible to affirm that Brazilian universities outline, even unintentionally, an agenda with common elements: collaboration, digital humanities, digital culture, relationship between hardware and software, interdisciplinarity, entrepreneurship and innovation (PINTO, 2020, p. 14).

Theoretical foundation: media labs goals

Social labs are platforms created to face social challenges. For Hassan (2014), they are divided in: (1) a social perspective that brings people together with different experiences and approaches to work together with government, civil society and the business community, (2) an experimental perspective in which the team deals with

cyclical creation processes, with prototyping and managing a portfolio of promising solutions, and (3) a systemic perspective, working on the generation of prototypes that can solve major challenges in order to address the root cause of "why aren't things working?".

Generally speaking, a media lab aims to (1) product development for any revenue generation; (2) to create new processes and skills, (3) to request a change in attitude, and (4) to generate social impact beyond the organization or institution. (NUNES, 2020). Other motivations might be (1) to catalyze organizational change, (2) instill organizational learning, (3) change and realign attitudes, (4) leverage new technology markets, (5) try out new types of content, (6) create a safe environment for innovation and (7) develop new business models (NUNES and MILLS, 2019, p. 12).

In a background of digital skills being appreciated, media labs can be used to fill a social gap as they generaly build a bridge between academia, industry and society. And, within this context, universities play a fundamental role to give prominence to the media labs.

Methodology

The research strategy of this article is descriptive-exploratory research as it allows, at the same time, greater familiarity with the problem and the description of characteristics. For Gil (2002, p. 111) the phases of a descriptive-exploratory survey involve 1) specification of objectives, 2) operationalization of concepts and variables, 3) elaboration of the data collection instrument, 4) instrument pre-test, 5) sample selection, 6) data collection and verification, 7) analysis and data interpretation and 8) presentation of results.

Following this indication, the first step was to specify the objectives of the survey, aligning with the research objectives, which are: "Characterizing and getting to know Brazilian university media labs" and "Identifying human, physical and organizational conditions for the creation of university media labs. The second stage was the choice of technique for data collection, the semi-structured interview, whose characteristics are basic questions supported by theories and hypotheses related to the research theme. This technique is favorable not only to the description of social phenomena, but also to their explanation and understanding of their totality, in addition to maintain the conscious and active presence of the researcher in the process of collecting information (TRIVIÑOS, 1987, p. 152).

The third step was the development of the data collection instrument: the question script. Manzini (2004) argues that the script serves as a guide for the researcher to organize the process of interaction with the interviewee. The objective of the data collection instrument in this article is to understand the characteristics of Brazilian university media labs and identify whether or not there are prerequisites for creating media labs. The fourth stage, pre-testing the instrument, was carried out after sample selection, with the first laboratory member interviewed.

The sample type is non-probabilistic. Fontanella et al. (2011) argue that the non-probabilistic approach is intentional. Such definition is made from the researcher's experience in the research field, into an empiricism based on reasoning instructed by theoretical knowledge of the relationship between the object of study and the corpus aimed to be studied. To select the sample, the survey by Pinto (2020) was used, which identified that universities are the original place of media labs.

The hypothesis is that university laboratories have a greater degree of maturity and articulation. The objective of this step was to build a sample that would demonstrate the representativeness of each of the Brazilian regions. In total, 19 representatives of media labs were invited to participate in the survey. However, only 10 responded positively and were, in fact, interviewed - 2 laboratories in the South, Northeast and Midwest regions, 3 from the Southeast region and 1 from the North region. Board 1 identifies and describes the university media labs interviewed.

Board 1 List and summary of interviewed media labs.

Region	Media lab name	Media lab description
North	Incubadora de Linguagens Digitais - ILD (UFPA)	It promotes projects within digital languages aimed at the solidarity economy that aim to generate income and digital inclusion, sometimes aimed at traditional communities in the Amazon and people at risk, sometimes at the development of projects within the educational area aimed at inclusion social, the appreciation of the historical and cultural heritage and technological innovation
Northeast	Labcom (UFMA)	Develops projects on the frontier between Communication and Technology oriented to applied research and guided by the epistemological proposal of Design Science. The laboratory works with

		emerging technologies such as Augmented Reality, Virtual Reality, Internet of Things (IoT), Big Data and Artificial Intelligence exploring their application in Social Sciences and more specifically in the field of Communication
Northeast	Grupo de Estudos e Práticas Laboratoriais em Plataformas e Softwares Livres e Multimeios (Linklivre) - (UFRB)	It houses research and extension activities that involve the role of technology in contemporary society, its relationship with communication, multimedia, technologies and artistic production, training, production of subjectivities and cyberculture
Central-west	*Medialab* (UnB)	It involves socio-artistic and political issues in the context of art, science and technology carried out in close collaboration (partnership, consortium or service provision) with other research areas such as computer science, communication, mechatronics, biology and music, to propose innovative projects, artistic and technological interest to think about society today
Southeast	*Medialab* (UFG)	It is dedicated to research, development and innovation in interactive media, with a strong cultural, social and artistic performance, generating an impact on human and scientific development. The laboratory carries out research and technological innovation
Southeast	*Medialab* (UFRJ)	It turns to the intersections between technopolitics, subjectivities and visibilities. The laboratory also explores digital methods for analyzing and visualizing data in the field of humanities. The experimentation of different languages, methodologies and conceptual perspectives in the production and dissemination of our research seeks to make the laboratory permeable to the political and social urgencies of the present
Southeast	*Media lab* (ESPM)	It produces original studies for different segments of society and a knowledge diffusion center that brings together the academic and market universes. Currently, the laboratory is undergoing a redesign of purpose and model

