A IMPORTÂNCIA DE PALESTRAS PRESENCIAIS PARA AMPLIAR A DIVULGAÇÃO CIENTÍFICA

THE IMPORTANCE OF IN-PERSON LECTURES TO EXPAND SCIENTIFIC DISSEMINATION

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Resumo: O projeto Café com Ciência BIO UVA foi criado em 2017 e desenvolvido até o início de 2020. Este artigo apresenta a análise do banco de dados sobre essa estratégia de divulgação científica após o período de realização. Os dados analisados mostram que foram realizadas 66 palestras científicas presenciais, com 2.271 participantes registrados no livro de atas do projeto, com média de 34±16 pessoas por palestra, com a participação de 63,2% de mulheres e 36,8% de homens. Dentre essas palestras presenciais, 37 foram realizadas por homens e 29 por mulheres, representando 20 instituições nacionais de ensino, pesquisa ou extensão. Por sua vez, o maior número de docentes (35%) foi formado por professores da Universidade Veiga de Almeida (UVA), seguidos por 18% da Universidade do Estado do Rio de Janeiro (UERJ). Além disso, os dados do projeto relativos à sua página no Facebook mostraram que durante o período analisado foram observados 790 seguidores, a maioria deles entre 18 e 24 anos de idade, e 68% representavam mulheres. O desenvolvimento das palestras presenciais no contexto do Café com Ciência BIO UVA permitiu aos seus usuários interagir com diferentes pesquisadores de diversas áreas do conhecimento científico, sendo uma eficiente estratégia de divulgação científica.

Palavras-chave: Aprendizagem Colaborativa. Palestras Presenciais. Ensino Superior.

Abstract: The project Coffee with Science BIO UVA was created in 2017 and developed until the beginning of 2020. This article presents the analysis of a databank on this scientific dissemination strategy after the period of accomplishment. The analyzed data shows that 66 scientific in-person lectures were held, with 2,271 participants recorded in the minute book of the project, representing an average of 34±16 people per lecture, with the participation of 63.2% of women and 36.8% of men. Among these in-person lectures, 37 were accomplished by men and 29 by women, representing 20 national teaching, research, or extension institutions. In turn, the largest number of lecturers (35%) was formed by teachers from the Veiga de Almeida University (UVA), followed by 18% from the State University of Rio de Janeiro (UERJ). Besides, the project data related to their Facebook page showed that, during the analyzed period, 790 followers were observed, most between 18 and 24 years old, and 68% represented women. The development of the in-person lectures in the context of Coffee with Science BIO UVA allowed its users to interact with different researchers from several areas of scientific knowledge, being an efficient scientific dissemination strategy.

Keywords: Collaborative Learning. Face-to-face Lectures. University Education.

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Introduction

Currently, we live in a world of constant change, where the ways of learning are changing at a surprising speed. According to Cazelli et al. (2010), it is vital to understand that we are facing new challenges since society seeks to be increasingly satiated through broader forms of knowledge, which allow engagement with the various fields of ideas at different levels. Therefore, the science outreach strategies have been applied in different ways. In turn, Davison et al. (2008) point out that science communication and outreach activities engage diverse audiences to increase public awareness of, support for, and participation in science, and to influence school subjects, degrees, and career choices. Besides, the growing interest in science dissemination offers new opportunities to communicate science openly to various audiences but also challenges adapting to an audience that does not share the same academic background (BERNAD-MECHÓ & VALEIRAS-JURADO, 2023).

In the understanding of Bautista et al. (2022), science communication is a broad term encompassing communication through multidisciplinary and interdisciplinary scientific teams in fundamental and applied science, education, community engagement, and outreach events that help raise science awareness. In the academic context, holding lectures and scientific conferences outside the classroom are frequently used tools in undergraduate courses. Conferences, congresses, workshops, and other kinds of scientific meetings are very important aspects of research and development, and they constitute a way for professionals to exchange their relevant findings and experiences in one place (LEOCHICO et al., 2021). Different areas of knowledge use conferences to expand their forms of communication on specific topics. Sardelis and collaborators (2017) highlight that conferences organized by professional societies provide professionals and scientists with the opportunity to disseminate their work, network, and form collaborative relationships for future endeavors.

