

The role of the “Rede Ciência, Arte e Cidadania” channel during the COVID-19 pandemic: actions to strengthen the teaching, research and extension field in Brazil

ABSTRACT

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Facing the emergence of the COVID-19 pandemic, in addition to health, several sectors of society were affected, such as cultural, economic and educational. In-person activities became remote. In this work, we will present a case study of the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel on the YouTube platform, elucidating the impact of our actions on the network during the period of social isolation needed to face the COVID-19 pandemic. The Channel was created in 2017, but it was during the pandemic that we got greater visibility, gaining more strength and demands. For analytics, we use the YouTube Studio > Analytics metrics tool and monitor the channel’s performance. In addition to data collection, we characterize our work as applied research. We developed live broadcasts of the network during the pandemic, which were divided into 3 moments: Network Chat, Broadcast of the II Meeting of Science Fiction and Science Teaching and Laser-Talks Rio events. For each event, we created a list of specific reproduction to facilitate the propagation and access to the videos. The audience reached was mostly female (66.4%). The age group with the greatest reach of participants who watched the broadcasts live was between 25 and 34 years old. We also observed that users from different states in Brazil participated and watched the broadcasts live. In addition to the public from the state where the channel is hosted (Rio de Janeiro), the presence of the states of Acre, Ceará, Bahia, São Paulo, Minas Gerais and Paraná was notable, a public hitherto not reached during the in-person science and art events of our group. Furthermore, in 2020, we carried out 10 live broadcasts with different approaches to science and art, which resulted in 89.4 thousand impressions, 12.6 thousand views and 943 new subscribers. Together, these results strengthen the role of the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) Channel as an important means of meeting network actors, disseminating science and art content through live broadcasts. All activities catalyzed an important connection and opportunity for our partners to hold their events remotely and for the interested public to have real-time access throughout Brazil during the COVID-19 pandemic.

KEYWORDS: Science. Art. Citizenship. Network. YouTube. COVID-19.

INTRODUCTION

In the face of the COVID-19 pandemic, in addition to health, various sectors of society were affected worldwide, such as cultural, economic and educational (PASINI; 2020). Thus, schools, a space with great importance for the construction of teaching and learning, were deactivated to prevent further spread and dissemination of SARS-COV-2, the virus that causes COVID-19 (CARVALHO; ALMEIDA, 2020). On this occasion, educational debates were intensified, with a view to understanding how to proceed with teaching remotely using essential tools that do not compromise the entire learning process of students (OEMESC, 2020).

The means of mass communication, also known as the media, have acquired great importance in recent times. This is characterized by its great influencing power in the construction of people's opinions and in the promotion of attitude and behavior, mainly because of the insertion of television in all demographic regions of the country (AMARAL, 2007). The means of communication have expanded a lot since the creation of the internet. In Brazil, from the 1990s onwards, communication has been intensified even more with the emergence of research channels and social networks (PASSIANI; CARVALHO; ALMEIDA; ALVES, 2020). Since the 1990s, digital information and communication technologies (TDICs) have been part of our daily lives, whether in an academic space or outside it, and this process directly impacts our personal and professional construction. (SILVA; CHAVES; OLIVEIRA, 2016). Education using digital media also helps the teaching and learning process (MACHADO, 2016). Among many tools used in a survey conducted by Machado (2016), videos are among the main teaching methods within the TDCIs, with great interest on the part of students.

Decree No. 9057, of May 25, 2017, in force during the COVID-19 pandemic in Brazil, defends in its first article, the use of digital media and TDICs in distance education, aiming at the didactic-pedagogical relationship in the teaching-learning process. Since these are important tools for good pedagogical development, including access policies and qualified professionals. Thus, activities mediated by TDICs for educational purposes have been developed by both students and education professionals who are experiencing different places or times (BRASIL, 2017). State and municipal governments have reinforced the importance of investing in teacher training for remote teaching during the COVID-19 pandemic, working towards new teaching methodologies (OEMESC, 2020). Although Distance Learning (EAD) in basic education is a tool offered (BRASIL, 1996), it is not (or until the COVID-19 pandemic was not) something common to be used by teachers. Therefore, many professionals needed to reinvent themselves and learn about the use and handling of digital platforms, as tools to aid in teaching. It is for this reason that Amaral (2007) argues about the great importance of debating issues relevant to the means of mass communication, as they are tools for conveying information and values that make up the subjects of a society. In addition, the media has great relevance in the construction of each individual's subjectivity (AMARAL, 2007).

