

# Animation as an information resource for health empowerment: the case of the Spanish National Health System on Youtube

La animación como recurso informativo para el empoderamiento en salud: el caso del Sistema Nacional de Salud de España en YouTube

## Sara Loiti-Rodríguez

University of the Basque Country / Euskal Herriko Unibertsitatea. Spain.

[sara.loiti@ehu.eus](mailto:sara.loiti@ehu.eus)



## Aingeru Genaut-Arratibel

University of the Basque Country/ Euskal Herriko Unibertsitatea. Spain.

[aingeru.genaut@ehu.eus](mailto:aingeru.genaut@ehu.eus)



## María José Cantalapiedra-González

University of the Basque Country/ Euskal Herriko Unibertsitatea. Spain.

[mariajose.cantalapiedra@ehu.eus](mailto:mariajose.cantalapiedra@ehu.eus)



*This article falls within the Pre-doctoral Researcher Training Program, funded by the Department of Education of the Basque Government. Thesis project from 2019 to 2022.*

### How to cite this article / Standardized reference:

Loiti-Rodríguez, Sara, Genaut-Arratibel, Aingeru, & Cantalapiedra-González, María José. (2024). Animation as an information resource for health empowerment: the case of the Spanish National Health System on YouTube [La animación como recurso informativo para el empoderamiento en salud: el caso del Sistema Nacional de Salud de España en YouTube]. *Revista Latina de Comunicación Social*, 82, 01-17. <https://www.doi.org/10.4185/rllcs-2024-2207>

**Date of Receipt:** 27/07/2023

**Date of Acceptance:** 06/09/2023

**Date of Publication:** 16/01/2024

## ABSTRACT

**Introduction:** Health institutions have the fundamental duty to educate and inform about health, and to promote social empowerment through their messages, which must always be adapted to the public, both socially, culturally and linguistically (LGSP 33/2011). Applying visual thinking to the health information through animation makes it possible to simplify and transform complex content into attractive and simple messages, in a way that facilitates understanding and retention of information by any audience (Okan Gil et al., 2016; Vivas, 2021; Anibueze et al., 2022). This study seeks to determine the use of animation as an informative resource by the Spanish National Health System (SNS) on YouTube, in order to determine the function assigned to this content and the objectives pursued by its dissemination. **Methodology:** A review was carried out of all the audiovisual content stored on the available official channels, from their creation until 2022, by means of an analytical file with 14 descriptive variables divided into three blocks-identifying elements, descriptive dimension of the content and narrative dimension-. **Results:** After analysing 18 official channels, a total of 7944 videos were identified, of which 1371 (17.3%) were animations. They are characterised by messages that, beyond informing, aim to educate in health, as they disseminate recommendations and advice to improve people's lives. **Discussion and Conclusions:** All this shows that institutions are working to adapt their messages to more dynamic and understandable formats, using representations derived from visual thinking.

**Keywords:** Audiovisual information; Health-institutions; Social empowerment; Digital animation; Spain; YouTube; Content analysis.

## RESUMEN

**Introducción:** Las instituciones sanitarias tienen el deber fundamental de educar e informar en salud, y promover el empoderamiento social a través de sus mensajes, los cuales deben estar siempre adaptados al público, tanto social, cultural como lingüísticamente (LGSP 33/2011). Aplicar el visual thinking a la difusión de información sanitaria a través de la animación permite simplificar y transformar contenidos complejos en mensajes atractivos y sencillos, de forma que facilita la comprensión y retención informativa por cualquier público (Okan Gil *et al.*, 2016; Vivas, 2021; Anibueze *et al.*, 2022). Este estudio busca conocer el uso de la animación como recurso informativo por parte del Sistema Nacional de Salud de España (SNS) en YouTube, así como determinar la función que se le asigna a estos contenidos y los objetivos que persiguen con su difusión. **Metodología:** Se realiza una revisión de todo el contenido audiovisual almacenado en los canales oficiales disponibles, desde su creación hasta 2022, a través de una ficha analítica de 14 variables descriptivas divididas en tres bloques –elementos identificativos, dimensión descriptiva del contenido y dimensión narrativa–. **Resultados:** Tras el análisis de 18 canales oficiales, se identifican 7944 videos, de las cuales 1371 (17,3%) son animaciones. Se caracterizan por ser mensajes que más allá de informar, pretenden educar en salud y fomentar la participación de la ciudadanía, ya que difunden recomendaciones y consejos para mejorar la vida de las personas. **Discusión y Conclusiones:** Todo ello muestra que las instituciones realizan una labor para adaptar sus mensajes a formatos más dinámicos y comprensibles, empleando representaciones derivadas del visual thinking.

**Palabras clave:** Información audiovisual; Instituciones sanitarias; Empoderamiento social; Animación digital; España; YouTube; Análisis de contenido.

## 1. Introducción

The current digital context and its intrinsic interactive properties provide new and dynamic tools that not only facilitate communication and interaction among individuals but also promote the constant and persistent search, consultation, reading, and dissemination of information. In this way, not only is there a democratization of knowledge fostered by ICT and the Internet, but also a de-monopolization of expert knowledge, which ceases to be exclusive and loses authority in knowledge management. Therefore, it is crucial that public institutions take on their social responsibility to educate and inform the population with professionalism and rigor (Loiti-

Rodríguez and Suárez-Villegas, 2022). To achieve this, it is essential to emphasize the need and relevance for healthcare institutions to adapt and facilitate their communication to the understanding of society as a whole, responding to its diverse needs and informational demands regarding health issues. Moreover, in the specific field of healthcare, this becomes even more indispensable, as any health-related topic is inherently of public interest. In this way, these organizations would fulfill a fundamental duty that goes beyond the care and cure of diseases; they would fulfill the social responsibility that, as public institutions, they have towards society, promoting health education and disseminating quality information through their own means. This public function is recognized in various legal norms, from the Spanish Constitution (art. 43) to the General Health Law 14/1986, the General Public Health Law 33/2011, and the Transparency, Access to Public Information, and Good Governance Law 19/2013. It is worth noting that, in order to promote health education, public administrations must also adapt their information to be "social, cultural, [and] linguistically" accessible (LGSP 33/2011, p. 16) to society.