In-person conferences, especially in biomedicine and human sciences, have always provided the scientific community with a unique opportunity for exchanging knowledge and ideas, professional updating, disseminating scientific findings, networking, and developing policies and prevention strategies, which have had a great impact on the field of research over time (VALENTI et al., 2021). In addition, Alencar et al. (2020) point out that the model of holding conferences or lectures to disseminate ideas has been gaining strength in recent years, and, as a result, several national and international initiatives have been very successful, especially in the academic world.

These lectures are characterized by an oral presentation, in a room or auditorium, to address a certain subject of interest to the target audience, using a more dynamic and less formal language. The success of the lecture, in general, depends on the form of narrative used to approach the subject. According to Harari (2018), humans think in the form of narratives and not facts, numbers, or equations, and the simpler the narrative, the better. In this context, Bruno Giussani, co-organizer of the TED Talks conferences, claims that when people gather in a room to listen to what someone has to say, they are handing over something extremely precious, irretrievable: a few minutes of your time and attention. Therefore, the speaker must use this time in the best possible way (ANDERSON, 2016).

In this context, the main objective of Coffee with Science BIO UVA was to establish a permanent self-critical and constructive space for scientific discussion in the Biology Course at Veiga de Almeida University. Thus, creating a cycle of seminars could significantly contribute to better academic training for the students of the course.

Materials and methods

Between 2017 and 2020, the Coffee with Science BIO UVA in-person lectures were held on Tuesdays, lasting 1 hour (1 pm to 2 pm), in the mini auditorium on the Tijuca campus of Veiga de Almeida University (UVA), which has 50 available seats. Initially, created for students of the biology course, the lectures were open to the free attendance of the entire community of the institution,

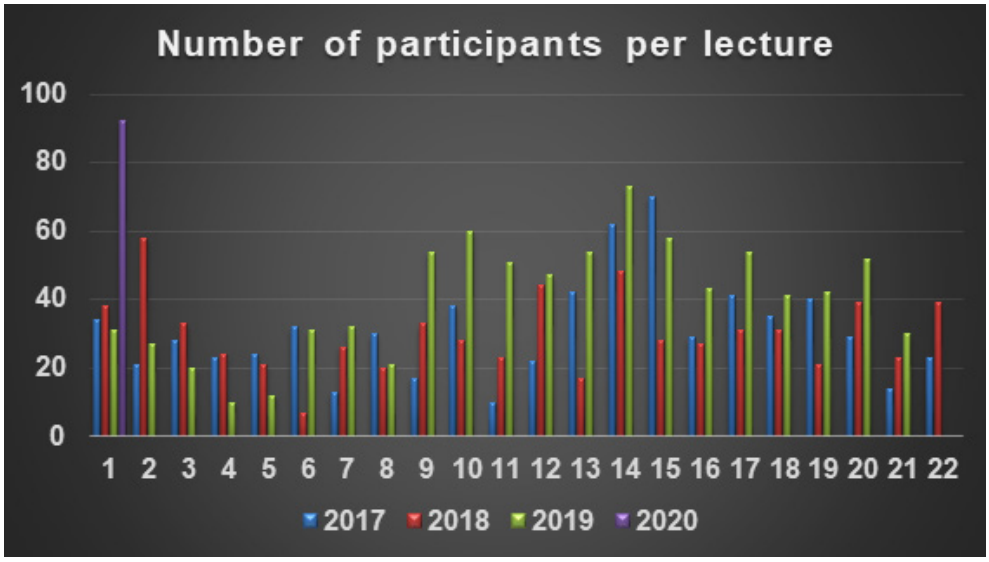
and to the external public. The choice of topics addressed in each lecture was carried out by members of the project's working group, formed by four teachers of the biology course. The choices considered the importance of the topics to be discussed and the suggestions made by the participants of the lectures. At the beginning of each in-person lecture, all participants registered their presence in the project minute book, and at the end of the lectures, they filled out a paper form containing personal information and suggestions for new lectures with different topics to be addressed.