YouTube emerged in 2005 (MOURA; FREITAS, 2018) and has become one of the best known and most used social networks by society. This is due to several factors, the main ones being: (1) the free access to its tools and (2) the enhancement of communication in digital media (MATIAS, 2016). In addition to being one of the largest means of video viewing in the world (KAMARES, 2017), YouTube has become a democratic space allowing anyone to access and publish

videos on any topic (MOURA; FREITAS, 2018). Since the beginning of the COVID-19 pandemic, digital tools have been highlighted, whereas YouTube has been considered a great digital resource in this period. In 2021, YouTube became the largest social network for displaying and sharing videos on the internet, reaching users around the world, resulting in a large visibility to content producers and generating a participatory culture of creating this material (SILVA NETO, 2018; JENKINS, 2006).

The “Rede de Ciência, Arte e Cidadania (Science, Art and Citizenship Network) channel on YouTube (CAC-YT), object of this work, is mainly focused on the production, transmission and dissemination of live material and science and art content in the context of education and culture, and it integrates a project in the line of research in Science and Art of the Graduate Program in Teaching in Biosciences and Health, at the Oswaldo Cruz Institute (IOC), Oswaldo Cruz Foundation (Fiocruz). This theme emerged from the union of two well-established fields, which since the 1998s have been studied and analyzed by our team at the Laboratory of Innovations in Therapies, Teaching and Bioproducts (LITEB/IOC/Fiocruz) (ARAÚJO-JORGE, 2018). We can reaffirm this idea from the ArtScience Manifest (ROOT-BERNSTEIN *et al.*, 2011, p. 192), in which they argue that “ScienceArt transcends and integrates all disciplines or forms of knowledge”. This is a growing field and the CAC-YT channel is a bridge for connecting hybrid students and professionals from all over Brazil, who connect with the themes and carry out actions related to the area. In addition to ArtScience, in our CAC-YT channel, we also exercise citizenship when we promote interaction and dialogue between different partners and public in general, with open access in all activities developed.

In 2018, we celebrate 30 years of research in ArtScience in the 10th edition of the Symposium on Science, Art and Citizenship, which has contributed throughout all these years to the meeting and training of professionals and students interested in this field. One of its wishes is that ArtScience can be part of the lives of people of any level of education, integrating scientific and citizen formation (ARAÚJO-JORGE, 2018). Thus, in this work we have as the guiding question: “how did the YouTube channel Rede Ciência, Arte e Cidadania strengthen this field of teaching, research and extension during the COVID-19 pandemic period in Brazil?” and as an objective to present the actions in the CAC-YT network, carrying out a case study during the period of isolation of the COVID-19 pandemic. Thus, we intend to generate evidence that the CAC-YT channel is an important point of strengthening for partners and the audience of interest in this field, acting, in 2020, as a catalyst for meetings and knowledge exchange in CienciArte during the COVID-19 pandemic in Brazil.

METHODOLOGY

The case study of the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel was carried out through an investigation that was characterized by the survey of data on the offer of content and access to them, together with the analysis of YouTube metrics. CAC-YT was created in November 2017, in the preparatory journey of the Symposium on Science, Art and Citizenship and is the object of study of the first author's doctoral thesis (RCMR). In 2018, it was a meeting point for the live broadcasts of the CAC Symposium, being

considered by peers as a milestone for the issue of visibility of the field in action. We use the approach according to Ventura (2007, p. 385), which organizes the research around a small number of questions, which result in the “how” and “why” of the investigation.

Based on these methodological guidelines, we use the YouTube Studio > Analytics metrics tool (<https://studio.youtube.com/>) and thus monitor the performance of the channel and videos. Through this analysis, we also evaluated the age group of our target audience, the impressions of the videos, the automatic form of reach that was generated by the YouTube platform, the video contents and the participants' comments during live broadcasts (public chat). YouTube Analytics is used to better understand the performance of videos and enable content creators to know and understand the profile of their audience, based on the metrics and reports made available. The tool provides a general summary of the performance of the channel and each video, with views and subscribers. It also provides the “reach” tab, to identify how the public is accessing the channel. Furthermore, in the “public” section, it is possible to assess the age and gender of the spectators (TOLKACH; PRATT, 2021).