Southeast	Laboratório de Informática Aprendizagem e Gestão (LIAG) - (Unicamp)	It integrates studies in the areas of information technology, learning and management in order to seek superior and differentiated results in three different areas. The goal is to be recognized as a laboratory with relevant academic results and strong interaction with the community
South	Proa *medialab* (Univali)	Center for research and development of content, formats and communication tools, mainly journalistic, aimed at the digital environment, with a focus on innovation and new technologies
South	Laboratório de Redes e Mídia (Remid) - (UEL)	It focuses on networks and digital media and conducts research in different areas such as Quantifying Information Security, Text Mining, Games, e-Health and Smart Cities

Source: The authors (2021).

The data collection and verification step involved conducting video interviews with the 10 laboratories. After transcribing the interviews, the categorization stage took place. Maxwell (2008) comments that categorization facilitates the development of a general understanding of what is going on, in addition to organizing and retrieving data to test and support the ideas generated by the research.

In this article, the categorization proposed by Nunes (2020) was used, namely: action axis, materialization of projects, type of innovation generated and laboratory objective in relation to the media context. Relevant topics were added to answer the work research question, such as funding sources, challenges and learning, and requirements to create media labs.

Categorization was performed using Excel software, with the aim of coding the respondents' contributions, making insights more easily extracted. Table 2 depicts each of the categories, with the exception of challenges and learning topics and media lab creation requirements, which will be explained later.

Board 2 Interview categorization.

Category	Topics
Axes of action	Games; Software or Hardware; Psychology; Arts and Technology; Broad media concept; Technology Business; Journalism; Education (Author, adapted from

	Nunes, 2020).
Financing source	University; Public notices; Private notices Partnership with the private sector; Donations; Sale of products or services (Authors, 2021).
Projects materialization	Digital tools, platforms or access channels, new businesses or revenue opportunities, new narrative forms, broad and contextual solutions (Nunes, 2020, p. 239).
Type of generated innovation	(1) Creative Innovation - Essentially creative-intellectual initiative impacting exclusively journalistic content/narrative and consumption; (2) Reflective innovation - Organizational or process innovation without technological mediation; (3) Exploratory innovation - Appropriation of technologies for production, distribution and/or consumption; (4) Generative Innovation - Development and implementation of functional innovation for production, distribution and/or consumption. This discussion dialogues with the issue of affordances, where functional development and implementation is related (Nunes, 2020, p. 239).
Laboratory goals concerning the media context	Create new products; Create or rethink processes; Propose a new position; Bring about social change; Propose changes in institutional values and/or business models (Nunes, 2020, p. 230).

Source: The authors (2021).

It is important to emphasize that both the stage of conducting and categorizing the interviews were essential to develop the basis for the creation of the framework proposed in this article. Through the transcription and codification of the interviewees' reports, classifying and associating the experience of the laboratories in common points, such as action axes, sources of funding, materialization of projects, type of innovation generated and laboratory objective, it was possible to design a prototype of model of the requirements needed to create a university media laboratory.
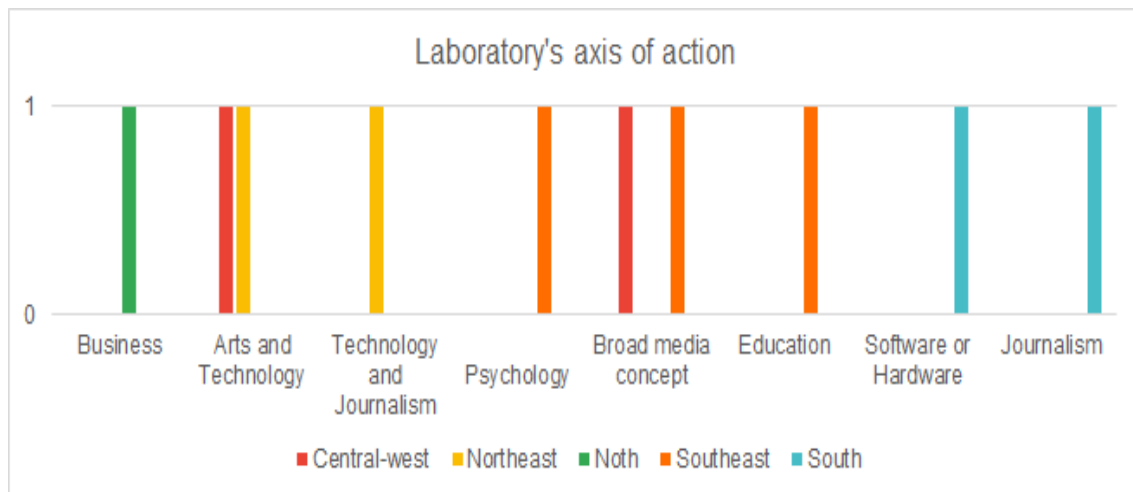
Interpretation and presentation of research results

As discussed in the previous topic, 10 representatives of media labs from Brazilian universities were interviewed and, although some are not characterized as media lab, they were considered as such because they fit the definition of university media lab, proposed in the topic of Theorical Foundation.

