

SCIENCE COMMUNICATION IN PRACTICE: The Case of Agência Escola UFPR (Brazil) and Labcom UBI (Portugal)

COMUNICAÇÃO DA CIÊNCIA NA PRÁTICA: Os Casos da Agência Escola UFPR (Brasil) e do LabCom (UBI)
LA COMUNICACIÓN DE LA CIENCIA EN LA PRÁTICA: Los Casos de la Agencia Escola (UFPR) y LabCom UBI (Portugal)

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ABSTRACT:

This article reflects on the experiences of two projects that communicate science: 1) Agência Escola from Universidade Federal do Paraná (AE-UFPR), Brazil, and 2) Laboratório de Comunicação e Artes from Universidade da Beira Interior (LabCom-UBI), Portugal. Using documentary research and principles of virtual ethnography, the Instagram profiles of both projects are analyzed. The research question that motivates this study is as follows: How can science be communicated to reach diverse audiences? Among the results, we highlight that in-person events engage more students and faculty on the institutional profiles of digital social media platforms.

KEYWORDS: Science communication; Audiences; Social media.

Introduction

The purpose of this article is to present some of the experiences developed in both projects, reporting results and challenges from the context of each country to communicate science to different audiences. The teams of the Agência Escola UFPR and LabCom-UBI consist of professors, researchers, undergraduate and graduate scholarship holders, and third-party professionals. Both participate in the International Cooperation Agreement between the Federal University of Paraná (UFPR) and the University of Beira Interior (UBI) established between the two institutions.

The Agência Escola (AE) is an extension project of the Federal University of Paraná (UFPR) and an institutional development agreement financially managed by Funpar - Foundation of the Federal University of Paraná. The initiative began in 2018 and has since been dedicated to the practice of scientific dissemination through various media formats and languages, in a process not only of content production but also of encouraging a

critical perception of the theory and practice of communicating science. Embedded in the Sector of Arts, Communication, and Design, the AE-UFPR project is multidisciplinary and is under the general coordination of a professor in the field of Communication, with guidance from seven PhD professors in the courses of Journalism, Public Relations, Design, Institutional Communication, and Information Management. These faculty members are responsible for the following areas: research and academic writing; planning and social media; public relations and internal communication; journalism; graphic design, information management, and training. An administrative technician, with a background in Public Relations, supports the general coordination. Among the contracted professionals involved in the project there is a journalist who serves as the editor of the Journalism Unit, and a communicator with a degree in Journalism and Advertising who manages Institutional Development. The editor of the Audiovisual Unit holds a degree in Cinema and Video. There is also an administrative assistant with a background in Information Management and Technology. The eight graduate and 21 undergraduate scholarship holders are distributed among the aforementioned areas of the project.

The plurality, integration and collective work are part of the daily life and operational process of the Agência Escola. The process is not limited to media production; it also involves research, education, training, and experimentation, which are foundational pillars of the proposal. In the research axis, public opinion research is conducted, and actions are developed for the construction of the researcher/communicator subject. In the education axis, priority is given to scientific literacy for undergraduate and graduate students participating in events, courses, article development, and the daily production of knowledge. In the training axis, efforts are focused on media literacy for the scientific community, researchers, projects, and research centers/groups of the UFPR itself, so that they recognize the field of communication and can act as protagonists in the production of their own content. Finally, in the experimentation axis, the acquired theory is applied in a creative and innovative perspective to favor new languages and formats. The project communicates and reflects about science through relationships and dialogues with the public, using accessible language available for reading, watching, listening, interacting, and reflecting. Currently, it has seven products in a hybrid format – both audio and video.

Established in 2002, the LabCom (Communication and Arts Laboratory) at the University of Beira Interior (UBI) is a research unit integrated into the Department of Communication, Philosophy and Politics of the Faculty of Arts and Letters. The main objective of LabCom is to conduct advanced research in communication technologies and new media, particularly those connected to online and digital processes, aiming to assess their impact on people's daily lives and understand communication phenomena at

individual, community, and social levels. LabCom consists of two research groups: 1) Communication and Media, and 2) Arts Group. Each group is associated with UBI's doctoral programs in Communication Sciences and Media Arts, respectively.

In the laboratory, various research projects are developed, and their coordinators typically organize events to discuss investigated themes, such as misinformation, public communication, hate speech, artificial intelligence, and autobiographical narrative by Portuguese-speaking documentarians. In addition to events, LabCom's activities are crucially supported by publications and book collections from the LabCom-UBI Publisher. The unit also produces scientific journals, including *Eikon*, *Doc Online*, *Recensio*, *Rhêtorikê*, and *Communication Studies*, the latter being indexed in Scopus. LabCom's research is funded by the Foundation for Science and Technology of Portugal.

In terms of organization, LabCom has a coordinator and a vice-coordinator, both professors in the field of Communication, elected by the group of researchers. In the management team, three more faculty members are responsible for the Communication and Media Group, Arts Group, and Internationalization Processes. A senior technician from UBI serves as the unit's secretary, continuing the university's mission of promoting the dissemination of knowledge, culture, science, and technology. Comprising 59 integrated members and 65 collaborators, LabCom includes the participation of doctoral students and undergraduate and graduate scholarship holders. In addition to UBI faculty, there are professors from six other institutions collaborating with LabCom's research activities. Two Ph.D. researchers in communication and one Ph.D. researcher in Arts, with temporary contracts, reinforce the team. Two competitively hired senior technicians take on the roles of editorial direction and design direction.