We developed live artsience broadcasts during the pandemic, which were divided into different moments: (1) Network Chat, (2) organization and transmission of the II Science Fiction and Science Teaching Meeting and (3) events of the LASER program Talks Rio. For each event, we elaborate a specific playlist to facilitate the propagation, visibility and access to videos. By seeking an exhibition strategy that would contribute to the scientific dissemination of the subject during the COVID-19 pandemic, our work was also characterized as exploratory research, in which we elaborated a hypothesis and carried out validations of the studied instruments (GIL, 2002).

The dissemination of activities was carried out organically (BURGESS, 2009), without payment, with each member of the CAC Network being asked to disclose it on their own social networks, such as WhatsApp groups and websites of national partner institutions, such as PUC², Fiocruz³ and international ones, such as Swissnex⁴ and LASER Talks⁵.

RESULTS AND DISCUSSION

The CAC-YT's mission is to disseminate science and art activities elaborated/proposed by the various partners that are articulated in the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network), built in the 10 editions of the Symposium of the same name. In January 2021, the date on which we completed this study, CAC-YT offered a vast media repertoire, with 52 videos described by playlists (Table 1), which were created according to the theme of the videos.

In Table 1, we systematize the channel's contents into playlists for each year of CAC-YT activity. In 2017, we held the Preparatory Journey of the Symposium on Science, Art and Citizenship 2018, with national and international guests. The themes covered in this playlist are: Creative Coalitions: artistic and scientific report from the USA and innovations and experience reports in science and art, about students with high abilities, Espaço Ciência Viva (ECV) [Living Science Space] and advances and challenges in the field of science and art. In 2018, we held the

Symposium on Science, Art and Citizenship with the theme: Innovation and Culture for Quality of Life. Throughout the year, we organized 14 events with the support of 140 organizers from different institutions. The symposium was part of the Laser-Talks network which is an international program of artists and scientists meeting for informal presentations and conversation, it was founded in 2008 by Piero Scaruffi and it is present in more than 30 cities around the world. The events had “science and art”, as a transversal theme dialoguing, for example, with Chagas disease, inclusive education, the Portinari Project and clown. In the playlist, you can watch video edits of recorded activities. As of 2019, our group organized and coordinated the activities of Laser Talks Rio, with lectures on: neuroscience, art and society. The 2020 playlists address issues related to blackness, music experiments with art and debates about the reinvention of science and art.

Chart 1 – Systematized content of the Science, Art and Citizenship Network YouTube channel until January 2021

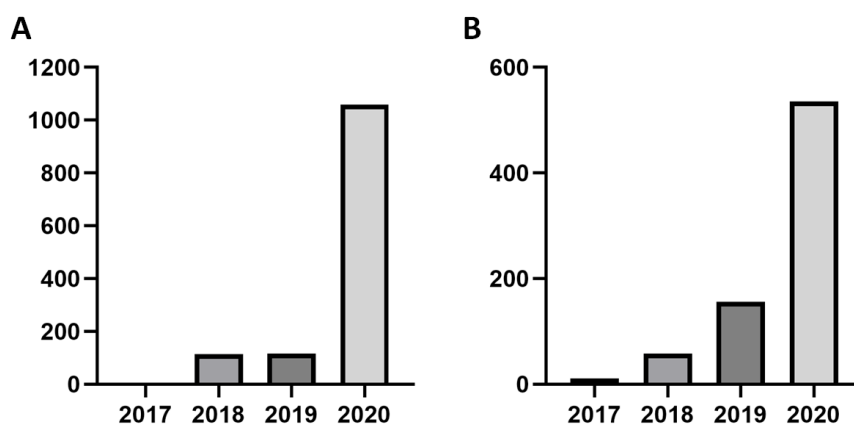
Year/Theme	Playlists
2017 - Preparation Day for the Science, Art and Citizenship Symposium 2018	https://www.youtube.com/watch?v=1oeX4DfCmA0
2018 - Science, Art and Citizenship Symposium 2018	https://www.youtube.com/playlist?list=PLjJny5p0PcYlZgABGVS-5x_gzQq1xlqDo
2019 - Laser Talks Rio 2019	https://www.youtube.com/watch?v=z-FtvwZLEA4&list=PLjJny5p0PcYLR0WyeiBOuGw6xCM5Br4vg
2020 - Laser Talks Rio 2020	https://www.youtube.com/watch?v=KsG0tLCqSy0&list=PLjJny5p0PcYLIBEgfWhJMK-S7EdA8ZxxG
2020 - Actions in the Pandemic	https://www.youtube.com/watch?v=a2CSOC-ETj8&t=2721s

Source: Elaborated by the Authors (2021).