As a first result of the data analysis phase, it was identified that almost all laboratories were created in the last 15 years, with the except of Medialab UnB, which

was created in the 80s. Most laboratories (five) have between 5 and 15 members; three laboratories have between 1 and 5 members and two laboratories have more than 20. The labs' activity axis is diversified, with spaces dedicated to business and education, as shown in graphic 1.
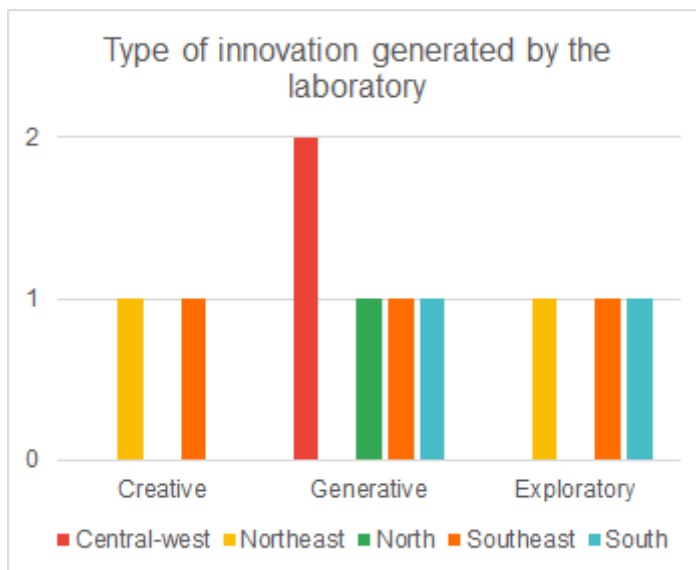
Graphic 1 Laboratory's axis of action.

Source: Authors (2021).

As for the financial sustainability of the laboratories, it was found that they all depend almost exclusively on the university's budget for the continuity of projects and research, seven make use of public notices and four also use public notices from private institutions. Only three laboratories have partnerships with the private sector for project development, Media lab UFRJ, Media lab UFG, and Remid. UFG's Media lab is the only one that has revenue diversification, which is made up of the university's budget, public and private notices, and partnerships with the private sector. As for the type of innovation generated by the laboratory, the result showed that the main one is the generative (2), as shown in graphic 2.

Graphic 2 Type of innovation generated by the laboratory.

Type of innovation generated by the laboratory

Source: Authors (2021).

In total, five labs develop and implement generative innovation that is functional for media production, distribution, and/or consumption - which in practice means applied research into media solutions. This is the case of the Digital Language Incubator (UFPA), which develops entrepreneurship projects for the Amazon region, LIAG Unicamp, which works with creative computing, educational tournaments, and computer classes for children from public schools in the region, of, Remid UEL, who carries out technology transfer and machine learning projects with companies in the region, Medialab UnB and Media lab UFG, both in the Midwest region, the laboratories develop partnerships for the application of research in the areas of art, science, and technology.
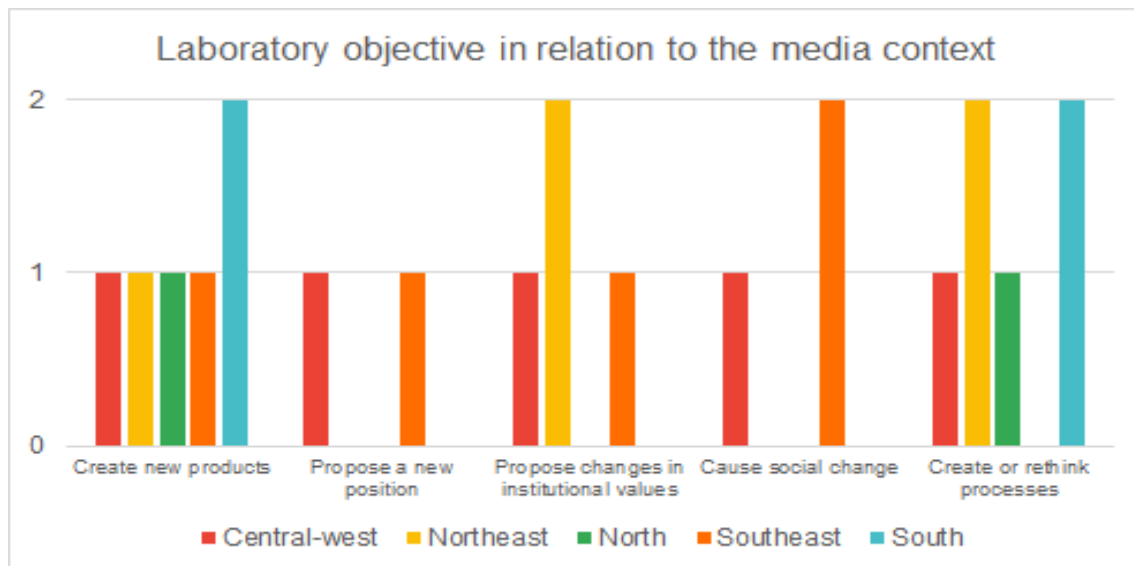
Exploratory innovation, conceptualized by Nunes (2020) as the appropriation of technologies for production, distribution, and/or consumption, is generated by the LabCom UFMA laboratory, through the appropriation of virtual reality, Internet of Things, Big Data, and Artificial Intelligence technologies for application in communication projects, by the Medialab ESPM laboratory through the connection between researchers and private initiative, with applied research and technology development, and by the Proa Media lab, through the use of information technologies in journalistic projects.

