

# Outreaching Optics During the COVID-19 Pandemic: From Face-to-Face to Social Networks

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**Abstract:** In this contribution we show how, in times of pandemic, outreach activities driven by social networks can be a successful alternative to face-to-face events. Designing each activity to properly suit the host platform ensures success. © 2021 The Author(s)

## 1. Introduction

In a world where science plays an increasingly important role, making the scientific culture more accessible to people is mandatory. Scientific societies, being well aware of it, have been actively promoting outreaching worldwide. Two important examples are the Optical Society (OSA), focused on optics and photonics, with presence in a large number of countries, and the European Physics Society (EPS), that acts in Europe and deals with physics. Among the policies of these societies to promote science, student chapters are one of the most promising proposals. Student chapters are self-organized groups of students that plan and develop different activities about a specific discipline. We are the USC-OSA Chapter and USC-EPS Young Minds Section, a student chapter founded in 2013 which is specialized in outreaching optics and photonics.

Outreaching optics is interesting not only because optics is fascinating and of great relevance in technology, but also because it is an ideal starting point to stimulate curiosity for science. Compared to other scientific areas, optical phenomena are more eye-catching and easier to observe in our everyday life. In order to exploit this potential, our chapter has been historically centered on visiting schools, science fairs and hospitals to perform educative face-to-face events [1,2]. The social distancing recommendations derived from the COVID-19 pandemic suddenly hampered our agenda, leading us to actively use Social Networks (SNs) to maintain our activity.

In this contribution, a series of activities for SNs carried out by our group during the current pandemic are presented. SN driven activities are an excellent alternative to our previous face-to-face outreach events. Throughout the text, the importance of designing each virtual activity to suit the unique features of each platform is depicted. Only those activities tailored to fit the unique features of the host SN can be functional and successful.

## 2. Social Networks as a science communication tool

SNs are online platforms used for interacting with people or associations who share similar tastes or interests. Three of the most trendy SNs were selected to host our activities: Twitter, Instagram, and Twitch. Twitter is a microblogging and social networking service in which users post and interact via messages known as *tweets*. A really interesting feature concerning this SN is the possibility of concatenating related tweets forming a *thread*, where all the information is shown together in a package that can be easily shared. Instagram is a platform devoted to photo and video sharing, where people can interact through *likes*. This SN has a feature known as *stories* for posting content that last a brief time and allows announcing activities and keeping in touch with the followers. Finally, Twitch is an emerging SN for live-streaming, which allows the audience to interact in real-time with the host of the event. Moreover, the content transmitted in this SN is kept in the user's profile for two weeks, so people can still consume it on a delayed basis.

### 2.1. Inclusion Activities

Promoting inclusion is one of the main objectives of our chapter since exclusion by race or sex is still a reality in many branches of science and research. For example, UNESCO revealed that between 2014 and 2016 only around

30% of high education female students chose a field related to some STEM area [3]. To change this scenario, the General Assembly of the United Nations established February 11<sup>th</sup> as the International Day of Women and Girls in Science.

In order to contributing to celebrate that date, from 8<sup>th</sup> to 12<sup>th</sup> of February, our chapter made and published a series of short bibliographic videos about brilliant female scientists, such as Maria Goeppert-Mayer or Jocelyn Bell, whose labour were not properly recognized due to their sex. Near figures like Antonia Ferrín, the first Spanish woman to obtain a Ph.D. in Astronomy, were also commemorated since local references are also important. The SNs chosen to hold this activity were Twitter, where a *thread* was created containing the videos, and Instagram, where they were promoted by means of *stories*. Note that for achieving success on the dissemination of the videos on these fast-content SNs, they must to be short (1-2 minutes) and owing subtitles, both key factors to make them more accessible.

## 2.2. Outreach activities: *The bright side of everyday life*

As a student chapter specialized in photonics and optics, one of our main communication goals is making people aware of the countless optical phenomena present in our daily lives. For this reason, we decided to hold the transmedia photography contest, *The bright side of everyday life*, to commemorate the International Day of Light (IDL) 2021, celebrated on May 16<sup>th</sup>.

The contest consist in identifying, taking a picture, and explaining a daily-basis optical phenomena. Among the submitted pictures, a professional jury selected the best ten, which were published on Instagram to chose the awarded ones by means of a popular election in terms of likes. Proceeding in such way, the quality of the awarded pictures is guaranteed by the jury, while the popular election ensures creating engagement with our followers and reaching as many people as possible. In fact, by the election death-line, the pictures received thousands of votes and our followers on SNs increased notably.

Finally, we organized a live-streaming awarding ceremony on Twitch. During the ceremony, as a part of a relaxed and catchy conversation, five members of our chapter had the opportunity to publicly explain the most interesting phenomena among the received pictures. The audience reception was satisfactory: the event was followed by around 30 people while streamed and reached more than more than 150 views on a delayed basis.

## 2.3. Career development activities: *Doc-Talks*

Student chapters are not exclusively devoted to outreach but career development is also a priority. For this reason, we started the Doc-Talks, a program which consists in a monthly meeting with two Ph.D. students of our University, which are invited to explain their research in optics, astronomy, or other fields. The perfect SN for host these talks is Twitch due to the interactive, affable and catchy environment it provides.

Each Doc-Talks meeting consists of two parts. In the first one, the participants are introduced by the hosts, two members of our chapter, and given 15 minutes to briefly explain their thesis research as well as some extra minutes to answering questions from the public. In the second part, speakers and hosts share research experiences, as well as words of advice with the audience, in a brief and informal conversation. This interaction is not only a fantastic way to promote networking between Ph.D. students, but also to help undergraduate students to understand how a Ph.D. works and the wide variety of topics that are currently being studied in our University.

## 3. Conclusions

The social distancing recommendations derived from the COVID-19 pandemic marked a profound change in the way in which outreach used to be done. Alternatively to traditional face-to-face experiences, SNs emerged as excellent platforms to disseminate optics, photonics and ultimately, science. We have show that interactive activities about inclusion in science, outreach, and career development can be successfully addressed by SNs if a proper perspective is applied. Success of these activities relies on a great extent on the coherent design of the activity which must suit the unique features of the host social network.

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