Through documentary research and ethnographic principles, we documented the trajectory of these projects, their goals, values, and missions. Among the documents consulted for this research are projects, websites, social media platforms, and promotional content. Testimonials from their founders complement this investigation, highlighting the importance of training future communicators and strategic communication management for disseminating and communicating science. We analyzed the profiles of AE and LabCom-UBI on Instagram, illustrating how science communication and intended dialogue with their audiences take place. Using the Instagram Insights tool, we collected data from both accounts from January to July 2023. Following the data collection, we conducted interpretative content analysis.

We also reflected on the use of digital social media platforms in science communication, with an emphasis on dialogue with audiences to communicate science. Furthermore, we discussed the concepts of Public Communication of Science (Brandão,

2007; Manso, 2015; Quadros et al., 2022), Science Communication (Gradim; Morais, 2016) in the context of the mediatization of science (Oliveira, 2018).

Science in Brazil and Portugal

Scientists worldwide have been striving to get closer to the population, seeking to create space for citizen participation in the knowledge production process. Citizen participation and communication are among the fundamental themes of UNESCO (2021) in the recommendation manual for Open Science. Approaching the public has also been a communication strategy to combat misinformation that negatively impacts science, scientists, and citizens. Studies on misinformation in science have increased globally since COVID-19, as indicated by Massarani and Oliveira (2023). The authors advocate for the need to strengthen research groups in Latin America to understand the peculiarities of misinformation in science in each region and overcome conceptual weaknesses. Disinformation, which is growing rapidly in contemporary society, requires a collective effort from everyone, not just scientists. Collaboration, whether local, regional, national, or international, can contribute to scientific development and science communication.

In this article, to understand science communication in Brazil and Portugal, a brief contextualization of both countries was outlined. The two described projects (AE-UFPR and LabCom-UBI) exist in different contexts and, therefore, have specific communication strategies to engage with their audiences. In this study, we sought to highlight possible similarities and differences in the actions developed to communicate science, with an emphasis on digital social media platforms.

Brazilian Context

"Science is back." This was the slogan created by the Brazilian federal government to announce, in July 2023, an investment of over 100 billion reais¹ in the next four years in the National Fund for Science and Technology. The funds will be utilized to refurbish scientific and technological laboratories in federal institutions and universities (Repórter Brasil, 12/07/2023). The campaign received positive feedback from Brazilian scientists who participated in the 75th Annual Meeting of SBPC (Brazilian Society for the Advancement of Science), the largest scientific event in Latin America. The meeting took place in Curitiba at the Federal University of Paraná at the end of June 2023. AE-UFPR was one of the partners of SBPC for the coverage of the event on digital social media platforms.

¹ Considering the conversion from August, when one Euro was worth 5.38 Brazilian Reais, the investment will be 18.59 billion Euros.

The news of the investment came as a relief for scientists who witnessed recurrent budget cuts in science and technology in Brazil in recent years. According to a special report by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the reduction from 2012 to 2021 was 84%, decreasing from 11.5 billion to 1.8 billion (Escobar, 2021). In addition to dilapidated scientific laboratories and a lack of inputs and supplies, scientists also grapple with attacks on digital social media platforms and observe the growing denial of science both within and outside the digital environment.

In the 2022 academic production ranking by Scopus/Elsevier, Brazil experienced a decline in the publication of scientific articles. In 2022, Brazilian scientists published 74,570 studies. In 2021, this number reached 80,499. Therefore, the decrease was 7.4%. Brazilian scientists attribute the pandemic as one of the factors responsible for the decline, but the reduction in investments in science may have impacted production (Garcia, 2023). Despite the drop in the global ranking, Brazil holds the 14th position in science production.

The report, compiled by the Observatory of Science, Technology, and Innovation (2023), illustrates the collaboration between Brazilian and foreign scientists based on articles available in the Web of Science. Brazil's main international partners are the United States, England, Germany, Spain, and Portugal, in that order. However, Brazil is not among the priority collaborations for the mentioned countries. In Portugal, on the other hand, Brazil holds the second position in international partnerships (OCTI, 2023).

Figure 1 Brazil's Partner Countries According to the Web of Science

1°.	2°.	3°.	4°.	5°.
Records: 412439	Records: 118.083	Records: 119.080	Records: 72.230	Records: 20.009
1° China 44.036	1° USA 23.712	1° USA 20.072	1° USA 9.835	1° Spain 3.777
2° England 22.211	2° China 15.576	2° England 12.611	2° Italy 7.229	2° Brazil 2.292
3° Canada 20.211	3° Germany 12.611	3° China 9.802	3° England 7.159	3° USA 2.195
4° GERMAIN 20.072	4° Italy 9.212	4° France 8.921	4° Germain 6.798	4° England 2.126
14° Brazil 7.434	17° Brazil 3.101	18° Brazil 2.736	10° Brazil 2.636	5° Italy 1.940



Source: OCTI, 2023, with graphic adaptation by the authors.