With the advent of the pandemic, non-face to face relationships were stimulated by various world health bodies, such as the World Health Organization (WHO, 2020). Activities quickly switched to online mode. In Table 1, we describe the influence of the COVID-19 pandemic in relation to the use of this social network, CAC-YT, through the live broadcast of our events in Science and Art. Since the channel's creation date (November/2017) until the end of 2018, we reached 114 subscribers and 1,179 views (Figure 1A, Table 1). In 2019, the CAC-YT still had no specific activity since the end of the 2018 Symposium. Thus, the channel did not get many activities, being released and published only 3 videos, with a total of 196 views. In 2020, the year of the COVID-19 pandemic, the number of subscribers increased 8 times. In January 2021, when we wrote this work, the channel had 1058 subscribers (Figure 1A, Table 1). Regarding views, the growth was even greater. The observed increase was 9 times in 2020, when compared to previous years, 2017, 2018 and 2019 (Figure 1B, Table 1). Thus, we observed an important

growth and increase in the number of subscribers and views of the CAC-YT, and it is possible to identify the growing influence of the channel in promoting science in 2018 and 2019, with its peak of activity in 2020, during the year of COVID-19 pandemic. This whole process together, corroborates the increase in the dissemination and reach of the content produced and/or transmitted by our partners and the channel's team, reaching even more the public interested in science and art.

Figure 1 – “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) activities before and during the pandemic, (A) number of subscriptions on the channel and (B) number of video views. The GraphPad Prism 8.0 software (GraphPad Software Inc., San Diego, CA, USA) was used to generate these graphs based on data obtained through YouTube Analytics



Source: YouTube *Analytics*, when applied to the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel (2021).

Table 1 – Activities of the Science, Art and Citizenship Network before and during the pandemic

Period	Subscribers	Published videos	Views
2017	2	3	28
2018	114	32	1.133
2019	115	3	196
2020/2021	1058	14	13.002

Source: YouTube *Analytics*, when applied to the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel (2021).

In 2020, the educational scenario was also modified to face the COVID-19 pandemic. Classes, seminars and scientific meetings were redesigned in order to use remote alternative means that could achieve their goals, without interfering with their quality. Consequently, all programming, from artistic shows to academic conferences, started to be transmitted by virtual platforms, such as YouTube (COUTO; COUTO; CRUZ, 2020; DA FONSECA SOUZA *et al.*, 2020). With this, the CAC-YT channel was a gateway for propagating and disseminating lectures and scientific events in the field of artsience that would take place in person in 2020, but which, due to the pandemic scenario and the necessary social isolation, could not be held.

However, with the use of the internet and its tools, as in our case study: YouTube, it was not necessary to interrupt these scientific events, which took place entirely in remote format.

If we compare the year 2020 with 2018, in which we had the highest number of videos published (32), it is possible to identify that during the year of the COVID-19 pandemic, the CAC-YT channel had the highest number of subscribers and views (Table 1). We believe that these results were obtained due to the confrontation of the COVID-19 pandemic in 2020, a period in which the entire academic community and people of interest in the field of science invested their attention to remotely attend scientific events. With the growth of the channel during the COVID-19 pandemic, we were able to reach states beyond Rio de Janeiro (headquarters of the CAC-YT channel). Through the analysis carried out on YouTube Studio > Analytics, audiences from other states in Brazil also participated and watched the broadcasts live. The presence of the states of Acre, São Paulo, Minas Gerais, Paraná, Ceará and Bahia was notable, a public hitherto not reached during the in-person events. In 2018, for example, the events were held in schools, universities and institutions in Rio de Janeiro, in which the Brazilian public interested in artsience cannot be present, mainly due to the geographic barrier. In addition, the event in 2018 took place during the day, while in 2020, all events took place remotely, primarily in the afternoon and evening, providing a favorable time to be attended by participants in their homes.