On the other hand, all public institutions need to establish professional communication strategies to promote effective relationships not only with the media but also with the public opinion (Rodríguez-Andrés, 2017). Today, in the midst of the digital context, the ability of institutions to act as a medium of communication per se is more evident than ever (Loiti-Rodríguez et al., 2021) to counter information from less reliable or even fake sources (Larson, 2018; Depoux et al., 2020; Downing et al., 2020; Nguyen and Catalán-Matamoros, 2020). For all these reasons, institutions must promote, through their own resources, the empowerment of society to become influential nodes and informational references (Montero-Viñuelas, 2019) through digital channels, and beyond traditional media (Rubia-Vila et al., 2011), achieving a greater impact on health education (CEOE, 2016). In fact, the Internet and new technologies have changed the communication paradigm, where it is increasingly viable for a communication channel—for example, a healthcare institution's website or YouTube profile—to have a social purpose—seeking health education and citizen empowerment—and to succeed thanks to all the means available to society as a whole.

### **1.1. Empowerment and health education**

The term 'empowerment' is used in cross-cutting and multidisciplinary areas; it developed as a subject of scientific study in the 1970s, linked to social and political movements that denounced oppression and called for equity as a solution. Therefore, relating empowerment to health issues could be understood as a linguistic borrowing that gradually expands its meaning, as it is an area where the act of empowerment is not typically a response to oppression and marginalization. In the academic field, the notion of empowerment in health has been linked from its beginnings to mental health, through community psychology (Rappaport, 1981; Speer and Hughey, 1995; Petterson and Zimmerman, 2004). However, currently, the interest in social empowerment in health has intensified significantly, focusing primarily on disease prevention (Cáceres-Manrique et al., 2010; Bonal-Ruiz et al., 2012), the capabilities developed by patients and families (Suriá-Martínez, 2017; Van Manen et al., 2017), as well as other approaches related to sexual health issues (Díaz-Llanes, 2011), and situations of marginalization (Romero-Zepeda, 2012). At the same time, it is worth noting some studies with a more theoretical approach (De-Vos et al., 2009; Trujano-Ruiz and Limón-Arce, 2010; Wiggins, 2011) that allow for a nuanced understanding of the concept and scope of this phenomenon.

Empowerment in the field of health can be defined as a process of acquiring competencies through which individuals gain greater control and confidence in their decisions and actions to improve their health and well-being (Loiti-Rodríguez et al., 2023). In essence, it is a process that reinforces the knowledge and competencies of individuals to promote a change in attitude toward more active engagement with the healthcare system and its decision-making processes. Therefore, it is necessary to promote health literacy and the participation of individuals in the system (Basagoiti, 2012; De-Vos et al., 2009; WHO and ITU, 2012; Loiti-Rodríguez et al., 2023) so that they develop an empowering attitude. In short, empowerment is a continuous dialectical process in which the dissemination of information becomes crucial. For all these reasons, empowerment is closely linked and related to education and communication and could be considered as the result of them. In this regard, the work of Airhihenbuwa (1994) is noteworthy, as he developed a theory of empowerment education as a

"This allows for the identification of both the strengths and weaknesses of the disseminated animations, as well as to what extent and in what ways empowerment and education are sought through their informational messages.

model for health prevention based on collective learning, power, and action. In this case, empowerment was an instrument for social action that implies the fundamental commitment of the population, allowing the development of shared values and knowledge at cultural, contextual, and personal levels (Moreda-Sánchez, 2015), driven through the relationship and communication among all social agents.

Therefore, empowerment consists of individuals and/or society having an active role in health issues to improve their environment and meet their needs; having more knowledge and information at their disposal, and greater autonomy to improve

self-management of their health. An empowered person would be one who is more competent in managing their health problems, taking care of themselves, and self-managing properly, but who also puts it into action. Since empowerment is directly related to action, it implies carrying it out in the social context, and that such action has some kind of impact or repercussion on the community (Pick et al., 2007). Moreover, it should be noted that in the General Public Health Law 33/2011, the duty of healthcare institutions to promote actions aimed at increasing people's knowledge and capacity to improve their health, both individually and collectively, is recognized (art. 16.1), and this can precisely be called health empowerment through education.