Four students from the biology course participated as support collaborators in the activities during the lectures. Annually, these students were replaced by other volunteer students. At the end of each lecture, all those present at the lecture received a certificate of participation as listeners, which could be used as proof of complementary academic activities at the university. In this context, qualitative and quantitative analyses were carried out on the database established in the period between 2017 and 2020. On April 08, 2017, a page on Facebook (https://www.facebook.com/cafecomcienciabiouva/) about the Coffee with Science BIO UVA was created to improve the dissemination of the in-person lectures, as well as keep an open communication channel with the target audience. Access information for this page was analyzed until March 15 2020, through data made available to the page administrator within the management environment (insight tab).

Results and discussion

In the context of Coffee with Science BIO UVA, between 2017 and 2020, 66 in-person lectures were accomplished: 22 (2017), 22 (2018), 21 (2019), and 1 (2020). Besides, were registered a total of 2,271 signatures in the attendance book, and this number of certificates were delivered after the end of the lectures: 667 (2017), 659 (2018), 843 (2019), and 92 (2020). During the studied period, the average number of participants per lecture was 34 ± 16, with a maximum number of 92 and a minimum of 7 participants, in 2020 and 2018, respectively (Figure 1).

Figure 1. Graphic of the number of participants per lecture, in the context of Coffee with Science BIO UVA, between 2017 and 2020.



Source: Prepared by the authors.

Most of the participants were represented by undergraduate students in biology at the Veiga de Almeida University. However, they also showed significant participation of undergraduate students in speech therapy, nutrition, biomedicine, nursing, and engineering, as well as people outside the academic community. Student participation in these in-person lectures can strongly contribute to forming their scientific career. In an article that discusses

simple rules for improving communication among scientists, Bautista et al. (2022) point out that listening to talks from scientists can help you learn how best to communicate your research.

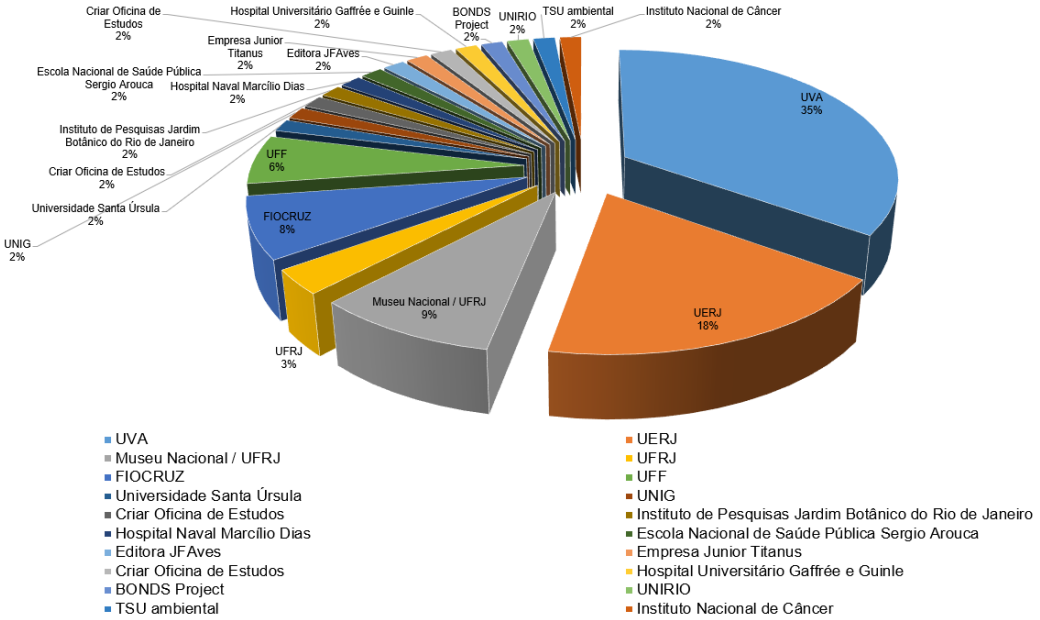
In 2020, only one in-person lecture was held in virtue of the interruption of the Coffee with Science BIO UVA project, due to the COVID-19 pandemic. In December 2019, an outbreak of pneumonia of unknown origin was reported in Wuhan, Hubei Province, China, and genomic analyses showed it to be a novel coronavirus related to SARS-CoV, and therefore named Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS-CoV-2) (CIOTTI et al., 2020). According to Mseleku (2020), the emergence of the COVID-19 pandemic undoubtedly resulted in devastating socio-economic challenges across the world and to manage the contagion, many countries have implemented restrictive measures to reduce social gatherings and to promote social distancing.

