

MetaDocencia: Co-Creating and Teaching Open Science

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MetaDocencia is an international community of researchers and educators dedicated to equipping individuals and organizations from Spanish-speaking regions and beyond by providing open science resources, delivering professional development training, and supporting infrastructure design and implementation. We believe that elevating scientific and technical capacity in Latin America will increase equity more broadly in society and accelerate innovation across the globe.

Our Vision

We work to make the production, communication, and application of scientific and technical knowledge equitable globally.

Our Mission

To advance innovation with a local perspective that responsibly builds scientific and technical capacities through the co-creation of networks, learning spaces, and accessible resources for Spanish-speaking communities.

The Problem

Our community is based in countries with high inequity in scientific training. Particularly for open science, most concepts and approaches were created in highly-resourced regions (such as in areas with easy access to technology, internet connectivity, stable jobs). The current solutions are often incompatible with many of the barriers and limitations prevalent in Spanish-speaking and Latin American regions. As an example, high-quality resources, events, networks, and other well-funded initiatives are mostly in English and often inaccessible for the vast majority of non-English speaking regions. Furthermore, when high-quality resources are available in Spanish, there is often an insurmountable economic barrier.

Our Approach

We develop open, reusable, and accessible educational resources that reach a global Spanish-speaking community. We build regional scientific, technical, and research capacity. Our work advances the power of open science to accelerate innovation throughout the Spanish-speaking world. This approach prioritizes Spanish-speaking communities and contextualizes open scientific and technical practices, leading to improved outcomes and impactful changes to practices.

We focus primarily on building scientific, technical, and research tools for individuals and organizations. We work to advance the power of open science to accelerate innovation throughout the world by developing open, reusable, and accessible educational resources. By prioritizing Spanish-speaking communities, we aspire to improve outcomes and deliver meaningful change that will increase equity more broadly in society across the globe.

Our Impact

- Developed a series of short courses and events for people who teach scientific and technical skills in Spanish-speaking contexts. Our training programs now include, but are not limited, to the following activities:
 - [Present! Resources for Active Meetings](#) is our hallmark workshop designed to introduce good practices for the management of online training events.
 - [Accessible Zoom for Screen Readers](#) teaches how to use Zoom with the NVDA screen reader.
 - [How to Teach Programming Online](#) covers effective techniques and good practices to design and implement programming courses, including useful tips to get feedback and evaluate students.
 - [Train the Trainer](#) workshop in Spanish in partnership with [The Carpentries](#). In 3 editions we certified ~50 instructors for teaching programming and data science skills to researchers.
 - [Ongoing 8-part webinar series](#), open to everyone, to discuss how to build governance for Latin American communities of practice.
- Collaborated on identification and implementation of guidelines to improve accessibility of our content and events - with a dedicated team that reviews each of them. Our courses are shared with an open CC BY 4.0 license. All our events are free to attend.
- Originated in Argentina but quickly expanded globally into many Spanish-speaking regions of the world, such as Latin America, the Caribbean, and many parts of North America, Europe, and Australia. We have trained 1k+ participants out of 2k+ instructors from 30+ countries who expressed interest in our workshops. Our workshop attendees have joined from all continents except Antarctica.
 - Since January 2021, our reach has increased by about 50% in participant interest and countries when compared with 2020.
 - 97.5% of workshop participants have completed our post-workshop survey, expressing high satisfaction (Net Promoter Index range: 82% - 100%).
 - 97% of those who completed our post-workshop survey learned something new at our workshops. A third of all participants indicated that about half of the concepts presented to them were novel. Up to 22% of them heard about most or all concepts for the first time from us.
 - We have uploaded many of our workshops and events to YouTube to increase their accessibility. As of early September 2022, our content has been viewed about 2,800 times.