## **1.2. New Visual Narratives in Healthcare Information**

Health information will always have a series of intrinsic handicaps due to its specialized nature and the use of many technical terms. Furthermore, it is aimed at a very heterogeneous audience with diverse comprehension and understanding abilities, a problem identified in several previous studies (Ríos, 2009; Okan, 2014; among others). Therefore, it is important to develop communication strategies that are adapted and understandable to the entire population, taking into account their informational needs and demands, in such a way that education and social empowerment can fully develop. One way to overcome these handicaps is to apply visual thinking techniques to the dissemination of health information because it aims to transform complex content into simple images and suggestive diagrams, making it easier to understand and retain the conveyed concepts (Roam, 2010; 2012; Vivas, 2021). In fact, in previous academic studies, it is considered that the use of visual and graphic resources can improve the understanding of this type of information (González-Pacanowski and Medina-Aguerreberre, 2009; Okan Gil et al., 2016; Vivas, 2021), as they simplify and transform complex messages into content composed of icons, symbols, and short texts that facilitate comprehension. Furthermore, there are some studies that demonstrate the communicative effectiveness of animated and multimedia resources compared to static images or oral messages (Anibueze et al., 2022; Ikechukwu-Illomuanya et al., 2022; Apuke et al., 2022). However, other studies warn that the level of understanding of any animation is conditioned and determined by the cultural and social context of the recipients (De-Castro-Andrade and Galvão-Spinillo, 2018). Obviously, this characteristic not only applies to visual products like animations but also affects any type of informational or media content. Indeed, the understanding of news, reports, or any audiovisual piece will depend on the cognitive, social, and cultural level of the message consumers.

However, identifying the limits of this context can be much more complex in the case of animations since academia has mainly approached them from an artistic perspective, but much less from an informative point of view: traditionally, animation has been studied as an artistic product of audiovisual fiction (Wells, 1998; Yoon and Malecki, 2010; Westcott, 2011; Furniss, 2012), and not as a piece of informative nature oriented towards health education and social empowerment. In the current multi-screen and multi-platform context where the relationship between institutions and society has been influenced by new information consumption habits, the use of animations, infographics, and moving elements to tell facts in a more attractive and engaging way to reach and maintain the audience's attention is considered increasingly indispensable (Costa, 2014; Ruivo-Manzano and Gomes-Franco, 2019). Therefore, it is relevant for institutions to adapt their communication to

the informational needs of today's society by developing strategies with innovative formats like animation, to ensure the presence of public institutions in such a competitive digital environment.

## **2. Objectives**

This study aims to understand the use that the Spanish National Health System (Sistema Nacional de Salud or SNS) has made of animation on its official YouTube channels, from its inception until the year 2022. To achieve this objective, the following specific goals are set:

- O1. Develop and quantify a metric analysis of animated pieces disseminated by public healthcare institutions on their YouTube channels;
- O2. classify and identify the format of these pieces;
- O3. establish a typology and thematic focus of the information disseminated in animated pieces;
- O4. identify the informative function of this type of content, and;
- O5. determine the level of user engagement with the analyzed content.

In summary, this work aims to show What, When, How, and Why the SNS has provided information through digital animations and what level of acceptance and interest these institutional contents have generated. This allows for the identification of both the strengths and weaknesses of the disseminated animations, as well as to what extent and in what ways empowerment and education are sought through their informational messages.

## **3. Methodology**

An empirical study is conducted to verify if the Spanish National Health System (Sistema Nacional de Salud or SNS) fulfills its duty to provide accessible and comprehensible information to society through communication that promotes health education for the citizens. Considering the primary challenge of healthcare information, which involves technical language and a heterogeneous audience, and the obligation to adapt institutional messages for general understanding (LGSP 33/2011), the use of visual communication in these cases is presented as a significant resource to enhance the efficiency of healthcare communication. It does so by summarizing messages into visual constructs, combinations of signs and symbols accompanied by brief texts, thereby creating informative pieces that are easier to understand, retain, and remember for any audience (González-Pacanowski and Medina-Aguerreberre, 2009; Okan Gil et al., 2016; Vivas, 2021; Anibueze et al., 2022; Ikechukwu-Ilomuanya et al., 2022; Apuke et al., 2022, among others). Therefore, this research examines the use of animation as an informational resource by healthcare institutions in Spain.

As the object and sample of study, all the pieces disseminated by the institutions within the SNS are analyzed on their official YouTube channels from the creation of the channels to the present day. In this way, all the official channels of the Spanish National Health System are studied from 2009, the year in which the first institutional channel was created, to 2022. It should be noted that although there should be 18 channels –the Ministry of Health and the 17 regional health services that have an official YouTube channel– the number of channels analyzed is 22 because some autonomous communities –Andalusia, Aragon, the Balearic Islands, and Cantabria– have or have had more than one official channel.

### **3.1. Method and Analytical Sheet**

For this study, a proposal is used as a starting point, which establishes the essential criteria for the analysis of informative audiovisual pieces disseminated on YouTube (Loiti-Rodríguez et al., 2021). This proposal focuses on

the messages disseminated by the Spanish National Health System during 2020, in the midst of the COVID-19 pandemic, through 20 variables divided into three blocks –identifying elements, consumption and interaction in the pieces, and the descriptive dimension of the content– in which the fundamental criteria for any analysis of audiovisual information on YouTube are cataloged.

Based on this methodological sheet, another one has been designed for the analysis of animated messages disseminated by healthcare institutions, taking into account contributions from various research studies on the topic (Costa, 2014; Arévalo-Salinas, 2017; Paredes-Otero, 2019). In this way, various proposals are adapted, and a sheet with 14 descriptive variables is developed, which are divided into four blocks (Table 1). The first three blocks aim to establish a technical sheet for each analyzed piece and are based on the proposal made in the research by Loiti-Rodríguez et al. (2021), although some aspects have been modified to adapt it to the analysis topic: animations.