Brazil invests approximately 1.2 percent of the Gross Domestic Product (GDP) in Science and Technology.² In the "Projeto para um Brasil Novo" (Project for a New Brazil), organized by SBPC, there is a request to increase this investment to at least 2 percent of the GDP. "All areas need Science. All Ministries need to enable investments in Science" (Sobral; Klebis, 2022, p. 30).

Portuguese context

The investment in science in Portugal is 1.7% of the Gross Domestic Product (GDP) (Pordata, 2023). Similar to Brazil, Portugal also aims to increase this percentage, as the average for other European countries is above two percent.³

The scientific production, as indicated by the Pordata report (2023), has been growing in Portugal. In 2021, there were recorded 31,431 thousand scientific productions in international journals. However, according to researcher Carlos Fiolhais, "science [in Portugal] has not advanced much, lacking both funding and scientific policy decisions" (Fiolhais, 2023).

Strengthening international cooperation is part of the European Community's proposal, emphasizing the importance of the role of communication in the biennial report on the implementation of a global approach to research and innovation. In this report, agreements with Latin America are mentioned, and Brazil also appears as a partner (European Commission Report, 2023).

Portugal maintains partnerships for scientific collaboration with Brazil, as demonstrated in Figure 1 with the articles published in Web of Science. The partnership between the two countries also occurs through publications available in other databases, books, and agreements for scientific collaboration. The linguistic proximity and common interests between Brazilian and Portuguese researchers enhance this joint scientific production.

² In 2022, Brazil's GDP was 2.5565 trillion Brazilian Reais.

³ In 2022, Portugal's GDP was 239,253.315 billion Euros, equivalent to 1,288,016.14443 billion Brazilian Reais.

Science Communication on Digital Platforms

Given the investment in science in Brazil and Portugal, we emphasize the importance of communication for the development of science. In many countries, researchers need to outline in their projects how the results of their research will be presented. Research projects should include actions for both scientific communication and science outreach. Wilson Bueno (2010) is one of the most cited authors when discussing these differences: While scientific communication is directed at other scientists, science outreach democratizes access to scientific knowledge. The former allows for the dissemination of specialized information within the scientific community, highlighting advances in each area. Scientific communication is also a crucial source for the specialized communicator, who organizes strategies to present the information from a scientific article in a way that captures the interest of the public in science (Bueno, 2010).

Therefore, science outreach democratizes access to scientific knowledge by making research results public for society. The disseminated information aims to empower citizens to make choices that benefit them in their daily lives. The two projects reported here go beyond mere science outreach.

The AE is based on Public Communication of Science, which is directly associated with the process of scientific openness. In this way, the citizen assumes an active role in the production of knowledge and can benefit from it. It is not only about disseminating science but also about popularizing scientific knowledge. The public is encouraged to interact with knowledge to reinterpret it according to their culture, social aspects, and personal experiences. This process grants greater autonomy to the citizen, who comes to understand how science works and how it is integrated into their daily lives.

The concepts of public communication of science are diverse and even divergent when considering authors, countries, and concepts (Quadros et al., 2022). In Brazil, intellectual production on public communication is extensive, but the majority focuses on government communication (Massuchin et al., 2023). In this latter cited study, 244 articles published from 2013 to 2022 in proceedings of events and Brazilian journals were analyzed. Of the total, 94 are about government/governmental communication. However, other themes were addressed, such as Public Broadcasting (25); Public Communication of Science (23); Communication and Health (23); Communication and Right to Information (18); Communication and Justice (16); Communication and Citizenship (14), and others (31). Here, we are interested in describing how Public Communication of Science is presented. The studies are not limited to the scientific dissemination by media, although they address the relationship between scientists, communication agencies, and media.

The public has gained prominence, and open science and citizen communication are discussed from the perspective of public communication of science.

Manso (2015) considers Public Communication of Science (PCS) as a space of opportunities for dialogues that place the citizen (not specialized in science) at the center of debates, highlighting the plurality of knowledge and cultures. This protagonism allows the citizen to expand their scientific knowledge and, consequently, their capacity and power of decision, including on public policies for the development of science. Thus, Matos's (2011) contributions are crucial for reflecting on the possibilities of PCS. "Public communication should be thought of as a political process of interaction in which expression, interpretation, and dialogue prevail" (p. 45).

In the context of Public Communication of Science, scientific dissemination can stimulate citizen participation, thus promoting communicative interactions with society. By arousing the interest of science, the public opinion, politicians, organized society, and the media, legitimacy and strength are gained to position oneself in the face of a country's political decisions (Duarte, 2007). To achieve these purposes, Brandão (2007, p. 4) warns that "it is crucial for the scientific field and the media field to be increasingly close." With the growth of digital social media platforms, new possibilities for connection and conflicts emerge for science. Therefore, we understand that it is not enough to simply disseminate. The communication of science requires planning and specific strategies for each context. However, the experiences reported by both projects (AE and LabCom) can contribute to reflecting on science communication. Here, we emphasize the context of digital social media platforms.

LabCom also encourages interdisciplinary collaboration among various fields of knowledge, emphasizing science communication to society. "Science is a public activity" (Gradim; Morais, 2016, p. 130). Therefore, it is the social responsibility of science, the authors add, to present the results to the society that finances and supports it. For a knowledge society to exist, a connection between research and society must be established (Ibid, 2016).