Creative innovation based on the creative-intellectual relationship for content/narrative and consumption is the type generated by the Media lab UFRJ, which conducts experiments in the field of forensic architecture, advocacy, and surveillance capitalism, also by LinkLivre, which has a research group dedicated to discussing the role of technology in contemporary society.

As for the laboratory's objective in relation to the media context, the interviews showed that most media laboratories in Brazilian universities are oriented towards the

creation of new products or processes. It is important to emphasize that, for categorization purposes, it was considered that a laboratory may have more than one objective, as shown in graphic 3.

Graph 3 Laboratory objective in relation to the media context.

Source: Authors (2021).

By interpreting the graph, it is possible to state that the laboratories' objective is in line with media innovation. Nunes (2020, p. 121) points out that laboratories are usually guided by experimental development research or applied research, which once again demonstrates the role of universities when it comes to media labs. In relation to the media, academic research on innovation tends to have two main perspectives: one that discusses the external factors (mainly technological) that shake the current structures, and another that focuses on new media innovation products (both in terms of new content and new platforms).

One of the semi-structured interview questions addressed the main challenges and learning of media labs since their creation. As challenges, the main points are in relation to bureaucracy, income diversification, and networking. Regarding learning, the use of agile methodologies for work management, interdisciplinarity, and research application was evidenced. Board 3 reveals the reports from each of the laboratories.

Board 3 Challenges and learning from laboratories.

Media lab name	Challenges	Learnings

ILD	(1) Lack of expertise in administration and market view, with the objective of measuring the impact of new technology on society; (2) It is not sustainable to rely solely on government and/or university resources. It is necessary to diversify the revenue. (Primary data of the author, interview carried out on 03/22/2021)	(1) The methodology (participatory design) is fundamental for the work to develop and the team needs to be open-minded. (Primary data of the author, interview carried out on 03/22/2021)
LinkLivre	Did not point (Primary data of the author, interview carried out on 03/01/2021)	Did not point (Primary data of the author, interview carried out on 03/01/2021)
LabCom	(1) Alignment of the new legal framework for research in innovation with funding possibilities since traditional forms has been greatly reduced. (Primary data of the author, interview carried out on 02/26/2021)	(1) Interdisciplinarity and active listening, as it is difficult to solve problems only from the perspective of an area of knowledge. The proposal is not a media or communication laboratory, but a laboratory that works with technology projects at the frontier of interdisciplinarity. (Primary data of the author, interview carried out on 02/26/2021)
Medialab UFRJ	(1) theoretical and methodological scope, which are not always studied; (2) More practical challenges, regarding the organization of the team itself in the projects and articulation between them. (Primary data of the author, interview carried out on 02/26/2021)	(1) Feeling of belonging and division of tasks brought more productivity to the team, facilitated project management and the digital presence of the laboratory began. As a result, the laboratory started to rely on people's feedback, organize events and produce content. (Primary data of the author, interview carried out on 02/26/2021)
Medialab ESPM	(1) The biggest challenge is to learn to work in a network so that the laboratory does not have a personalist character. Networked projects remain and are more stable, in addition to having a dynamic that allows for reverberation. (Primary data of the author, interview carried out on 03/02/2021)	(1) Construction of the marketplace for network collaboration and reformulation of the laboratory's objectives (Primary data of the author, interview carried out on 03/02/2021)
LIAG Unicamp	(1) Lack of diversity in partnerships and bureaucracy (Primary data of the author, interview carried out on 03/19/2021)	(1) Applied research with no intention of gaining anything from it. The goal is to see the technology working in practice. (Primary data of the author, interview carried out on 03/02/2021)
Remid UEL	(1) Maintain productivity and keep	(1) Diversification and search for

	an eye on the market, where there are many application possibilities; (2) Keep research grants active. (Primary data of the author, interview carried out on 02/26/2021)	partnerships and keeping the link active; (2) Appreciation of proximity to the laboratory's members, which gives more security to design a research strategy. (Primary data of the author, interview carried out on 02/26/2021)
Proa *Media lab*	(1) Deliver results to the community and lack of articulation with other teachers; (2) Reactive behavior in relation to the problems to be solved and (3) Lack of structure (Primary data of the author, interview carried out on 03/04/2021)	(1) Innovation is simpler than it sounds. (2) Apply technologies already available in other contexts (3) Let students produce on their own, with more freedom and autonomy. (Primary data of the author, interview carried out on 03/04/2021)
Medialab UnB	(1) Bureaucracy and institutionalization. (Primary data of the author, interview carried out on 03/22/2021)	(1) Decentralization of knowledge; (2) Transdisciplinary look at social issues. (Primary data of the author, interview carried out on 03/22/2021)
Media lab UFG	(1) Working as a team is a challenge due to the variety of backgrounds of the laboratory members; (2) Parasitic behavior of projects that do not bring resources; (3) Overcoming a certain convenience of people waiting for the money to do the project; (4) Create a proactive, collaborative culture. (Primary data of the author, interview carried out on 03/23/2021)	(1) The belief that "together we are stronger"; (2) Culture and technology are not made by isolated elements; (3) Networks are necessary for culture to take place correctly. (4) Collaboration, relevance. proactivity. (Primary data of the author, interview carried out on 03/23/2021)

Source: Authors (2021).