The first block comprises categories related to elements that help identify and differentiate the animated pieces. Among them are the title, duration, date, and the healthcare system. The second block focuses on the descriptive dimension of the content disseminated by the pieces; in this block, the typology and theme of the messages are indicated. Additionally, the pieces are distinguished as pure animations or hybrid pieces. In both cases, animated visual resources, text, and icons are used, but the difference between them lies in the use of real video and the mixing of it with the other elements. A hybrid piece is understood as any audiovisual content in which real video is used alongside animated visual resources such as symbols, drawings, and icons, in addition to text and audio. On the other hand, a pure animation is any audiovisual piece based solely on the use of moving visual elements like symbols, drawings, and icons, which can also be accompanied by text and audio, but never real video. In this second block, the target audience for each piece is also indicated, consisting of profiles of external healthcare institutional communication –patient, user, and citizen. These are differentiated in the fact that:

A patient has a direct and personal relationship; a user is not truly a patient but has a direct relationship out of necessity, either for caregiving or family responsibility; and a citizen has an indirect relationship with the healthcare system but has an informational need that must be met for the promotion and prevention of their health (Loiti-Rodríguez et al., 2021, pp. 5-6).

If the analyzed animations are not explicitly directed at a specific audience profile, it is understood that they are, by definition, aimed at society as a whole, in other words, at citizens.

For the specific analysis of animated pieces, a third block is included, focusing on the narrative dimension of the pieces. In this section, the following aspects are sought to be determined:

- a) The narrative functions present, based on five of the six language functions proposed by Jakobson (1975): informative, appellative, phatic, emotive, metalinguistic, and poetic. Additionally, identifying which function is predominant in the pieces;
- b) The type of structure that the discourse in each piece has: analyzing and determining if it adheres to a classic narrative structure of beginning-middle-end and if it addresses the fundamental 5 Ws of journalistic information.

Finally, the fourth block of the analytical sheet includes questions about the consumption and interaction of the pieces: it records the number of views, reactions (likes and dislikes), and comments for each animation.

**Table 1.** Analytical Sheet for Animated Content Disseminated by Spanish Healthcare Institutions on YouTube.

<p>1. IDENTIFYING ELEMENTS</p> <p>1.1. Healthcare System [List- 20 categories]</p> <p>1.2. Date [dd/mm/yyyy]</p> <p>1.3. Duration [mm:ss]</p> <p>2. DESCRIPTIVE DIMENSION OF CONTENT</p> <p>2.1. Format [List- 2 categories]</p> <p>1. Pure Animation</p> <p>2. Hybrid Piece</p> <p>2.2. Typology [List- 10 categories]:</p> <p>1. Recommendations</p> <p>2. Information</p> <p>3. Mixed Pieces</p> <p>4. Tutorials</p> <p>5. Testimonials</p> <p>6. Acknowledgments</p> <p>7. Advertising</p> <p>8. Report</p> <p>9. Song</p> <p>10. Story</p>	<p>2.3. Theme [Textual open variable]</p> <p>2.4. Profile / Target Audience</p> <p>1. Patient</p> <p>2. User</p> <p>3. Citizen</p> <p>3. NARRATIVE DIMENSION</p> <p>3.1. Narrative Functions of the Pieces [List- Combinations]</p> <p>3.2. Structure (beginning/middle/end) [Yes or No]</p> <p>3.3. Structure (5 W's) [Yes or No]</p> <p>4. CONSUMPTION AND INTERACTION IN THE PIECES</p> <p>4.1. Views [Numeric value]</p> <p>4.2. Reactions [Numeric value]</p> <p>4.2.1. Number of likes</p> <p>4.2.2. Number of dislikes</p> <p>4.3. Comments [Numeric value]</p>
---	--

**Source:** Author's own work.

#### 4. Results

After analyzing the 22 official YouTube channels corresponding to the Spanish National Health System, a total of 7,944 audiovisual pieces have been identified, disseminated from the creation of these channels until 2022. Out of these, 1,371 correspond to animated pieces, which means that this format is used in 17.3% of the cases (Table 2). Using the analytical sheet designed for this study, a total of 19,194 data points have been collected, as the methodological tool employed examines each case taking into account 14 descriptive variables.

**Table 2.** Audiovisual Content Disseminated by the Spanish National Health System on YouTube (2009-2022).

	Nº of Audiovisual Pieces	Nº of Animated Pieces	Percentage of Usage
Sistema Nacional de Salud de España	7944	1371	17,3%

**Source:** Author's own work.

During the analyzed period, the use of animated pieces shows a steady increase year after year, with several spikes observed: one in 2012 (4%) and another in 2018 (10%), leading up to 2020. In this year, a significant and exponential increase in the dissemination of this type of content is noticed: a total of 353 animated pieces are published in 2020, representing 26% of the 1,371 study cases. Over the following years, there is a decline in the use of this type of pieces by healthcare services compared to 2020, but always above the previous years. It is worth noting that in 2021, the second-highest amount of animated content is concentrated within the analyzed

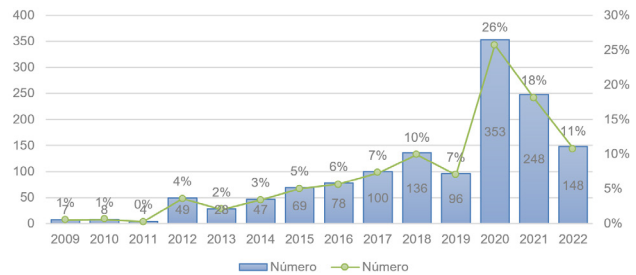
period, with a total of 248 pieces, accounting for 18% of the cases; followed by the year 2022, where 11% of this type of pieces are represented, specifically 148 pieces in total (Figure 1).