Both projects (AE and LabCom) are inserted in the context of the mediatization of science (Oliveira, 2018). According to Thaine de Oliveira, the paradigms of scientific communication have changed with the use of digital social media platforms. "Social media has become one of the relevant circuits for measuring scientific impact through engagement metrics" (Oliveira, 2018, p. 107). For the author, these spaces are dynamic and serve not only to disseminate science; they should be viewed as political spaces. Oliveira also warns about the need to observe the disputes around the legitimation of science in these spaces. Based on the presented theoretical frameworks, we sought to

critically observe the use of Instagram to communicate science to and with society in two projects that have made various efforts to listen to and give a voice to their audiences.

Methodological Path and Objects

In this study, we employed various methodological procedures. Documentary research was adopted to contextualize science in Brazil and Portugal, as well as to retrieve the history of two projects that communicate science: AE-UFPR and LabCom-UBI. We sought information on the websites of both institutions analyzed to understand their communication strategies and objectives. Documents consulted include congress proceedings, institutional history, and action plans of the directorates. It is important to note that the authors of this article are part of the projects analyzed here. The methodological choice helped us analyze the objects as impartially as possible, and the involvement of the authors highlights the backstage of two projects that communicate science.

The precepts of virtual ethnography (Fragoso; Recuero; Amaral, 2011) were adopted to study the digital social media platforms of both projects. Using the Instagram Insights tool, we collected data from both profiles from January to July 2023. The initial proposal was to use Crowd Tangle, but we were unable to retrieve certain data due to a tool failure during the collection week. After the collection, we began the interpretative content analysis. In the pre-analysis, we conducted a floating reading of the material to list the topics disclosed and select what would be analyzed based on the data generated by the Instagram Insight tool. In exploring the material, the content was coded for analysis. In this article, we selected only the content with higher engagement to understand what has sparked the interest of audiences consuming science content.

AE-UFPR's Instagram

In February 2019, the AE-UFPR opened its accounts on Facebook and Instagram. In the first half of August 2023, they had 3,800 and 4,900 followers, respectively. The AE project was launched in September 2018, and a team was formed for its debut on digital social media platforms to plan, create content, and analyze metrics. The initial team, coordinated by a faculty member, consisted of three Public Relations scholarship holders. Design and Advertising scholarship holders also contributed to enhancing the content from the beginning. AE is also present on YouTube and X (formerly Twitter). In the first semester of 2023, AE-UFPR created an account on TikTok. The strategic plan for scientific dissemination on digital social media platforms for this project aims to follow media consumption trends. According to the We are Social report (2023), Instagram is identified

as the favorite digital social network worldwide. Currently, the AE team responsible for social media is part of the Planning Unit. The Unit, coordinated by two professors, one from the Institutional Communication course and one from the Public Relations course, carries out integrated work that involves, in addition to social media and its metrics, Public Relations planning actions, events, internal communication, and campaign development. In this unit, four undergraduate scholarship holders participate.

The digital social media team of Agência Escola UFPR works with organic content, meaning its propagation happens naturally through people, and there is no payment to increase engagement. The number of followers consistently increases when the agency is involved in organizing or covering scientific or cultural events. This has also been one of the strategies used by other science communication social media platforms (Quadros; Gradim, 2023). Agência Escola UFPR has a manual of best practices in digital social media that guides scholarship holders on planning, creating, and distributing content. The manual is updated according to media consumption trends or the need to redefine its target audiences.

The planning and social media team of the agency speaks to a diverse audience. In August 2023, AE had almost five thousand followers, as mentioned earlier. According to Insight data, 67.1% of these followers are women, and 32.9% are men. In Table 1, we highlight that the majority of the female audience is concentrated in the age group of 25 to 34 years. The data collected in the Insight tool align with the results of the We are Social survey (2023), which indicates that the Instagram social network is the preferred choice of women in this age group. Therefore, media consumption reports also provide an overview of social media consumption and contribute to planning communication for different audiences.

Table 1 AE Followers, by age groups, who consume content the most

Age Group	Female	Male
18 - 24 years	19,1%	8,3%
25 - 34 years	21,6%	12,3%
35- 44 years	14,7%	7,4%

Source: Instagram's Insight, 2023.

LABCOM- UBI's Instagram

The LabCom-UBI is also present on other digital social media platforms, such as Facebook and Youtube. The Instagram account was created on May 14, 2020. The number of followers is lower than on Facebook, which had over 2,200 followers in August 2023.

The LabCom-UBI Instagram profile, with 979 followers during the same period, has attracted students and faculty from UBI, as well as researchers from Brazil.

Since October 2020, the science communication on digital social media has been centralized by a Ph.D. student in Communication. She is responsible for content production and design, planning, and managing the Facebook page and Instagram profile. The student has experience as a journalist in various television outlets in Brazil, holding editing and directing positions. With the isolation caused by the Covid-19 pandemic, the priority was to structure the publication flow, energize social media, strengthen contact with researchers, and communicate to diverse audiences within and outside the institution. Fundamental for the social and economic development of Covilhã, the University of Beira Interior has various scientific and cultural activities directed at the population. Therefore, this strategy would allow converging information in one direction and creating the habit of communicating science through LabCom.