The lecture entitled "Climate Crisis and Antarctica", given by Dr[a] Rosemary Vieira from the Physical Geography Laboratory at Federal Fluminense University had the largest audience (92 participants) in the analyzed period (Figure 1). The speaker developed a significative discussion about the importance of the Antarctic Continent and its influence on the balance of global climatic conditions. The large number of participants in the lecture illustrates the growing interest of the public in issues involving Antarctica.

In this context, scientific dissemination vehicles that address Antarctic issues online (e.g.: Antarctic Channel, APECS-Brasil, Ice in Luggage, and InterAntar) or in-person (e.g.: ZANANDREA et al., 2018) scenarios have shown a significant number of participants in recent years. Between 2017 and 2020, the speakers at Coffee with Science BIO UVA represented 20 national institutions (Figure 2). In this context, com 23 (35%) speakers, the Veiga de Almeida University (UVA) was the institution with the highest number, followed by the State University of Rio de Janeiro (UERJ) with 12 (18%), and National Museum at Federal University of Rio de Janeiro (Museu Nacional/UFRJ) with 6 (9%) speakers.

These numbers are explained by the fact that Veiga de Almeida University was the scientific institution managing the Coffee with Science BIO UVA and where lectures were held, on its Tijuca campus. Meanwhile, UERJ and Museu Nacional/UFRJ are scientific institutions close to UVA, respectively in the neighborhoods of Maracanã and São Cristovão.

Figure 2. Graphic of the percentage of speakers by institutions at Coffee with Science BIO UVA between 2017 and 2020.



Source: Prepared by the authors.

During the analyzed period, scientific speakers (e.g.: doctors, masters, and teachers) from different institutions and areas of knowledge, accomplished 66 lectures on the most diverse topics. Tables 1 to 3 show the title of the lectures and names of the speakers, during 2017 (Table 1), 2018 (Table 2), 2019, and 2020 (Table 3).

Table 1. Title of the 22 lectures and names of the speakers in the context of Coffee with Science BIO UVA in 2017. Where m/d (month/day).

m/d	Lectures and Speakers in 2017
03/07	Marine communities as an environmental monitoring tool (Drª. Cristiane da Silveira Fiori)
03/07	Biology of climate change (Dr. Alexandre Santos de Alencar)
03/14	Radioecology (Dr. Alexandre Santos de Alencar)
03/28	Rational search for active principles in plants of the Brazilian flora (Dr. Marco Eduardo do Nascimento Rocha)
04/04	Construction of the biologist's professional life (MSc. André Micaldas Corrêa)
04/18	Environmental Scientific Photography (Dr. Alexandre Santos de Alencar)
04/25	Fossil collection, curation and preparation techniques (MSc. Natan Santos Brilhante)
05/02	Gave zika?! Emerging and reemerging mosquito-borne viruses (Ph.D. Shana Barroso)
05/09	Connecting ecology and parasitology: the importance of multidisciplinary studies (Drª. Natalie Olifiers)
05/16	Yellow Fever: disease transmission, production and quality control of vaccines (MSc. Leila Abboud Dias Carneiro)
05/23	Palynology in the analysis of atmospheric connections between South America and Antarctica (MSc. Luiz Antonio da Costa)
05/30	Biology and entrepreneurship: Mapping opportunities (Bióloga Jessica Castelo Branco)
08/23	Scientific Photography: The Atlantic Forest in Focus (Dr. Antonio Carlos de Freitas)
08/30	Animal Models in Neuroscience (Drª. Danielle Paes Machado de Andrade Branco)
09/06	Life and Artificial Intelligence (MSc. Joelmir Ramos)
09/20	Cultural Zoology: the wave of the moment (Drª. Maíra Moraes Pereira)
09/27	Astrobiology: Cosmic Contingencies of Life (MSc. Bruno Leonardo do Nascimento Dias)
10/04	Smoking, Nicotine, and Anxiety (Dr. André Luiz Nunes Freitas)
10/11	Paleoparasitology - unveiling the past to make the present better and more intelligible (Drª. Shênia Novo)
10/18	Ballast water – diagnosis, consequences and preventive measures against species bioinvasion (MSc. Viviane Bernardes dos Santos Miranda)
11/08	Biosafety: Concepts and Applications (PhD. Allan Cézar de Azevedo Martins)
11/29	Where to publish my academic information? FACE or LATTES (Dr. Alexandre Santos de Alencar)