Finally, one of the most important points was the definition of requirements for creating a lab: eight labs agreed that there are requirements for creating a lab while two disagreed. Again, the relevance of the semi-structured interview used in the work methodology is highlighted as a way to obtain information to build a solid basis for the conceptual framework design.

ESPM's Media lab pointed out that "conceptual imprecision is part of the material object of media labs. The main thing is to know what you want, there is no cake recipe". LinkLivre commented that "we cannot think of a lab media as a room space, a computer lab, but as a concept, which basically needs the human being armed with technologies, to laboratory experiment with how to achieve goals and objectives, through "media", means that connect people to these experiences". In a way, the laboratories that

classified requirements for the creation of a media lab reached a consensus. Board 4 presents a summary of the main points indicated by them.

Board 4 Requirements for creating a media lab.

Requirements	Indication of which media labs
People with technical knowledge/understanding of the workforce available for project allocation	ILD; LIAG Unicamp
Teamwork	ILD; *Media lab* UFRJ; Remid UEL; *Media lab* UnB; *Media lab* UFG
Inter or transdisciplinarity	ILD; Proa *Media lab*; *Media lab* UnB; *Media lab* UFG
Project coordination/management	ILD; *Media lab* UFRJ; Remid UEL; Proa *Media lab*
Physical equipment and/or physical location	ILD; LIAG Unicamp; Remid UEL; Proa *Media lab*; *Media lab* UnB; *Media lab* UFG
Production and/or applied research	ILD; LIAG Unicamp; Remid UEL; Proa *Media lab*; *Media lab* UnB; *Media lab* UFG
Partnerships and networking	Proa *Media lab*; *Media lab* UFG

Source: Authors (2021).

The result of the semi-structured interview is in line with the theoretical basis brought by this work. Fonseca (2014) argues that media labs form a real circuit, made up of people who cooperate. In addition to collaboration, Nunes (2020) mentions the importance of a central mission; institutional support; deliverables, and defined results, and operating budget - although the interviewees did not mention it, this point of attention subjectively emerged among the challenges they pointed out. With the interpretation of the data performed, we turned to the construction of the conceptual framework, a section that will be presented below.

The conceptual framework for creating a media lab

Regoniel (2017) highlights that the conceptual framework is the researcher's understanding of how the particular variables in their study are connected. It is the researcher's "map" in the exercise of investigation. Preece et al. (2005) corroborate by stating that a conceptual framework is a set of ideas and concepts that interrelate to

describe how a system should behave, look, and be understood by users in an intended way.
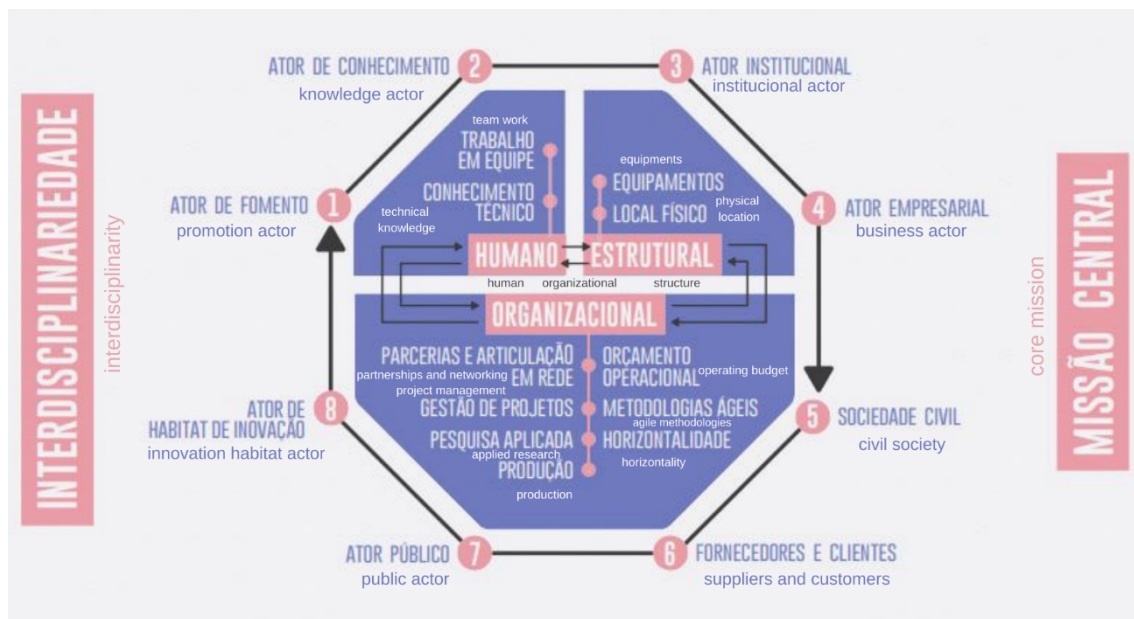
For Shehabudenn et al. (2000), the framework supports the understanding and communication of structure and relationship within a system with a defined purpose. It translates complex issues into a simple, analyzable format by describing the relationship between the elements of a system.

Unlike a model, the framework is a broad concept that can be used for modeling, it represents the researcher's synthesis on how to explain a phenomenon. According to Regoniel (2017), the construction of a framework encompasses some guidelines. Below, the guidelines and their application for the context of this article are specified.