Until October 2020, LabCom-UBI's Facebook had 1,235 followers, and the Instagram profile had 372 followers, half of the current numbers. Some publications were made only on Facebook, disregarding the participatory potential of followers on Instagram. The appointment of a scholarship student to manage social media allowed, first of all, the standardization of messages so that both platforms were equally nourished, delivering the same messages to followers with occasional variations in format. Audiovisual content, with videos up to 1 minute, was also implemented. The first posts were cut/paste testimonials from researchers in the fields of Communication and Arts about the challenges of scientific production during the pandemic. The main objective of the action was to bring LabCom-UBI closer to citizens, inviting them to "be close" to science while conveying a message of encouragement to people. With centralized posts, the challenge was to expand production while encouraging researchers to send important and relevant information for science communication. Another challenge was to improve the visual and textual quality of the posts.

The redesign of LabCom-UBI's social media required the development of a strategic map for post control, setting goals for weekly publications to increase engagement from the audience. From this focus, content planning involved categorizing posts into "network editorial" such as institutional, tips (books, journals, scientific articles), projects, events, call for papers, curiosities, personalities, among others, as anchor points for generating weekly content. The identification of important dates for the city also aimed to generate more intuitive posts capable of bringing citizens closer through issues related to identity and proximity.

All posts have organic distribution, avoiding paid production of follower engagement. Until the first half of August 2023, the profile had recorded the reach of almost five thousand people. According to data provided by Instagram's Insight, 60.8% of the consumer audience of LabCom-UBI's profile is composed of women aged 25 to 44 (Table 2). Regarding the countries of access, Brazil appears in second place, behind Portugal, with 30.3%.

Table 2 Followers of LabCom-UBI, by age groups, who consume the most content

Age Groups	Female	Male
18 -24 years	8,5%	5,2%
25-34 years	20,3%	13,2%
35-44 years	18,7%	11,8%

Source: Instagram's Insight, 2023.

Analyzing results

From the analyzed period (January to July 2023), we selected the content that generated the highest engagement on the social media of both projects to reflect on digital communication strategies for audience engagement. It's important to note that engagement is directly associated with the academic calendar of the higher education institutions to which the projects are linked. In Brazil, January and February are typically vacation months, and holiday periods also impact the production and consumption of social media content for both projects. During these times, there are fewer impressions (the number of times the content is displayed), shares (the number of times the content is shared on other social media platforms), and audience reach (the number of viewers of the content). In Table 1, we present the content with the highest engagement for each month from AE-UFPR.

Table 1 Content with the highest engagement from AE in the first half of 2023

Month	Publication date	Impressions	Shares	Reach	Theme	Type	Likes	Comments	LinK
Jan. (1/1)	01/01/2023	583	7	498	Commemorative Date: New Year	Image and text	44	2	https://www.instagram.com/p/Cm4OPmALkY/
Feb. (1/7)	13/02/2023	15	65	13.142	Event Call - SBPC	Reel	293	11	https://www.instagram.com/r

									ee/Conb6pLj Wnq/
March (11/11)	08/03/2023	11.221	35	10.135	Commemorative Date: Dia da mulher	Image and text	277	5	https://www.instagram.com/p/CpiB2dCM-IY/
April (4/9)	28/04/2023	5.525	31	4.157	Event call: SBPC Cultural	Reel	152	5	https://www.instagram.com/reel/Crl69P1rEjk/
May (1/7)	19/05/2023	3.565	26	2.693	Event call: Pint of Science	Reel	105	6	https://www.instagram.com/reel/Csb_XU2u-rp/
June (23/23)	01/06/2023	11.359	17	8.030	vodcast: BatePoPAE	Carousel	182	14	https://www.instagram.com/p/Cs9W3Oau1qX/
July (30/52)	25/07/2023	12.999	23	11.376	Pergunte aos Cientistas Especial SBPC Minister of Health from Brazil Nísia Trindade Lima	Reel	236	7	https://www.instagram.com/reel/Cv14Hk6tmrO/

Source: Compiled by the authors with data from Instagram Insights, 2023.

In the first semester of 2023, Agência Escola UFPR posted 110 messages. The content production was higher in the last two months, as it is associated with the launch of a new project product, the BatePop AE⁴ vodcast, and the coverage of the 75th SBPC Meeting (Brazilian Society for the Advancement of Science). Partnerships with other institutions have been one of Agência Escola's strategies both within and outside digital social media. The collaboration with SBPC and the UFPR Extension Pro-Rectorate was crucial to expand AE's content production and dissemination.

In the first column of Table 1, we provide the position of the highlighted content in relation to the quantity of posts published during that period. In July, for example, 52 posts were published, and the thirtieth post had the highest engagement. Therefore, the table displays "30/52." While conducting a floating reading of the content posted on AE's

⁴ With monthly episodes, the vodcast (video podcast) discusses science, culture, and entertainment through a conversation with guests on a specific theme for each episode. Definition available on the AE website: https://agenciaescola.ufpr.br/site/?page_id=445.