Source: Prepared by the authors.

Table 2. Title of the 22 lectures and names of the speakers in the context of Coffee with Science BIO UVA in 2018. Where m/d (month/day).

m/d	Lectures and Speakers in 2018
02/20	Limnic malacology: far beyond the simple study of freshwater molluscs (Drª. Ximena Maria Constanza Ovando)
02/27	Visualizing tumor cell death (Dr. Fabricio Montalvão Ferreira)
03/06	Do you know what science communication is? (Dr. Alexandre Santos de Alencar)
03/13	Palynology applied to paleoenvironmental reconstruction (MSc. Luiz Antonio da Costa Rodrigues)
03/27	Systematic biology or phylogenetic systematics, where do we venture? (MSc. Rafael Gomes de Souza)
04/10	Chemistry of essential oils (Dr. Paulo Roberto Dias dos Santos)
04/17	Diptera Diversity (MSc. Marco Antônio Menezes)
04/24	Photography of birds and reptiles "*in situ*" (Photographer José Felipe M. Pereira)
05/15	BIO-UVA: Past, present and future (Drª. Cristiane da Silveira Fiori)
05/22	The Secret Life of Trees by Peter Wohlleben: Fable or Science? (Drª. Alessandra Ribeiro Guimarães)
06/05	Biological puzzle: sequence alignment (Ph.D. Allan Cézar de Azevedo Martins)
08/14	Exotic species: implications for ecology, economy, and public health (Drª. Sonia Barbosa dos Santos)
08/21	Enzymatic biomarkers and their use in monitoring aquatic environments (MSc. Ana Carolina Volpato Zanandrea)
08/28	Research methodology and scientific production (Dr. Alexandre Santos de Alencar)
09/11	Microplastics: impacts on marine life (MSc. Érica Cristina Ferreira)
09/25	Science-art in Basic and Higher Education (MSc. Felipe do Espírito Santo Silva Pires)
10/02	Ethnobotany of food plants in the Amazon (MSc. Clara de Carvalho Machado)
10/09	Spreading Antarctic Science (Dr. Alexandre Santos de Alencar)
10/16	The Water Nexus (MSc. Tatsuo Shubo)
10/23	New antiviral therapies - the use of siRNA and CRISPR-Cas9 (Dr. Alexandre dos Santos da Silva)
10/30	Studies of ectoparasitic mites of bats in Brazil (Drª. Juliana Cardoso de Almeida)
11/06	The importance of interdisciplinarity for a scientist: Bioprospecting of Ulva species (MSc. Ana Carolina dos Santos Calheiros)

Source: Prepared by the authors.

Table 3. Title of the lectures and names of the speakers in the context of Coffee with Science BIO UVA in 2019 (21) and 2020 (1). Where m/d (month/day).

m/d	Lectures and Speakers in 2019
03/13	Science - Scientific Dissemination: a two-way street (Dr. Alexandre Santos de Alencar)
03/20	Identification of bioactive substances in plants (MSc. Fernanda Gouvêa Gomes Ürményi)
04/03	Basic sanitation, environmental impacts, and solutions (Dr. Gustavo Aveiro Lins)
04/17	Arboviruses: A health challenge! (MSc. Max Willian Lisboa Gomes)
04/24	Biosynthesis of diterpenes in the brown seaweed *Canistrocarpus cervicornis* (Ph.D. Ana Carolina da Silva Braga)
05/08	Environmental Health: A panoramic view of one of the great public health challenges (MSc. Denise Alves de Lima)
05/22	Environmental scientific photography and preservation (Dr. Artur Moes)