● Choice of the theme: the creation of media lab;

● Literature review: the theoretical basis was based on a narrative review of literature on the subject, using scientific journals and productions cited by peers; in parallel, the semi-structured interview revealed several issues related to the media lab creation process;

● Isolation of important elements: common elements for the creation of media labs were identified, in the categorization of interviews and in the literature, and these were related to each other;

● Field Research: the realization of semi-structured interviews by video conversation served as micro field research. It was possible to bring to the development of the work a series of practical questions, challenges, and lessons that, after being analyzed, helped in the construction of the framework;

● Construction of the conceptual framework: this guideline takes into account the combination of elements identified in the literature and elements identified in interviews with representatives of media laboratories from Brazilian universities.

Following the guidelines mentioned above, the experience report of representatives of university media labs in Brazil, as well as their indications of what they understand by "requirements for creating a media lab", the conceptual framework for the creation of a university media lab was developed, whose result is shown in Figure 2.

Figure 2 Conceptual framework for creating a university media lab.

Source: Authors (2021).

The goal of the framework proposed in this work is to show, in a visual and didactic way, the elements to be considered for the creation of a university media lab. It is necessary to emphasize that the framework does not indicate the stages of implementation, as it is understood that the media lab maturation process happens in a fluid way and from the responses and involvement of the actors.

With this clarification made, a brief explanation of the composition of the framework is undertaken. The purple octagon is the base of the figure and represents the necessary interdisciplinarity for the composition of the media lab, an element that was pointed out both by the interviewees and by the literature review. The pink circles numbered from 1 to 8 represent each of the actors that make up the media lab and are necessary for its long-term survival.

The triple helix, made up of government, academia, and business, is essential to leverage innovation in ecosystems, as pointed out by Etzkowitz and Leydesdorff (2000). The triple helix is included in the actors represented in the pink circles, inspired by the study by Teixeira et al. (2016, p. 16), who identified the first seven actors of the innovation ecosystem presented below - the eighth was inserted by the authors of the article as a complement:

1.   public actor: institutions that provide mechanisms for programs, regulations, policies, and incentives;

2.   knowledge actor: educational and/or research and development institutions responsible for training people, promoting the entrepreneurial spirit, and creating future companies. It also includes researchers and students;

3.   institutional actor: public or private and independent organizations, providers of specialized assistance and knowledge to other agents involved with innovations;

4.   promotion actor: banks, governments, angel investors, virtual capitalists, and industries, providers of financing mechanisms for the building stages of the innovation ecosystem;

5.   business actor: companies that supply requirements for evaluating solutions, developing technologies, and knowledge in their research and development (R&D) departments.

6.   innovation habitat actor: environments that promote the interaction of local innovation agents, R&D developers, and the productive sector, collaborating to disseminate the culture of innovation and entrepreneurship in the region;

7.   civil society: individuals who create demands and needs in society, which may be environmental, profoundly affect business, and impact the development of innovation.

8.   Suppliers and customers: to compose the framework, one more actor was added representing the media lab's suppliers and customers, that is, the people who provide services and offer products to the media lab and/or the people who buy the media's products and services lab.

The pink squares symbolize the human, physical (structure) and organizational requirements for setting up a media lab. Such requirements were suggested by both the interviewees and the theoretical basis, according to the topic Interpretation and presentation of research results. The human requirement encompasses the technical and interdisciplinary knowledge of the team and the teamwork itself, necessary for a better development of projects. The structural requirement takes into account equipment such as computers and other technologies (printers, machinery, etc.) necessary for the application of the research. As noted by Media lab UnB, "bad equipment does not do good research".

The organizational requirement, in turn, demonstrates the organizational and cultural aspects of creating a media lab. The operational budget stands out, an element mentioned by Nunes (2020) as being the necessary resource for investment in human capital and technologies to test, share, and potentially scale the results of the media lab. Horizontality has its basic principle in a structure without valuing power relations. As the

name shows, it opposes vertical management (derived from hierarchy) as a more participatory form.

Agile methodologies are necessary to manage media lab projects in order to increase production and partnerships with stakeholders. Nunes (2020) cites some as Design Thinking, a method created by IDEO to create concepts and products that meet user and business requirements; Agile, a method to manage projects and develop products in an evolutionary and iterative way; Lean, a method that seeks to take the team from problem identification to prototype for user feedback in four days and Hacks, a method to develop people to solve problems and prototype at a certain pace, hacks are regularly deployed by commercial labs and environments academics.

Finally, the double arrow beside the octagon highlights a cyclic feedback loop, that is, each actor and each requirement plays a fundamental role not only in the creation but in the sustainability of a media lab. The octagon, in turn, works flawlessly when all the elements are aligned and in tune. The double arrow also reflects an elementary point for the creation of a media laboratory: central mission, which is the ability to articulate a fundamental objective to be understood by its actors, helping the laboratory team to gain strength and start working immediately (NUNES, p. 14).

In an increasingly competitive context, in which it is necessary to train professionals with skills to produce practical work, with interdisciplinary teams and with the flexibility to adapt to a constantly changing labor market, the role of the laboratory can be increasingly significant (VILLA, MARULANDA AND MOLINA, 2020, p. 232).