Regarding the services that make up the Spanish National Health System, it is worth noting that 74% of the dissemination of animated content is managed by five institutions. Specifically, the service that uses this type of format the most is Catalonia (29.8%), followed by the Basque Country (13.1%), Navarre (10.9%), the Canary Islands (10.5%), and Andalusia (9%). On the contrary, among the administrations that produce the fewest animated pieces are Extremadura and Asturias (0.3% each), Castilla y León (0.4%), Murcia (0.5%), followed by Castilla-La Mancha and the Balearic Islands (0.7% each), Aragón (0.9%), as well as Cantabria (1%), the Valencian Community (1.4%), and La Rioja (2%). On the other hand, the channels of the Ministry of Health, the services of Galicia, and Madrid use animated pieces around 6% (Figure 2).

The analyzed pieces are characterized by being short in length, with 74% of them having a duration of less than 2 and a half minutes, and 53% being pieces of up to 1 and a half minutes. In terms of the descriptive dimension of the analyzed pieces, in terms of their format, 709 are characterized as pure animations (52%), and 662 are hybrid pieces (48%). Regarding the typology of the animated pieces, it could be highlighted that the most used one is the dissemination of 'Mixed' content, which corresponds to 42% of all of them. This category is characterized by sharing 'Information and recommendations' about the topics covered in 90% of cases. Following this type of content is 'Information' (20%), 'Recommendations and advice' on health (18%), as well as 'Advertising' messages for awareness campaigns (14%). Thus, it could be stated that the services that make up the National Health System use their YouTube channels to share animated content mainly focused on disseminating information and recommendations on health topics, accounting for 80% of all cases, including the 'Mixed' category, as it also incorporates this type of content.

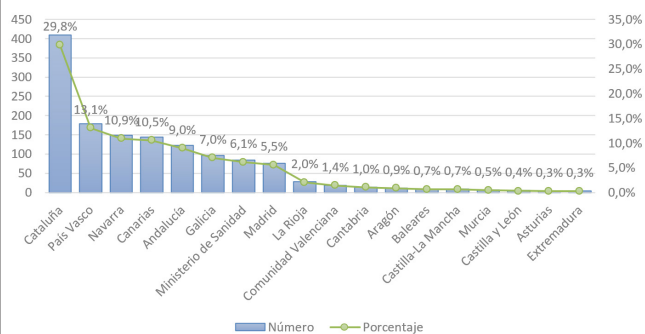
The analyzed animated pieces cover various and multiple health topics, with a highlight on those that provide information about 'COVID-19'. These pieces represent almost 24% of the entire sample analyzed (Figure 3). They are followed by pieces focused on disseminating informative content about 'Diseases and addictions' (9.4%), messages aimed at raising awareness about the use of 'Medicines, vaccines, and alternative therapies' (7.1%), promoting 'Healthy and safe eating' (7%), dedicated to 'Service information and institutional transparency' (6.9%), as well as pieces focused on promoting 'Healthy habits' (6.7%), and campaigns for 'Prevention and awareness' (5.8%) of health issues. In fact, these seven thematic categories account for 67% of all topics addressed in the studied animated content.

**Figure 1: Evolution of Animated Piece Production by the Spanish National Health System on YouTube (2009-2022).**



Source: Author's own work,

**Figure 2: Use of Animated Pieces by Spanish National Health System Services on YouTube (2009-2022).**



Source: Author's own work.



As for the target audience for the animated content, it is observed that the majority of the messages are intended for 'Citizens' – the entire society – and this corresponds to 79% of all the analyzed pieces. Additionally, there is also content dedicated to 'Patients and Users' (11%), only 'Patients' (9%), and even exclusively to 'Users' (1%).

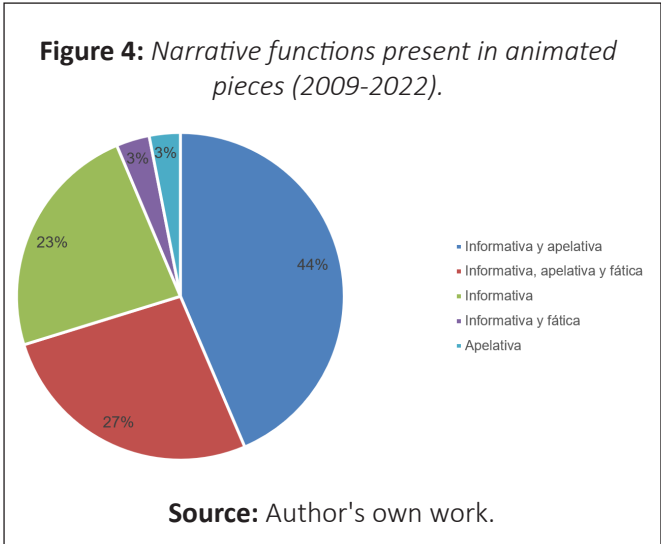
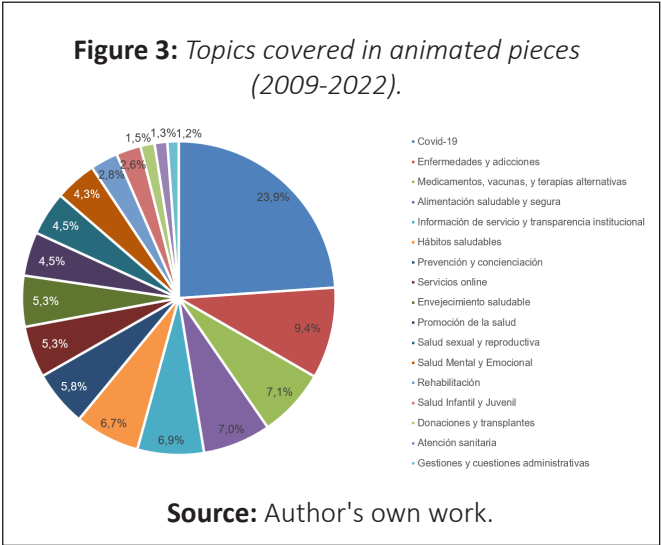
Regarding the narrative dimension of the pieces, it is observed that two functions stand out: firstly, the most used is the 'Informative' function, which corresponds to 72% of the entire sample, and the next most represented function is the 'Appeal' function, fulfilled by 28% of all cases analyzed. From the perspective of all the functions present in these contents, it is noted that almost 44% of the analyzed pieces are shared to inform and appeal to action – informative and appeal functions. 27% share the same along with the aim of promoting contact and relationship with the audience – informative, appeal, and phatic functions. Nearly 23% focus exclusively on providing data, references, and knowledge – informative function – through these contents. These three groups represent more than 94% of the analyzed sample, which reveals that these are the functions used in almost all animated pieces (Figure 4).