Instagram, we observed that the profile covers various themes, such as health, education, teaching, research, culture, events, scholarship announcements, institutional updates, awards, reading suggestions, and commemorative dates. The content reflects a concern for its followers and the principles of public communication of science. There is an effort to involve the audience in the content production process.

The highlighted post in July exemplifies this participation. For the special edition of "Ask the Scientists" (Pergunte aos Cientistas)⁵ produced for the 75th SBPC Meeting, a UFPR student questions the Health Minister about the importance of scientific dissemination. This content, published in Reels⁶, had the highest engagement in the first semester of 2023. In Table 1, out of the seven highlighted contents, four are Reels. In this example, there is an appreciation for the student, who also has a voice in AE. It also opens up the possibility of having a direct channel with experts. Minister Nísia Trindade Lima responds that scientific dissemination goes beyond informing what happens in institutions; it also allows for dialogue with society.

The contents with the highest engagement also reveal that AE does not solely promote science. In March, Women's Month, the agency shared various content about gender-based violence. With the slogan ("International Women's Day beyond flowers"), the post features an illustration of a crying woman with a male hand covering her mouth. The illustration emphasizes that, in the opinion of scientists, gender-based violence is a social and public problem. The caption also poses a question ("Why can't women simply have the same experiences as men concerning life in society?"), which was addressed in a report on International Women's Day 2023. The goal was to show how this violence occurs so that women can respond to this social issue. The actions promoted by AE are not transmissionist or normative. Dialogue prevails when addressing gender-based violence, diseases, or scientific discoveries. The carousel prepared for the launch of BatePop AE also aims to demonstrate that the project provides space for different voices in a relaxed and straightforward format for science communication.

In January, during the school vacation period in Brazil, AE scheduled only one post to wish everyone a Happy New Year. The caption reinforces the message of the illustration, wishing that the "new cycle be filled with inspiration, motivation, and science." The low engagement indicators of this post, as mentioned earlier, are associated with the vacation period for students and teachers. Although the Agência Escola addresses a diverse audience, the majority of followers are undergraduate and graduate students.

⁵ The "Pergunte aos Cientistas" is one of AE's products that aims to bring people and scientists together for the construction of knowledge (Quadros et al., 2022).

⁶ Reel - short video format on Instagram.

They also form an important link with the community. The extension projects promoted on the social media of the Agência Escola also fulfill this role.

To determine which audience to address when communicating science, Agência Escola UFPR outlined profiles for four different personas who consume AE's content on digital social media. These personas were designed based on market trends and the results of public opinion research conducted by AE. The description of the personal and consumption preferences of each persona contributes to planning the entire production and distribution process of AE.

The brand persona was also conceptualized by the Planning and Social Media team based on AE's proposals. It is represented by a journalist who advocates for scientific knowledge, diversity, and inclusion. "Her biggest dream is to bring people closer to science communication and, through this relationship, transform lives. Therefore, she is active on social media, sharing relevant information." (AE Report, 2023). She also fights against misinformation on social media.

In Table 2, we present the LabCom-UBI's most engaging content. In a floating reading of LabCom's content, we found the themes mentioned in the Instagram profile section: commemorations, events, book launches, published articles, doctoral defenses, calls for conferences, and scientific journal announcements. Similar to Agência Escola, events and commemorations generate the highest engagement. The two projects, which have already joined forces for mini webinars for SBPC, can plan joint events to promote science communication and attract even more people willing to participate in this initiative on digital social media.

Table 2 Content with the Highest Engagement from LabCom in the First Half of 2023

Month	Publication date	Impressions	Shares	Reach	Theme	Type	Likes	Comments	Link
Jan. (10/20)	06/01/2023	648	0	593	Event: Artificial Intelligence, Algorithms, and Media	Image and text	45	1	https://www.instagram.com/p/CnUEju0skGu/
Feb. (5 /9)	10/02/2023	480	0	444	International Day of Women and Girls (Raparigas) in Science	Video	56	2	https://www.instagram.com/p/CoeXGUTNhGQ/
Mach (11/24)	09/03/2023	538	0	495	Doctoral Examinations	Image and text	62	0	https://www.instagram.com/p/CplAo3Aoc9J/

April (18/18)	30/04/2023	559	0	512	37 years UBI	Image and text	78	2	https://www.instagram.com/p/Crpx4CvPkfe/
May (11/14)	17/05/2023	577	0	529	CFP Sopcom	Image and text	57	0	https://www.instagram.com/p/Csv3_WOJTaN/
June (12/12)	26/06/2023	378	0	349	CFP Sopcom	Image and text	32	0	https://www.instagram.com/p/Ct8wGNTolAz/
July (12/14)	17/07/2023	477	0	360	IAMCR 2023	Image and text	64	0	https://www.instagram.com/p/Cuy0E8VxgJl/

Source: Authors' Compilation with Data from Instagram Insights, 2023.

The conversation series organized by LabCom generated engagement from the public. Among the invited professors to discuss artificial intelligence, algorithms, and disinformation were renowned researchers (both young and senior) in the field of digital communication. This strategy has attracted new followers who engage with LabCom's profile, as indicated in table 2, particularly in the month of January.