The research by Villa, Marulanda, and Molina (2020) on media labs in universities already indicated that media labs can help to close the gap between study and practice in higher education institutions, incorporating in their projects interdisciplinary teams capable of crossing academic needs with social and technical development. Thus, the framework proposed by this research contributes so that more educational institutions can organize themselves and add to the media labs' agenda. The 10 laboratories studied by this work can be inspiring for the development of new ideas, approaches, and methods that aim to solve social problems.

Final remarks

As pointed out by Pinto (2020), Jenkins' (2009) knowledge revolution, also provided by the media labs, is not merely a technological process, but a social one - and for this reason, it must be interdisciplinary. This article showed that actors in technological sectors have high potential to promote innovation through applied

research, knowledge transfer between universities and other agents of society, ecosystem connection from the perspective of the media in its broad concept of mediation - or that is, with a media laboratory, something that does not only exist in universities but also in Brazilian innovation ecosystems.

Because they are anchored in cooperation and experimentation, media labs have spacious "umbrellas" that relate to applied research and creative practice. Despite their flexible structure, they can assume more homogeneous faces and act with a focus on solving a specific problem in the short and medium-term. Capoano (2016) describes that the integration of knowledge generates new perspectives that would not be possible before the use of education and communication technologies and that knowledge is born from the multiplicity of possibilities that a creative environment can generate. The first step to build this creative environment can be taken with the conceptual framework for creating a university media lab, presented as the main result of this research.

References

CAPOANO, E. *Media lab*s de Jornalismo no Brasil: conceitos, tendências e desafios para uma proposta nacional. Revista Comunicação Midiática (Online), Bauru, SP, v. 10, n. 3, p. 221-231, set. 2015.

ETZKOWITZ, H.; LEYDESDORFF, L. The dynamics of innovation: from national systems and "Mode 2" to a Triple Helix of university-industry-government relations. Research Policy, v. 29, p. 109-123, 2000.

FONSECA, F. Laboratórios Experimentais: espaços em branco na educação formal. Em Aberto, v. 28. Brasília, jul./dez. 2015.

FONSECA, F. S. Redelabs: laboratórios experimentais em rede. 2014. Dissertação (Mestrado em Divulgação Científica e Cultural) - Instituto de Estudos da Linguagem, Universidade Estadual de Campinas, Campinas, 2014. Disponível em: <http://repositorio.unicamp.br/bitstream/REPOSIP/268901/1/Fonseca_FelipeSch midt_M.pdf> Acesso em: 15 de mar. de 2021.

FONTANELLA, B.; RICAS, J.; TURATO, E. Amostragem por saturação em pesquisas qualitativas em saúde: contribuições teóricas. Cadernos de Saúde Pública, [S.L.], v. 24, n. 1, p. 17-27, jan. 2008. FapUNIFESP (SciELO). http://dx.doi.org/10.1590/s0102-311x2008000100003.

GIL, C., A. Como Elaborar Projetos de Pesquisa, 6ª edição. São Paulo, Atlas, 2002.

HAASE, K. Why the *Media lab* works: A personal view. IBM Systems Journal, v. 39, n. 3- 4, p. 419-431, 2000. Disponível em: <https://dl.acm.org/doi/10.1147/sj.393.0419>. Acesso em: 15 de fev. de 2020.

ESPM SP. *Media lab* ESPM SP, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <https://pesquisa.espm.br/pesquisa-espm/nucleos-de-pesquisa/espm-media-lab/>. Acesso em: 22 de fev. de 2021.

HASSAN, Z. The Social Labs Revolution: a new approach to solving our most complex challenges. San Francisco: Berret-Koehlet Publishers, 2014.

JENKINS, H. Cultura da convergência. São Paulo: Aleph, 2009.

MANZINI, E. Entrevista semi-estruturada: análise de objetivos e de roteiros. Seminário internacional sobre pesquisa e estudos qualitativos, 2004. Bauru: USC, 2004. ISBN: 85-98623-01-6. 10p. Disponível em:

https://www.marilia.unesp.br/Home/Instituicao/Docentes/EduardoManzini/Manzini_2004_entrevista_semi-estruturada.pdf> Acesso em: 01 de fev. 2021.

MARTÍN, J. M.; MELLADO, J. R. Los cuatro ejes de la cultura participativa actual. De las plataformas virtuales al *medialab*. Revista Icono14 Revista Científica de Comunicación y Tecnologías Emergentes, [S.L.], v. 14, n. 1, p. 95-122, 1 jan. 2016. Asociacion Cientifica ICONO14. http://dx.doi.org/10.7195/ri14.v14i1.904.

MAXWELL, J. A. Designing a qualitative study. In: BICKMAN, L; ROG, D. (Ed.) Handbook of Applied Social Research Methods. Thousand Oaks CA: Sage, 2008. p. 214-253.

MILLS, J., & WAGEMANS, A. (2021). Media labs: Constructing journalism laboratories, innovating the future: How journalism is catalysing its future processes, products and people. Convergence. https://doi.org/10.1177/1354856521994453

NUNES, A. C. B. O que é inovação em mídia e jornalismo? Uma análise de *media lab*s e seus projetos. 333 f. Tese (Doutorado em comunicação social em regime de cotutela com a Universidade da Beira Interior) - Escola de Comunicação, Artes e Design - FAMECOS Programa de Pós-graduação em Comunicação.