In addition to the CAC-YT channel, during the COVID-19 pandemic, other researchers and professors intensified the elaboration of events, congresses and activities in the academic field, in a virtual way, transmitted by social networks, such as YouTube (ALMEIDA; GAMA-ALVES, 2020). At the time of the COVID-19 pandemic, live broadcasts gained greater space, being considered as an interactive and informative medium (ALMEIDA; ALVEZ, 2020). We were able to identify this process in the CAC-YT channel from the large number of impressions obtained (automatic YouTube reach from thumbnail views in the platform's feeds) in the live streams presented in 2020. One of the major impacts made by the channel during this period was the high amplitude reached in the transmissions, enabling participants from all over Brazil to be connected and present virtually, reinforcing the result we achieved in the participation of other states in Brazil in the events transmitted by the Network.

Live broadcasts began to be organized during the pandemic period, from March 2020, being divided into 3 moments, chronologically ordered with the organization and transmission of (i) " Network Chat", (ii) " events of the LASER-Talks Rio Program" and (iii) "events of the II Meeting of Science Fiction and Science Teaching". First, we inaugurated an essay with a specialist in artsience, who has a master's degree in Teaching in Biosciences and Health and reported his research project. In the second action, we organized and broadcast the Laser Talks Rio 2020 events, the first session being integrated into the "Semana Paulo Freire" [Paulo Freire's Week] of the Postgraduate Course in Teaching in Biosciences and Health. In the third group of videos, we organized and broadcast the "II Science Fiction and Science Teaching Meeting".

Thus, during the period of the pandemic, we carried out 10 live transmissions (Table 2). The videos resulted in an important 89,400 impressions, which are the number of times shown to viewers on YouTube in their feeds, 12,600 views and 943 new subscribers. The audience reached was mostly female (66.4%). The age

group with the greatest reach of participants who watched the broadcasts live was between 25 and 34 years old. As the form of dissemination of CAC-YT was organic, YouTube's auxiliary tool recorded that the three main sources of the public came from: (1) navigation resources (clicks within the channel -16.8%), (2) playlist page (16.6%) and (3) external resources (13.7%). In addition, the external resources that most helped in the dissemination of broadcasts were WhatsApp (47.4%), Facebook (15.5%), Fiocruz website (6.5%), Google search (5.2%), Gmail (3.8%), Instagram, Telegram and Twitter (1%). This information can be seen in Table 2.

Table 2 – Mapping of the profile, age group and origin of the target audience

		n	%
Gender	Female	681	66,4
	Male	355	33,6
Age (years)	18-24	211	19,9
	25-34	449	42,4
	35-44	296	28,0
	45-54	57	5,40
	55-64	45	4,30
Traffic source	Navigation resources	178	16,8
	Playlist page	176	16,6
	External resources	145	13,7
External resources types	WhatsApp	501	47,4
	Facebook	164	15,5
	Fiocruz website	69	6,50
	Google	55	5,20
	Gmail	40	3,80
	Instagram	11	1,00
	Telegram	11	1,00
	Twitter	11	1,00

Source: YouTube Analytics, when applied to the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel (2021).

Knowing that the predominant gender of the audience reached is composed of women, corresponding to more than 60% of the participants (Table 2), we emphasize here the importance of discussing the gender issue in different spaces, including the CAC-YT. The channel, through its activities, opened space to debate the role of women in science, during the live broadcast 3 (Table 2) entitled “The representation of female scientists + Neuromancers Reading Club”. Despite the advance of current issues involving the space of women in society and the very conquest of women for their territory, after many political and ideological conflicts, women still face several barriers regarding their performance in specific

fields in society, as well as in science, academia and research, it is increasingly necessary to create spaces with debates that strengthen ideas that go against the sexist roots that still exist in our country (MENDES; COSTA, 2020).

An issue that also deserves attention is that 47% of people who watched the broadcasts subscribed to our channel. This high adhesion strengthens the CAC-YT channel as an important meeting point for the public interested in the topic and as a borderless propagator of educational content, research and extension within the field of Science and Art. In a live broadcast of Laser Talks Rio, entitled “Bugs and Tweets: Art and Science in the Conversation between Insects, Birds and Humans”, we reached 269 views (Table 2), a number much higher than the maximum physical capacity of the IOC auditorium -FIOCRUZ (116 people), in which the event would be presented.

YouTube has become an extremely important tool for countless professionals from many fields of knowledge (MATTAR, 2009; SILVA NETO, 2018), because this tool is easy to access and anyone who has a computer/cell phone and internet can make use of the videos of this platform (NETO, 2009). We follow the YouTube public chat during live broadcasts and collect questions for speakers, as well as other types of interactions and comments that strengthen the channel's positive impact in times of pandemic, such as: “There are a lot of curiosities, a lot of interesting things!!”; “It's great”; “Congratulations for the initiative of the event” and; “Let more events like this come where we can learn about science and art.”