- This year we have been uploading the recordings of our open governance meetings to YouTube, with live captioning in English on some of them to widen the access for English-speaking audiences. Our recording with our advisor Malvika Sharan (The Turing Way) even had live interpretation between Spanish and English.
- Our series of open governance meetings had 90+ registered attendees who joined from 14 countries and represented 11 communities.
- Welcomed participants who teach and practice data science, research methods, and data analysis for scientific disciplines (such as STEM, Biomedical Sciences, Social Sciences, Humanities and Economics). About 40% of our participants have a graduate college degree while only 7% have had formal instruction in teaching. MetaDocencia leverages its team's expertise to provide evidence-based teaching resources to anyone regardless of their background. The diversity of disciplinary expertise and interests in our community encourages cross-disciplinary knowledge-sharing on open scientific and technical practices.
- Maintained active collaborations with communities such as [R-Ladies](#), [Women in Bioinformatics and Data Science Latin America](#), [Fundación Vía Libre](#), and [OLS](#) who have been instrumental in our growth, as well as the support from [Code For Science & Society](#) and the [Chan Zuckerberg Initiative](#).
- Supported an open Slack workspace with 680+ participants that serve as our main interaction hub.
- Managed an active website (9k+ unique visitors in 2022), social media accounts (3500+ followers), and a monthly newsletter (2k+ recipients, 38% opening rate).

Our Team and Support

[MetaDocencia's team](#) includes outstanding professionals from multiple marginalized groups in international open science. With its diversity in several intersections - gender, disability, migration status, first language, career stage, affiliation, or geography - MetaDocencia works to improve our realities based on each of our walks of life and aspirations.

MetaDocencia was born in the wake of the COVID-19 pandemic to address an urgent need for support. After about a year and a half of dedicated work by a diverse volunteer team of scientists and technicians, mostly based in Argentina and Brazil, we were glad to become fiscally sponsored by [Code for Science & Society](#), a US-based 501(c)(3) nonprofit, and to receive a [2-year grant from the Chan-Zuckerberg Initiative](#). The support of both organizations ensures MetaDocencia's sustainability until November 2023, while it transitions from an organization made up entirely by volunteers to a fully funded organization.

Our Future

We will continue to generate new Spanish-language content for reproducible, open science. The following workshops are currently being developed, updated, or are in the planning stage:

- *Ethics and Social Impacts of Artificial Intelligence* for a machine learning savvy audience;
- *How to Teach Bioinformatics* for undergraduate and graduate Instructors;
- *Train-the-trainer workshops on ethics and social impacts of artificial intelligence*, for an audience unfamiliar with machine learning;
- *How to Teach Programming* for high-school technology teachers;
- *OpenRefine for Librarians*;
- *Creating a Welcoming Online Classroom* for STEM instructors and event organizers;
- *Creating Accessible Online Events* for STEM instructors and event organizers.

Other MetaDocencia goals for the next three years include to:

- Cultivate our existing vibrant community of Spanish-speaking scientific and technical instructors through events and additional training, as well as by fostering an active community on Slack and social media.
- Reach new underserved Spanish-speaking open source science communities.
- Nurture the development of other Global South-centered communities of practice for open and reproducible research by openly sharing our internal practices and experiences on how to grow from a grassroots volunteer-led organization to a fully-funded organization.
- Provide multilingual (Spanish/Portuguese/English) consulting services by our highly qualified and experienced team members.
- Collaborate together with other like-minded international communities with the [NASA Transform to Open Science \(TOPS\) initiative](#) by teaching TOPS OpenCore modules contextualized to Spanish or developing inclusive and accessible new TOPS OpenScience modules.
- Investigate ways to offer on-ramps towards open scientific infrastructure for Latin America ([see the proposal with 2i2c and others](#)) and towards more inclusive international open science (see [the proposal](#) with [OLS](#), [CS&S](#), and [Talarify](#)).
- Measure and publish our impact in different citable formats.
- Continue honoring our [values, mission, and vision](#).
- Build new partnerships to plan for sustainable operations over the next three years.

Selected Reports and Resources

For our Immediate Future

- [Open grant narrative: A Collaborative Interactive Computing Service Model for Global Communities](#) (bilingual, with 2i2c)
- [Proposal: Emerging Open Science Leadership Fellows](#) (with CS&S, OLS, and Talarify)

From our Present and Past

- 11/22 - [Advances of MetaDocencia's New Governance](#) (bilingual)
- 09/22 - [Open Source and Open Science in Latin America](#) (trilingual, with CZI)
- 04/22 - [MetaDocencia accessibility profiles](#) (bilingual)
- 02/22 - [2021 Report. Another year together, and we go for more!](#) (bilingual)
- 11/21 - [Teaching to teach between communities in Spanish](#) (bilingual, with The Carpentries)
- 11/21 - [MetaDocencia awarded 2-year grant and joins CS&S](#) (bilingual, with CS&S)
- 01/21 - [2020 Report. Cheers to the great MetaDocencia community!](#) (bilingual)

Most of our products can be found in the [MetaDocencia Community on Zenodo](#).