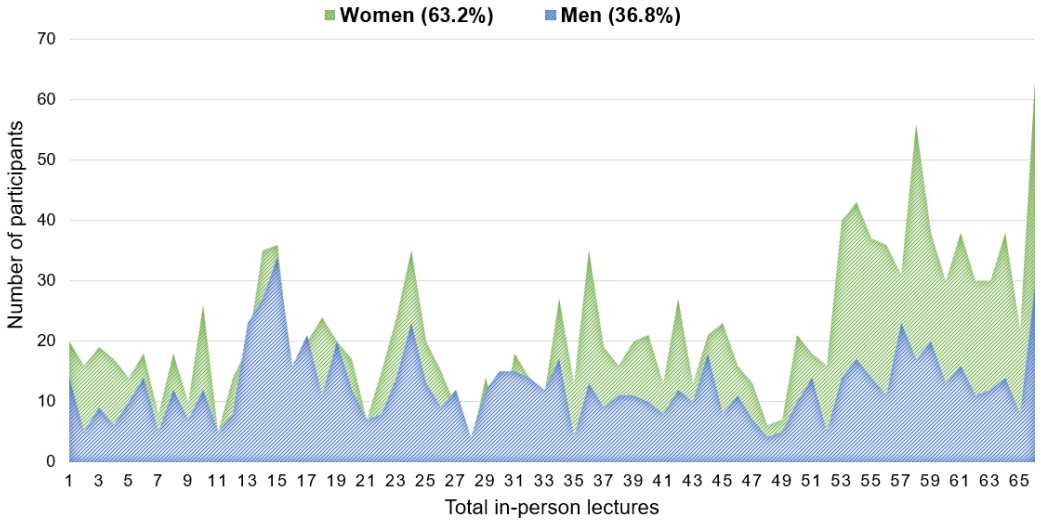
05/29	Global Climate Change in the Context of the Sustainable Development Goals: Echoes of the 2019 Magna Meeting of the Brazilian Academy of Sciences (Dr. Alexandre Santos de Alencar)
08/07	Regenerative medicine: concepts and applications (Dr. Alex Balduino de Souza)
08/14	Viral hepatitis (Drª. Marcelle Bottecchia Coelho Branco)
08/21	Vila Dois Rios - A collective look: An experience of photography in textbooks (Photographer Margareth Pederneiras)
08/28	Scientific research is for the whole society and not just for scientists (Dr. Cleber Nunes Kraus)
09/04	Freshwater bivalves in Brazil: who are they, how many are there and why is this important? (Dr. Igor Christo Miyahira)
09/11	Animal models to assess behavior associated with schizophrenia (Drª. Ana Carolina Tavares Dutra)
10/02	Forests under the ice: Unraveling Antarctica's past (MSc. Arthur Souza Brum da Costa)
10/09	Methods for capturing and identifying small mammals (Dr. Roberto do Val Vilela)
10/16	To write or not to write, that is the question (Drª. Thereza Cristina Ferreira Camello)
10/23	The One Health concept in the environmental interface and bacterial enteroinfections (Drª. Adriana Hamond Regua Mangia)
10/30	Changes in the pattern of world food consumption due to Global Climate Change (Dr. Alexandre Santos de Alencar)
11/06	Marine Pollution: can we get to zero waste? (Biologists, Nayana Cordeiro & Kariny de Araujo Teles)
11/13	The era of genomics: Breast cancer and genetic mapping (MSc. Pricila da Silva Spínola)
	Lecture and Speaker in 2020
03/11	Climate Crisis and Antarctica (Drª. Rosemary Vieira)

Source: Prepared by the authors.