All animated content follows a classic narrative structure of beginning, middle, and end (98%), and most of them also convey their messages in a simple and comprehensive way, as 74% of all animated pieces formulate and answer the 5Ws of journalistic discourse.

Regarding the viewership of this type of content, it's worth noting that around 72% of the pieces have been viewed fewer than 1,000 times, with 62% having fewer than 500 views and the remaining 10% having between 500 and 1,000 views. Additionally, there isn't a significant difference between the number of positive and negative reactions from users to the animated pieces. Nearly 92% of the content has fewer than 50 likes, with 79% having fewer than 10 likes and 12% having between 10 and 50 likes. Likewise, almost 95% have fewer than 50 dislikes, with 93% having fewer than 10 dislikes and 2% having between 10 and 50 dislikes. Finally, regarding user interaction with the pieces, in 54% of the content, commenting is not allowed. In cases where commenting is allowed, 90% of them have no comments, and in the remaining 10%, there are fewer than 10 comments.

## 5. Discussion and Conclusions

The quantitative analysis of the present study (Objective 1) reveals that, over the years, the use of animations by the National Health System on its YouTube channels has followed a more or less constant upward trend, with three exceptions: in 2012 and 2018, the number of animations increased significantly, only to decrease the following year, while still maintaining an overall upward trend; and in 2020, the number of animations almost quadrupled. This spike is attributed to the 'COVID-19' health crisis, with the animations distributed in that year alone accounting for 26% of the total. The human and material resources utilized during that year



were in response to an extraordinary situation, and the creation of animations decreased over the next two years, though they remained higher than those created in 2019, prior to the pandemic. This last case might suggest that the previous instances of increase and subsequent slight decrease in the number of distributed animations could be due to a situational factor such as another health crisis. However, the years 2012 and 2018 do not seem to correspond with any specific crisis, while the H1N1 Flu and Ebola crises — which had considerable public impact at the time — do not appear to have influenced the number of animations distributed by the National Health System, occurring in 2009 and 2014, respectively. Moreover, the observed differences in the number of animations distributed across different channels — with the Catalan Health Service alone having distributed almost 30% of the animations, and together with those of the Basque Country and Navarre, exceeding half — do not allow for extrapolation of possible communication policies that led to the creation and distribution of animations on different channels. This study has allowed us to verify that animation is an increasingly used resource by the National Health Service; that this upward trend has been evident since 2012; that the 'COVID-19' pandemic has altered this more or less constant trend, making 2020 an exceptional year in terms of the number of distributed animations, causing a decrease in their number in the following two years, and focusing on the year 2023: depending on what happens this year, it will be possible to determine if the decrease in the number of animations is solely due to the exceptional nature of 'COVID-19', or if the upward trend of the last decade has been truly altered. Finally, the extreme variation in the number of animations distributed by the different channels of the Spanish National Health System indicates the absence of a unified or, at least, shared communication policy among the different autonomous health services. Although, as we will see later, conclusions can be drawn about how and for what purposes animations are used, the question of why the various autonomous services employ them in this way can only be answered by analyzing each autonomous health service channel separately.

Leaving aside the "What" and moving on to the "How" and "Why" animations are used, this research aims to determine to what extent education and empowerment are promoted through new visual narratives such as animations on the official information channels of Spanish healthcare institutions. The reason for this is that, beyond the more obvious goals such as curing and preventing societal diseases, the public administrations that make up the Spanish National Health System have the challenge and institutional duty to strengthen all communication aspects through the empowerment of society, as well as universal and equitable access to healthcare, including higher quality healthcare information and more humanized relationships between the institution and patients, users, and society. In essence, they seek to create a culture of health in which an equitable and equal system is achieved, promoting citizen participation, education, and empowerment of individuals. To achieve this, animated pieces are disseminated, both in a pure format in 52% of cases and in a hybrid format in the remaining 48% (O2), aimed at providing information and recommendations on various and diverse topics (O3) that can be classified into four general thematic categories: diseases (32%); healthy habits (29%); COVID-19 (24%); and service management (15%).

After the analysis, it has been found that the Spanish National Health System promotes health education through its informative content on YouTube in 71% of cases since, once the language functions (O4) are studied, it is observed that these pieces promote, beyond literacy, a proactive attitude (44%), and even facilitate citizen participation (27%). This trend clearly shows the intentions and strategies that healthcare institutions maintain when sharing this type of content, as they serve both informational and educational purposes, as they fulfill the informative and appellative functions in all cases, and in most cases, they are also accompanied by the phatic function. Jakobson (1975) establishes that: the informative function of any content serves to explain facts, concepts, or ideas objectively; the appellative function seeks to change the behavior of any receiver through a call to action; and the phatic function focuses on facilitating contact between the sender and receiver, aiming to initiate or prolong a channel of communication between them.