NUNES, A. C. B; MILLS, J. (2019). Media Labs. WAN-IFRA Trends in Newsroom, 2019. Retrieved from:https://wan-ifra.org/wp-content/uploads/2020/09/WAN-IFRA_TIN_MediaLabs.pdf

PERASSI, R. Mídia do Conhecimento: Ideias sobre mediação e autonomia. Florianópolis, SC: SIGMO/UFSC, 2019.

PREECE, J.; ROGERS, Y.; SHARP, H. Design de Interação: Além da Interação Humano-Computador; Porto Alegre: Bookman, 2005.

PINTO, L. Os *media lab*s nas universidades brasileiras: mapeamento de espaços interdisciplinares e de promoção da cultura digital. In: CONGRESSO BRASILEIRO DE CIÊNCIAS DA COMUNICAÇÃO, 43., 2020, Virtual. Anais Intercom – Sociedade Brasileira de Estudos Interdisciplinares da Comunicação 43º Congresso Brasileiro de Ciências da Comunicação – VIRTUAL – 1º a 10/12/2020. Bahia, 2020. p. 1-15. Disponível em: <http://www.intercom.org.br/sis/eventos/2020/resumos/R15-0665-1.pdf>. Acesso em: 01 fev. 2021.

REGONIEL, P. Conceptual *Framework*: A Step by Step Guide on How to Make One. Simplyeducate.me. 5 de jan. de 2015. Disponível em: <http://simplyeducate.me/2015/01/05/conceptual-*framework*-a-step-by-step-guide-onhow-to-make-one/>. Acesso em: 15 de fev. de 2021.

SHEHABUDDEEN N., PROBERT D., PHAAL R., PLATTS K. Representing and approaching complex management issues: part 1 - role and definition (Working Paper), Institute for Manufacturing, University of Cambridge, UK. CTM2000/03, ISBN: 1-902546-21-0, 2000.

TANAKA, A. Situating within Society: Blueprints and Strategies for *Media lab*s. In: PLOHMAN, A. (Ed.). A Blueprint for a Lab of the Future. Eindhoven: Baltan Laboratories, 2011.

TEIXEIRA, C.; TRZECIAK, S.; VARVAKIS. ECOSSISTEMA DE INOVAÇÃO: alinhamento conceitual: [recurso eletrônico}. Florianópolis: Via Ufsc, 2017. 24 p. Disponível em: <http://centrosdeinovacao.sc.gov.br/wp-content/uploads/2020/01/11.Ecossistema-de-inovacao-Alinhamento-Conceitual.pdf>. Acesso em: 06 de abr. de 2021.

TRIVIÑOS, A. Introdução à pesquisa em ciências sociais: a pesquisa qualitativa em educação. Atlas, 1987.

UEL. Remid, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <http://www.uel.br/grupo-pesquisa/remid/>. Acesso em: 22 de fev. de 2021.

UFG. *Media lab* UFG, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <https://www.*medialab*.ufg.br/>. Acesso em: 22 de fev. de 2021.

UFMA. LabCom, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <https://www.labcomdata.com.br/>. Acesso em: 22 de fev. de 2021.

UFRB. LinkLivre, 2021. Conteúdo sobre o grupo de pesquisa. Disponível em: <https://www2.ufrb.edu.br/linklivre/>. Acesso em: 22 de fev. de 2021.

UFRJ. *Media lab* UFRJ, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <http://*medialab*ufrj.net/>. Acesso em: 22 de fev. de 2021.

UNB. *Media lab* UnB, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <http://*medialab*.unb.br/index.php/o-*medialab*/>. Acesso em: 22 de fev. de 2021.

UNICAMP. LIAG, 2021. Conteúdo sobre o laboratório de mídia. Disponível em: <https://liag.ft.unicamp.br/>. Acesso em: 22 de fev. de 2021.

VILLA, M. I.; MARULANDA, A.; MOLINA, T. (2020). La experimentación educativa, social y técnica en los medialabs universitarios. Revista complutense de educación, 31(2), 231-240.

RESUMO:
Este artigo defende a ideia de que laboratórios de mídia (*media labs*), são uma ferramenta para gerar inovação tanto no setor público quanto no privado, uma vez que atuam como espaços de experimentação e de práticas interdisciplinares. Por meio de uma pesquisa descritivo-exploratória e entrevistas semiestruturadas com representantes de laboratórios de mídia de universidades brasileiras, o objetivo deste artigo é caracterizar os *media labs* universitários e identificar condições humanas, físicas e organizacionais para a criação de um *media lab*. O principal resultado da pesquisa é a proposição de um framework conceitual que retrata tais condições.

PALAVRAS-CHAVES: media lab; laboratório de mídia; framework; universidade; inovação em mídia.

RESUMEN:
Este artículo defiende la idea de que los laboratorios de medios, los media labs, son una herramienta para generar innovación tanto en el sector público como en el privado, ya que actúan como espacios de experimentación y prácticas interdisciplinares. A través de una investigación descriptiva-exploratoria y entrevistas semiestructuradas con representantes de laboratorios de medios de universidades brasileñas, el objetivo de este artículo es caracterizar los laboratorios de medios universitarios e identificar las condiciones humanas, físicas y organizativas para la creación de un laboratorio de medios. El principal resultado de la investigación es la propuesta de un framework conceptual que retrata tales condiciones.

PALABRAS-CLAVES: laboratorio de medios; media lab; framework, universidad; innovación mediática.