During the analyzed period of Coffee with Science BIO UVA development, Dr. Alexandre Santos de Alencar, a teacher from Veiga de Almeida University (UVA), gave the largest number of lectures (10). This occurred, since, as project coordinator, he had the responsibility of giving a lecture every time a speaker did not attend the event. In that period, it was possible to verify the occurrence of lectures in the most diverse areas of scientific knowledge, mainly in the fields of life sciences and biomedical. According to Leochico et al. (2021), scientific conferences are integral to all fields of study, providing learners of all ages with opportunities to improve their practices, resulting in advancements that may benefit the greater population.

Tables 1, 2, and 3 show that among the 66 in-person lectures held between 2017 and 2020, 37 were accomplished by men and 29 by women. The analysis of the participation records in the minute book showed that women (63.2%) were more present at the in-person lectures when compared to men (36.8%). Figure 3 shows the participation for gender (women and men) in the 66 in-person lectures accomplished between 2017 and 2020, in the context of Coffee with Science BIO UVA.

Figure 3. Participation for gender (women and men), in 66 in-person lectures done at Coffee with Science BIO UVA, between 2017 and 2020



Source: Prepared by the authors.

In this case, Jones et al. (2014), discussing gender differences in the participation of conference presentations, authors point out that women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. Furthermore, according to the authors, these differences persist despite long-running policies to ameliorate gender inequity. In an article that discusses strategies to reduce gender inequality at scientific conferences, Sardelis et al. (2017) highlighted the importance of conferences to provide the opportunity for scientific dissemination but also pointed out that these opportunities are rarely distributed equally between men and women in science. Furthermore, the authors highlighted that addressing gender inequity should be a primary consideration for all societies hosting conferences.

Analyzed navigation data from the Coffee with Science BIO UVA Facebook page, between April 08, 2017, and March 15, 2020, showed a total of 785 people clicked on the option to "like" the page, resulting in 790 followers. During this period, the maximum "organic" reach of online publications on the Facebook page was 2,385 people, with an advertising banner published on August 22, 2019, about the in-person lecture entitled "Scientific research is for the whole society and not just for scientists" developed by Dr. Kraus (Table 3). According to Facebook rules, "organic" means that no payment was made to the social network to expand the page's reach. In addition, the predominant age group between men and women, was from 18 to 24 years old, with the majority composed of the female audience with 68%, and only 32% composed of men. In this context, according to Alencar et al. (2013), inserting social media, in this case, Facebook, in the student context becomes an easy task since digital natives are already used to using digital media assiduously.

Additionally, in the last years, the analysis of page information made available by Facebook has allowed better monitoring of page dynamics and knowledge of their target audience in the online scenario (e.g.: MONTEIRO, 2016; ZANANDREA et al., 2018). Despite this benefit, regarding the use of Facebook, Schyff et al. (2020) highlighted that the unauthorized use of personal information belonging to users of apps integrated with the Facebook platform affects millions of users.

Conclusions

This article highlighted the importance of applying scientific outreach strategies. The development of Coffee with Science BIO UVA, between 2017 and 2020 allowed its users, mostly college students, to interact with different researchers and professionals from several

areas of scientific knowledge, using in-person lectures as a scientific dissemination strategy. Thus, becoming an important educational tool for collaborative learning, as well as an efficient initiative for the expansion of spaces dedicated to scientific discussion in the academic setting.

In addition, to providing the opportunity to discuss a particular scientific topic, the in-person lectures of the Coffee with Science BIO UVA also helped students to develop and expand their communicative competence, influencing their oratory, as well as bringing students closer to researchers from different areas and laboratories, allowing many to try to join, still in graduation, the team of laboratories that they did not know before, creating new opportunities for learning and research.

Considering that attending lectures by experienced professors and researchers from different areas of knowledge can serve as a significant example. Its page on the social network of Facebook served as an important tool for publicizing the scientific outreach project in the online universe, allowing its growth, and reaching a larger number of people with scientific interests.

Acknowledgments

The authors would like to express their deepest gratitude to all speakers who participated in the Coffee with Science BIO UVA, who kindly donated their time and shared knowledge, thus contributing to scientific dissemination. We also thank all the students who participated in the lectures, without whom the success of the project would be impossible. We thank the academic coordination of Veiga de Almeida University for the constant support of the project.

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Recebido em 01 de março de 2024.
Aceito em 06 de junho de 2024.