In this sense, the informative function is conceived as a way to promote the literacy of the receivers, the appellative function to maintain a proactive attitude, and the phatic function to promote and ensure participation and relationship with the system. That is, content that meets these characteristics simultaneously seeks to ensure the dissemination of information with the intention of promoting a change in the attitudes of

individuals, as well as fostering and ensuring communicative bidirectionality between senders and receivers. Therefore, these three functions are crucial to promote health education in general and social empowerment in particular, as they not only disseminate or inform about health issues but also promote a change in the attitudes of the receivers and ensure their participation in the system by opening channels of relationship and communication between them. Therefore, it can be affirmed that healthcare institutions of the Spanish National Health System use animations not only as informative resources but rather as educational and communicative resources. In this sense, it should be acknowledged that, with the development of actions focused on promoting health education, healthcare institutions can develop strategies that promote social empowerment. In fact, empowerment, understood as a dialectical process of acquiring competencies, implies not only promoting the education of society but also promoting a proactive attitude towards improving health and well-being, as well as fostering and ensuring citizen participation in the system. In other words, if every empowerment process is developed through strategies based on education, promotion, and collaboration (De-Vos et al., 2009; WHO and ITU, 2012; Basagoiti, 2012; ONTSI and MIET, 2016), any healthcare strategy centered on these three pillars will fulfill empowerment, beyond informing and promoting literacy, not only educating society but also establishing bridges for participation in the system.

On the other hand, it is worth noting that empowerment is closely linked to power and its relationships; it arises as a response to an unmet social need, and for it to develop fully, it must reach a favorable social context that enables the desired change, either by changing a previously unfavorable or passive context or by having institutional support from the outset. In essence, every empowerment process seeks to "have power" in order to "be able to do"; to achieve visibility through institutions so that, through them, the desired social change can take place. Although gaining institutional support is a necessary condition for achieving the goals of empowerment, this support will depend on the starting context and is not guaranteed from the outset. However, if institutional support is present from the beginning, or even better, if the institution itself takes on the responsibility for empowerment, it can evolve more efficiently and have greater and better resources. Since any form of empowerment develops over a considerable period of time and will require a large number of messages—information and communication—targeted at a multitude of recipients with different profiles through various channels, which will also evolve over time, coherence throughout the process can only be maintained if there is a planned communication strategy that acts as a model. Obviously, this applies to any area of empowerment, including health. However, after analyzing the level of user participation with the content disseminated by healthcare institutions at the national level (O5), it cannot be determined whether these messages are fulfilling their educational or empowering purpose, as no correlation has been observed between the number of reactions, visits, likes and dislikes, as well as comments made on the disseminated pieces. Therefore, for future research, it would be of great interest to assess the communicative power and effectiveness of understanding of infographic animations in health by conducting a participatory study with the population, through interviews, surveys, and discussion groups

Finally, the fact that the National Health System uses digital animation as an informative resource to disseminate its messages in 17.3% of cases—a total of 1,371 animated pieces out of the 7,944 audiovisual contents shared by the 18 healthcare services in the analyzed period, from 2009 to 2022—is a noteworthy fact, as creating animations involves a significant amount of time, effort, and resources for their production (White, 2006; Williams, 2012; Lowe and Schnotz, 2014). In other words, the creation of animations is especially more costly, not only in terms of production but also economically, than the creation of other audiovisual pieces, but in return, it allows for complete control over the content disseminated because it does not depend on external resources and the informational functions to be disseminated. However, although it is used to a lesser extent than other audiovisual content such as live-action video, it is a positive sign that animations are being used as informational resources by various healthcare institutions, as this type of visual content allows for messages that are more adapted and accessible to the general understanding of the public (González Pacanowski and Medina-Aguerreberre, 2009; Ríos, 2009; Okan, 2014;

"It should be acknowledged that healthcare institutions are making efforts to adapt their messages to more dynamic formats in which they use visual thinking"

Okan-Gil et al., 2016; Vivas, 2021; Anibueze et al., 2022; Ikechukwu-Illomuanya et al., 2022; Apuke et al., 2022). Therefore, it should be acknowledged that healthcare institutions are making efforts to adapt their messages to more dynamic formats in which they use visual thinking-derived visual metaphors, such as representing information through short texts or keywords alongside easily identifiable and memorable icons and symbols.

