



The challenges of biology teaching through the creation of a biological sciences extension project during the COVID-19 pandemic in Brazil

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Introduction

Considering the political and social context that Brazilian society lives currently, university extension projects are necessary for students to produce knowledge that will then be disseminated beyond the physical limits of higher education institutions through teaching and research [1].

The discipline "INT0183 Extension Curriculum Actions" was created in early 2020 as part of the new curricular profile of the Biological Sciences course (Bachelor's Degree/UFPE), in order to meet the new guidelines for Extension in Brazilian Higher Education (Annex I), established in RESOLUTION No. 09/2017 CCEPE/UFPE and No. 7/2018 of the National Council of Education/Chamber of Higher Education, which regulates the provisions of Target 12, Strategy 12.7, of Law No. 13.005/2014 [2], approved by the MEC Ordinance N°1.350 [3], which implements the extension curriculum in undergraduate courses in Brazil.

Linked to the discipline, the extension project entitled Biology in the Neighborhoods was created in March 2020 and designed for the face-to-face model in a science fair format so that undergraduate students could take Biodiversity, Biotechnology and Health themes to schools and community centers of the city of Recife. However, due to the new Coronavirus pandemic (COVID-19), the project underwent changes and started to be executed in a remote model. The project was effectively started in January 2021 and completed in September 2021, lasting two semesters.

Therefore, improve the training of university students in scientific dissemination by bringing Biology closer to the external community of UFPE, composed mainly of students and teachers from elementary and high schools, as well as their families and community centers. Inform, clarify, interact and generate curiosity in the population about current issues related to the

three areas of biology covered in the discipline – biodiversity, biotechnology and health.

Improve the education of Biology students (Bachelor's Degree/UFPE) from the interaction between Teaching, Research and Extension, enabling them to disseminate science through actions on social networks, organizing an online event managed entirely by them and coordinated by professors from institution that operate in their respective areas of expertise.

Experience report

Each action lasted one academic semester and was performed by 32 students of the Bachelor of Biological Sciences/UFPE in the 1st semester and 30 in the 2nd semester, supervised by 12 professors and 11 collaborators, including undergraduate, graduate and postgraduate students and post-docs. The actions resulted from the preparation of booklets, podcasts, live events, interactive games, videos and interviews, posted on the project's social media (Instagram, Spotify, Facebook and YouTube). These materials are available for public consultation at any time on the project's social networks.

The Instagram profile had 78 posts, 546 followers, 678 accounts reached and was accessed by audiences between 18-24 years old (44.4%), 25-34 years old (34.6%) and 35-44 years old (9.6 %), composed of 69.3% women and 30.7% men. There were even accesses from Ecuador and Portugal. The Facebook profile has 139 friends. The YouTube channel has 146 subscribers, 55 videos with 2 to 423 views, five live streams with 79 to 423 views. The channel had 1,677 views and the audience comprises 78.1% women and 21.9% men, aged 18 to 24 years (55.4%) and 25 to 34 years (44.6%).

At the end of each semester, the artistic-scientific productions, together with the results obtained by the

teams and their experience reports, were presented by university students through live Biological Extension Conferences, transmitted by the project channel on the YouTube platform. All lives had LIBRAS (Brazilian Sign Language) interpreters. During the event, opinion questionnaires were made available to the public, with 100% approval.

Reflection on the experience

Scientific and technological production has the capacity to economically, socially and politically impact society as a whole and in specialized areas of institutions, with health being one of these areas. In addition, it works through the generation of culture and values, such as the dissemination of cultural institutions [4]. In this context, the project generated scientific, social and environmental impact through the dissemination of important scientific knowledge to the population. Among the themes that obtained greater public interaction on the project's social networks, the following stood out: mucormycosis, biosensors, GMOs, use of masks after the COVID-19 vaccination, the main types of vaccine against COVID-19 in Brazil and bioremediation.

Due to the pandemic, the project had to undergo changes to the remote model and the difficulties encountered were related to the instability of the internet for meetings and transmission of events online, inadequate equipment and facilities for the preparation of materials and presentation of some team members, as well as difficulty or values for installing programs for making the contents and broadcasting events, as well as failures in microphones and cameras. Despite the difficulties encountered, the results of the project reached a relevant audience that was satisfied with the materials produced.

Conclusions and recommendations

The project promoted academic integration, with articulation between teaching and research, integration between the areas of knowledge, diffusion and dissemination of technology and information, and scientific, social and environmental impact. It also generated technical-scientific publications and trained human resources. In the remote model, more frequent meetings and weekly or fortnightly goals are recommended for the accomplishment of activities. It is also recommended to maintain external collaborators to the discipline, including from other areas of activity besides biology, such as communication or related areas for teaching programming of live broadcast platforms and text corrections respectively and the preparation of

questionnaires opinion for the general public and students of the project in order to improve future editions of the event.

Keywords: Biology. Scientific dissemination. Teaching. Extension.

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Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

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