Felcher, Bierhalz and Folmer (2020) noted the increased use of YouTube videos for educational purposes. Among the multiple ways in which students search for learning, the most cited were: to see simulations and content reinforcement. Adding to this, they also described ways to build environments for learning on YouTube: either by pausing the video, adding it to a private or public playlist (playlist), in addition to clicking links in the video descriptions, expanding the access to similar content. Our experience with live broadcasts during the pandemic period was made available on our CAC-YT channel. Thus, we offer future users the possibility to also add them to their own specific playlists or from other channels.

Another interesting example was the live broadcast of the Second “II Meeting of Science Fiction (SciFi) and Science Teaching”. the first day of the event, which had the title: “Representations of Science + SciFi and contemporaneity”. In this live broadcast, we reached a total of 2,646 views (Table 2), a number greater than the physical space of the mythical concert hall in Paris, the Olympia. In this live broadcast, the CAC-YT offers two lectures: the first on representations of science and science fiction narratives, conceptualizing the theme and questioning the dilemma: “to instruct or to entertain?” and the response to it we have a citation of a speech coming from the Science Tent at Fiocruz on 03/22/2004: “...the ideal, then, is to spread it with fun... the ludic learning is always more fun”. In the second part of the live broadcast, the theme of science fiction and contemporaneity was discussed, focusing on science and interdisciplinary teaching, humanities and natural sciences from the perspective of philosophy and history of science. In addition, a general idea of the classification of science fiction, common sense and with critical points was also presented. The importance of the theme for the CAC-YT arises from the presentation of new ways of thinking about bringing science to society, and setting an example in science fiction. In addition to reflecting on an area not being a pedagogical amulet for another, but rather being an

interdisciplinary fusion of two disciplines in a new field, CienciArte, explained in the ArtScience Manifesto: “ArtScience is not art + science or art-and-science nor art/science, in which the components retain their distinctions and disciplinary compartmentalization” (ARAÚJO-JORGE *et al.*, 2018, p.26).

The live broadcast with the theme “Science in the Pandemic” (Chart 2), aimed to produce testimonials and reports by arts scientists and scientists about the reinvention during the COVID-19 pandemic. We invite an arts scientist who develops his research in art-based learning with music therapy techniques and with the ArtScience line. During the presentation, it was theoretically contextualized how arts science can help to rethink the artist's practice, as well as reports on the reinvention of the speaker in carrying out his research through live broadcasts and the creation of an online group on Instagram with a transdisciplinary team that works with music, health promotion and bodily practices. This group of researchers conducts weekly online body practices, also using the practice of yoga and opens a space to share each one's adaptation during the pandemic. The live broadcast “CienciArte na Pandemia” (ArtScience in the Pandemic) was conceived out of the concern to adapt teaching during the pandemic period and to know how arts scientists and scienciatists were reacting to the barriers imposed by social isolation. We found a similar example of action exemplified by Nascimento (2020) of artists who created an Instagram account (@arteemtemposdepandemia) which is a poetic diary of elementary education teachers who want to artistically reflect on this moment of uncertainty. All together to overcome the new times.

Live broadcasts have the power to reach a wide range of viewers, generating a culture of participation, in which the user becomes close to the speaker when he is at home, showing his pets in the background, stimulating an environment intimate with greater interaction. In addition, in relation to the technical side of the content, live YouTube broadcasts can be recorded on the platform and available to those who could not be on time for the event (MATTAR, 2009; CHAU, 2010).

Chart 2 – Transmissões de 10 eventos da Rede de Ciência, Arte e Cidadania durante o período de pandemia de COVID-19

Live broadcasts/Date	Results
1. Network chat 03/27/2020	1: 138 Views - Network chat: CienciArte na pandemia (ArtScience in the Pandemic) <i>Specific Playlist:</i> https://www.youtube.com/playlist?list=PLjJny5p0PcYJool39rZ0WAsF8akLJGZeU