Commemorative dates are explored within the context of science. On the International Day of Women and Girls⁷ in Science, the design intern created a multimedia illustration. Despite the international reach, the message is directed at the internal audience - a communication strategy to honor LabCom's female researchers. The engagement of followers indicates that the production of animated content, using multimedia elements, can enhance the flow of access to the research unit's social media. However, this would require an increase in human resources, either through interns or professionals, with the aim of establishing a productive partnership specifically for social media communication.

As we can see in Table 2, the participation of researchers and doctoral students in international events is usually valued by the academic community. The presentation of papers at the International Association for Media and Communication Research - IAMCR 2023, energized LabCom's profile during a period of low engagement, as July is a vacation month in Portugal.

For an international partnership, cultural issues should be discussed so that their expanded audiences also feel included. In the category of commemorative dates, UBI's anniversary had the highest number of likes for the semester. In the post, there is a

⁷ In Portugal, "rapariga" means a young woman. In Brazil, the word has a different meaning and a negative connotation. It means a prostitute.

connection between LabCom and the University. Calls for papers often generate good traffic to the website and other networks. Although followers don't share and comment much on this type of content, data obtained from Instagram's Insight show that some save the posts to avoid missing the dates. In May and June, the calls for papers for the Portuguese Association of Communication Sciences (Sopcom) conference obtained the highest engagement.

It is worth noting that, in Portugal, Instagram is the fourth most accessed network, behind Facebook and YouTube⁸. On the one hand, this indicates that the platform still has a lot of growth potential for consuming science-related information. On the other hand, it points to the need for greater promotion of audiovisual content that can be shared on platforms like YouTube. These two approaches can enhance LabCom-UBI's visibility on the internet. The biggest challenges for this achievement are the active involvement of researchers in promoting their work and investment in the communication team, which could enhance the conceptualization and production of content.

Considerations

Both projects value science communication and aim to reach a diverse audience, even though the majority of their followers are from their own educational institutions. The actions undertaken in both projects are distinct, but both strive for the popularization of science as a way to gain legitimacy and support from the public. In this article, we chose to focus on science communication on digital social media platforms, as the number of consumers seeking information in this digital environment full of both information and misinformation is steadily increasing.

However, it is important to emphasize that there are many actions developed in the selected projects of this article. LabCom-UBI, with over 20 years of existence, is internationally recognized for editing open-access books in the field of communication. LabCom also encompasses various research projects funded by the European Community to benefit people. Agência Escola UFPR, with five years of existence, has various other initiatives to communicate science through public communication. Among these initiatives are events that bring people closer to science and training courses. There are also other planned initiatives to strengthen a scientific culture at UFPR, such as the Science Communication Network, created to bring together different science communication activities at the university, and the Transversal Discipline of Science Communication and

⁸ Digital News Report, 2023. https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2023-06/Digital_News_Report_2023.pdf. Accessed on: 15/08/23.

Popularization, which is part of a project offering disciplines to postgraduate students at UFPR and other public universities in Paraná.

Engaging diverse audiences on digital social media requires planning, time, and money. The strategy of forming partnerships with educational and research institutions, media outlets, and researchers has contributed to the dissemination of content on digital social media. The science communication digital social media platforms analyzed in this article do not pay to boost their posts. There is still significant resistance in public institutions to invest in paid content strategies, making it challenging to expand audiences, considering that platforms do not prioritize organic content. Therefore, 'breaking the bubble' presents a significant challenge. However, for this to happen, in addition to planning, it is essential to work in harmony with a platform policy that does not always align with the goals and concepts of both projects.

Regarding the most circulated content, it is interesting to note that audiovisual resources, especially short videos, are prioritized strategies by the platform (Instagram) and need to be taken into account in content planning. Thus, it is crucial for creativity and experimentation to align with the production of content that, even though it must be excessively simplified, does not lose scientific rigor. Losing sight of this connection between creativity and information from data can result in decontextualized or incomplete content, leading to misinterpretations and misunderstandings by the audience and, consequently, being a step toward misinformation.

Communication has been valued in reports addressing the requirements for the development of science, as highlighted in this article. However, funds for communication are almost nonexistent when considering investments in science. This scenario seems to be changing, as initiatives like the Agência Escola and the expansion of calls and funds for scientific dissemination and popularization have become concrete since the pandemic and promise to be even more present under the current government. In a context of misinformation and mistrust in science, without investment in scientific communication and without strategic communication by the government and public institutions, dialogue with society and the construction of a favorable image of science and scientists decrease.

It is noted, therefore, that knowledge sharing is intrinsic to a democratic society, and access to information is essential for the full exercise of citizenship and social participation. Accessible and mediated scientific discussion on social media, albeit with various limitations, provides an opportunity to qualify public opinion. Projects like Agência Escola and LabCom are essential for the creation of a scientific culture inside and outside universities and research centers.