<p>2. Laser Talks Rio 12/07/2020</p>	<p>1: 694 Views - Event linked with the Paulo Freire's Week of the Post-Graduate Course in Teaching in Biosciences and Health. 2: 64 Views - Art and Science for the construction of a "new best". (Transmitted by the Swixness partner channel and later copied, authoritatively, to our channel). 3: 261 Views - Bugs and Tweets: Art and Science in the Conversation between Insects, Birds and Humans. 4: 350 Views - The Reinvention of Science and Art in 2020. <i>Specific Playlist:</i> https://www.youtube.com/playlist?list=PLjJny5p0PcYLIBEgfWhJMK-S7EdA8ZxxG</p>
<p>3. II SCIFI 09/10/2020</p>	<p>1: 2646 Views - Representations of Science + SciFi and contemporaneity. 2: 1725 Views - Future wishes seeded by SciFi + Immersion, Science and Games. 3: 1309 Views - The representation of the female scientist + Neuromancers Reading Club. 4: 1208 Views - Art, diversity and interdisciplinarity + Isaac Asimov. 5: 1187 Views - SciFi Cinema at "Chão da Escola" [Sc+ Science and Technology in Anime and Mangás. <i>Specific Playlist:</i> https://www.youtube.com/playlist?list=PLjJny5p0PcYJjblH3eP1qgffvdz55qZsq</p>

Source: YouTube Analytics, when applied to the "Rede de Ciência, Arte e Cidadania" (Science, Art and Citizenship Network) channel (2021).

Although YouTube is an efficient tool for disseminating scientific knowledge, its use as a form of teaching and programmed content must be very well planned. The teacher's use of YouTube can be at the level of illustration, with the use of videos to highlight situations of nature and inspiration, such as watching videos of an experiment and trying to reproduce it in the future. It's a practical alternative. The video is also good to replace field trips to learn explanations of natural events. It is also possible to watch videos and reinforce knowledge (PORTUGAL, 2014).

When working with a channel such as the "Rede de Ciência, Arte e Cidadania" (Science, Art and Citizenship Network), some precautions need to be taken into account, regarding mental health and physical exhaustion during transmissions. This subject is very important and present in people's lives during the period of the COVID-19 pandemic. Live broadcasts used for the dissemination of scientific knowledge must meet criteria that do not become another burden for participants. To avoid user exhaustion, it is necessary to use a time limited to 2 hours, development of the autonomy, investigative processes and issue resolutions, and collaborative knowledge construction (ALMEIDA; ALVES, 2020).

Live broadcasts during the COVID-19 pandemic period were important, but will they replace face-to-face events? A study by Silveira (2020) shows an increase of approximately 5% of the population in accessing the internet, but in Brazil, there is still a significant percentage of people who do not have access to it. Among the main factors for this are: (a) not knowing how to use the internet and (b) high cost

of services for the socioeconomic level of the population, which together result in a lack of consumer interest (ALVEZ; ALMEIDA, 2020; COUTO; COUTO; CRUZ, 2020). Thus, our perspective for the next CienciArte (ArtScience) events, to be developed by our group after the COVID-19 pandemic, is to carry out all activities in person, but not abandon the live broadcast, so that we can continue reaching users of other states in Brazil interested in these two fields, which are Science and Art, as well as international collaborators.

CONCLUSION

The use of YouTube as a tool for live broadcasts on the “Rede de Ciência, Arte e Cidadania” (Science Art and Citizenship Network) channel had a very positive impact during the period of the COVID-19 pandemic in 2020. The CAC-YT received significant interactions and shares, with more than 89 thousand prints with organic advertising, without financing. We stimulated an important connection that provided the opportunity for interaction between the actors in the network, catalyzing the realization of events remotely and that the public interested in the field obtained access, in real time, available throughout Brazil. The CAC-YT also acted to increase the visibility of several activities in the field of Science and Art that would no longer be developed due to the social isolation necessary to face the pandemic. The moment allowed these two fields, Science and Art, to be present among the different types of public, since this topic is of interest to different school levels, from elementary school to graduate programs, enabling the construction of a new look at the world through awareness promoted in the themes worked.

With the growth of the channel in 2020, we identified an important role for CAC-YT: to fight misinformation about scientific knowledge. As with other research groups, YouTube has been used as a means of disseminating science in order to validate and bring relevance to scientific information. During the COVID-19 pandemic, other channels also attracted the attention of the community, such as FABC⁶ Extension UFMG⁷, EducaDF SFFDF⁸, among others. In addition, the digital influencers existing in the academy received the arduous mission of combating fake news, making scientific knowledge easily accessible to the population, through the creation of videos with synthetic messages and live broadcasts to deepen the content.

Thus, we demonstrate here that the “Rede de Ciência, Arte e Cidadania” (Science, Art and Citizenship Network) channel, created and designed from a doctoral thesis, is an important meeting point for scientific artists and artscientists, acting as a propagator of content and strengthening teaching, research and extension during the COVID-19 pandemic. CAC-YT played an important role, continuing the debates about ArtScience in the face of the period of social isolation, allowing anyone to access this knowledge transmitted live, recorded and made available for free on YouTube. Despite the atypical moment, we enriched the debate about scientific knowledge, at a time of negacionism and intellectual obscurantism in Brazil. In this way, we also act in the propagation, validation and valorization of science. The CAC-YT's legacy is the connections and meetings between the network's actors and the strengthening of the field of science and art.

O PAPEL DO CANAL “REDE CIÊNCIA, ARTE E CIDADANIA” DURANTE A PANDEMIA DE COVID-19: AÇÕES PARA FORTALECIMENTO DO CAMPO DE ENSINO, PESQUISA E EXTENSÃO NO BRASIL

RESUMO

Diante do surgimento da pandemia COVID-19, além da saúde, vários setores da sociedade foram afetados, como o cultural, econômico e educacional. As atividades que eram presenciais passaram a ser remotas. Neste trabalho, apresentaremos um estudo de caso do Canal Rede de Ciência, Arte e Cidadania do YouTube elucidando o impacto das nossas ações em rede durante o período de isolamento social necessário para o enfrentamento da pandemia de COVID-19. O Canal foi criado em 2017, mas foi durante a pandemia que obtivemos maior visibilidade, ganhando mais força e demandas. Para as análises, utilizamos a ferramenta de métricas YouTube Studio > Analytics e realizamos o monitoramento do desempenho do canal. Além da coleta de dados, caracterizamos nosso trabalho como pesquisa aplicada. Desenvolvemos transmissões ao vivo da rede durante a pandemia, que foram divididas em 3 momentos: Bate-Papo em Rede, Transmissão do II Encontro de Ficção Científica e Ensino de Ciências e eventos da Laser-Talks Rio. Para cada evento, nós elaboramos uma lista de reprodução específica para facilitar a propagação e acesso aos vídeos. O público alcançado foi majoritariamente feminino (66,4%). A faixa etária de maior alcance dos participantes que assistiram às transmissões ao vivo foi entre 30 a 40 anos. Observamos também que usuários de diferentes estados do Brasil participaram e assistiram às transmissões ao vivo. Além do público do estado sede do canal (Rio de Janeiro), foi notável a presença dos estados do Acre, Ceará, Bahia, São Paulo, Minas Gerais e Paraná, um público até então não atingido durante os eventos presenciais de ciência e arte do nosso grupo. Além disso, em 2020, realizamos 10 transmissões ao vivo com diferentes abordagens de ciência e arte, que resultaram em 89,4 mil impressões, 12,6 mil visualizações e 943 novos inscritos. Em conjunto, esses resultados fortalecem o papel do canal Rede de Ciência, Arte e Cidadania como um importante meio de encontro de atores da rede, divulgando conteúdos de ciência e arte através das transmissões ao vivo. Todas as atividades catalisaram uma conexão e oportunidade importantes para que nossos parceiros realizassem seus eventos de forma remota e que o público interessado tivesse acesso em tempo real em todo o Brasil durante a pandemia de COVID-19.

PALAVRAS-CHAVE: Ciência. Arte. Cidadania. YouTube. COVID-19.

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NOTES

1 Available at: <https://www.youtube.com/c/RededeCiênciaArteeCidadania>

2 Available at: <http://dad.puc-rio.br/2020/11/19/laser-talks-a-reinvencao-da-ciencia-e-da-arte-em-2020/>

3 Available at:
https://portal.fiocruz.br/busca?search_api_views_fulltext=laser%20talks

4 Available at: <https://www.swissnexbrazil.org/event/laser-talks-rio-de-janeiro-art-and-science-for-the-construction-of-a-new-better/>

5 Available at: <https://www.facebook.com/events/2920709798038068>

6 Available at: <https://www.youtube.com/watch?v=gLhbMV9lddc>

7 Available at: <https://www.youtube.com/watch?v=NA7OwnMq0cw>

8 Available at: <https://www.youtube.com/watch?v=2fcd0qWfUFU>

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