References

- Brandão, E. P. (2007). Conceito de comunicação pública. In Duarte, J. (Ed.), *Comunicação pública: Estado, mercado, sociedade e interesse público* (2–33). São Paulo: Atlas.
- Bueno, W. (2010). Comunicação científica e divulgação científica: aproximações e rupturas conceituais. *Informação & Informação*, 15.
- Duarte, J. (Ed.). (2007). *Comunicação pública: Estado, mercado, sociedade e interesse público*. São Paulo: Atlas.
- Escobar, H. (2021). *Dados mostram que ciência brasileira é resiliente, mas está no limite*. Jornal da USP.
- Fiolhais, C. (2023). *Ciência em 2023*. Lisboa: Fundação Francisco Manuel dos Santos.
- Fragoso, S., Recuero, R., & Amaral, A. (2011). *Métodos de pesquisa para Internet*. Porto Alegre: Sulina.
- Garcia, R. (2023). *Produção científica brasileira caiu 7,4% no ano passado, a maior queda entre 51 países*. O Globo.
- Gradim, A., & Morais, R. (2016). *Anões aos ombros de gigantes: desafios contemporâneos na comunicação de ciência*. Lisboa: Livros Horizonte.
- Manso, B. L. de C. A. (2015). Comunicação pública da ciência à luz da ciência aberta: Repensando o cidadão como sujeito informacional [Apresentação de conferência]. *VI Encontro Nacional de Pesquisa em Ciência da Informação*, João Pessoa, Brasil.
- Massarani, L., & Oliveira, T. de. (2023). Desinformação e divulgação da ciência e da saúde na América Latina. *Journal of Science Communication - América Latina*, 6, E.
- Massuchin, M. G., Quadros, C. I., Ioscote, F., & Oliveira, P. A. (2023). Comunicação pública na teoria e na empiria: aspectos da produção brasileira recente. *Anais do 32 Encontro Anual da Compós*, Universidade de São Paulo (USP), São Paulo.
- Matos, H. (2012). A comunicação pública na perspectiva da teoria do reconhecimento. In M. M. K. Kunsch (Ed.), *Comunicação pública, sociedade e cidadania* (39-59). Difusão Editora.
- OCTI. (jun. 2023). Boletim anual, v.3. Brasília: Centro de Gestão e Estudos Estratégicos.
- Oliveira, T. M. de. (2018). Midiatização da ciência: reconfiguração do paradigma da comunicação científica e do trabalho acadêmico na era digital. *Matrizes*, 12(3), 101-126.
- Pordata. (2023). *Estatística sobre Portugal e Europa: PIB*. Lisboa: Fundação Francisco Manuel dos Santos.
- Quadros, C. I., Ribeiro, R. R., Goedert Melo, P., & Kohls, C. D. (2022). Participação, Cidadania e Ciência: A Experiência do Pergunte aos Cientistas da Agência Escola Universidade Federal do Paraná. *Revista Lusófona De Estudos Culturais*, 9(2), 81–98.
- Quadros, C. I., & Gradim, A. (2023). O combate contra a desinformação: Um dos principais desafios dos comunicadores de ciência no Brasil e em Portugal. *III Jornadas de Comunicação*, Coimbra.
- Recomendação da UNESCO sobre ciência aberta. (novembro, 2021). [Online]. https://unesdoc.unesco.org/ark:/48223/pf0000379949_por
- Relatório da Comissão Europeia. (jun. de 2023). Primeiro relatório bienal sobre a implementação sobre a abordagem global da investigação e inovação. Bruxelas.
- Relatório de Personas da Agência Escola. (2023). Curitiba: UFPR.
- Repórter Brasil. (12 jun. 2023). "A ciência voltou" e terá investimento de R\$100 bi em quatro anos. Repórter Brasil.
- Sobral, F., & Klebis, D. (2022). Projeto para um novo Brasil. *Cadernos SBPC*.
- We Are Social. (2023). The changing world of digital in 2023. [Online]. <https://wearesocial.com/uk/blog/2023/01/the-changing-world-of-digital-in-2023>

RESUMO:

Este artigo reflete experiências de dois projetos que comunicam ciência. 1) Agência Escola da Universidade Federal do Paraná (AE-UFRPR), Brasil e 2) Laboratório de Comunicação e Artes da Universidade da Beira Interior (LabCom-UBI), Portugal. A partir da pesquisa documental e preceitos da etnografia virtual, são analisados os perfis do Instagram de ambos os projetos. A questão problema que motiva este estudo é a seguinte: De que forma é possível comunicar a ciência para alcançar públicos diversos? Entre os resultados, destacamos que os eventos presenciais mobilizam mais estudantes e docentes nos perfis institucionais de plataformas de redes sociais digitais.

PALAVRAS-CHAVE: Comunicação da ciência; Públicos; Redes sociais.

RESUMEN:

Este artículo reflexiona sobre las experiencias de dos proyectos que comunican la ciencia: 1) Agência Escola da Universidade Federal do Paraná (AE-UFRPR), Brasil, y 2) Laboratório de Comunicação e Artes da Universidade da Beira Interior (LabCom-UBI), Portugal. Utilizando la investigación documental y los principios de la etnografía virtual, se analizan los perfiles de Instagram de ambos proyectos. La pregunta de investigación que motiva este estudio es la siguiente: ¿Cómo es posible comunicar la ciencia para llegar a audiencias diversas? Entre los resultados, destacamos que los eventos presenciales involucran a más estudiantes y profesores en los perfiles institucionales de plataformas de redes sociales digitales.

PALABRAS CLAVE: Comunicación de la ciencia; Audiencias; Redes sociales.