## 6. References

- Airhihenbuwa, C. O. (1994). Health promotion and the discourse on culture: Implications for empowerment. *Health Education Quarterly*, 21(3), 345-353. <https://doi.org/10.1177/109019819402100306>
- Anibueze, A. U., Ugwuanyi, J. C., Ikwemesi, C. K., Onuora, C., Ugwuoke, J. C., Apuke, O. D. y Gever, V. C. (2022). Impact of counseling visual multimedia on use of family planning methods among displaced Nigerian families. *Health Promotion International*, 37(3). <https://doi.org/10.1093/heapro/daac060>
- Apuke, O. D., Omar, B., Tunca, E. A. y Gever, V. C. (2022). The effect of visual multimedia instructions against fake news spread: A quasi-experimental study with Nigerian students. *Journal of Librarianship and Information Science*, 1-10. <https://doi.org/10.1177/09610006221096477>
- Arévalo-Salinas, A. I. (2017). Propuesta metodológica para el análisis de Youtube y su relación con los movimientos sociales. *Actas del II Congreso Internacional Move.net sobre Movimientos Sociales y TIC*, 25-27. Universidad de Sevilla.
- Basagoiti, I. (Coord.) (2012). *Alfabetización en salud: de la información a la acción*. Itaca.
- Boletín Oficial de Estado. (25 de abril, 1986). *Ley 14/1986. General de Sanidad*, 102, (15207-15224). <https://bit.ly/43wIzML>
- Boletín Oficial de Estado. (4 de octubre, 2011). *Ley 33/2011. General de Salud Pública*, 240, 104593 a 104626. <https://bit.ly/3C1QSTX>
- Boletín Oficial de Estado. (9 de diciembre, 2013). *Ley 19/2013 de transparencia, acceso a la información pública y buen gobierno*, 97922-97952. <https://bit.ly/3BZK6OA>
- Boletín Oficial del Estado. (29 de diciembre, 1978). *Constitución Española*, 311, 29313-29424. <https://bit.ly/43eOUvo>
- Bonal-Ruiz, R., Almenares Camps, H. B. y Marzán Delis, M. (2012). Coaching de salud: un nuevo enfoque en el empoderamiento del paciente con enfermedades crónicas no transmisibles. *Medisan*, 16(5), 773-785.
- Cáceres-Manrique, F. D. M., Vesga-Gómez, C. y Angulo-Silva, M. L. (2010). Empoderamiento para la prevención y control del Dengue. *Revista de Salud Pública*, 12(5), 798-806. <https://bit.ly/43okir8>
- CEOE. (2016). *El libro blanco de la sanidad*. Confederación Española de Organizaciones Empresariales. <https://bit.ly/3WCwaDH>
- Costa, C. T. (2014). Um modelo de negócio para o jornalismo digital. Como os jornais devem abraçar a tecnologia, as a redes sociais e os serviços de valor adicionado. *Revista de Jornalismo ESPM*, 9, 51-115. <https://bit.ly/3ILVh1a>
- De-Castro-Andrade, R. y Galvão-Spinillo, C. (2018). Interaction and animation in Health Infographics: a study of graphic presentation and content comprehension. En A. Marcus y W. Wang (Eds.), *Design, user experience*,

and usability. *Designing interactions* (pp. 187-199). 7th International Conference, DUXU 2018, proceedings part II, Springer. [http://dx.doi.org/10.1007/978-3-319-91803-7\\_14](http://dx.doi.org/10.1007/978-3-319-91803-7_14)

De-Vos, P., Malaise, G., De Ceukelaire, W., Pérez, D. P., Lefèvre, P. L. y Van der Stuyft, P. (2009). Participación y empoderamiento en la atención primaria en salud: desde Alma Ata hasta la era de la globalización. *Medicina Social*, 4(2), 127-134. <https://bit.ly/3BYPajw>

Depoux, A., Martin, S., Karafillakis, E., Preet, R., Wilder-Smith, A. y Larson, H. (2020). The pandemic of social media panic travels faster than the COVID-19 outbreak. *Journal of Travel Medicine*, 27(3). <https://doi.org/10.1093/jtm/taaa031>

Díaz-Llanes, G. (2011). Consideraciones teóricas acerca del empoderamiento psicológico en salud sexual de actores sociales vinculados a niños/as preescolares. *Revista Cubana de Medicina General*, 27(1), 23-32. <https://bit.ly/3WDw1Qm>

Downing, J., Ahmed, W., Vidal-Alaball, J. y López Seguí, F. (2020). *Battling fake news and (in)security during COVID-19*. E-Interinternational Relations.

Furniss, M. (2012). *Animation: art & industry*. John Libbey Publishing Ltd.

González-Pacanowski, T. y Medina-Aguerreberre, P. (2009). Comunicación online en el sector salud: valor de la infografía. *El profesional de la información*, 18(4), 413-420. <https://doi.org/10.3145/epi.2009.jul.08>

Ikechukwu-Illomuanya, A. B., Anselm U, A., Odoh, N. S., Odoh, G. C., Oyeoku, E. K., Verlumun Celestine, G. y Obodo, E. (2022). Effect of Visual Multimedia as a Counseling Intervention for Improving Classroom Concentration Among Young Students in Northern Nigeria who Survived Kidnapping. *Journal of Asian and African Studies*, 57(5), 1072-1085. <https://doi.org/10.1177/00219096211045097>

Jakobson, R. (1975). *Ensayos de lingüística general*. Seix Barral.

Larson, H. (2018). The biggest pandemic risk? Viral misinformation. *Nature*, 562, 309. <http://dx.doi.org/10.1038/d41586-018-07034-4>

Loiti-Rodríguez S., Genaut-Arratibel A. y Vink-Larruskain N. (2023). Promoción del empoderamiento social y la educación en salud desde una web institucional: propuesta metodológica de análisis y medición. *Estudios sobre el Mensaje Periodístico*, 29(1), 129-141. <https://doi.org/10.5209/esmp.81988>

Loiti-Rodríguez, S., Genaut-Arratibel, A. y Cantalapiedra-González, M. J. (2021). Crisis communication in audiovisual format: information from Spain's National Health System on YouTube in 2020. *Profesional de la información*, 30(4), e300416. <https://doi.org/10.3145/epi.2021.jul.16>

Loiti-Rodríguez, S. y Suárez-Villegas, J. C. (2022). Redes para la investigación y transferencia de conocimiento en comunicación: el caso de INTRACOM. *Ámbitos. Revista Internacional De Comunicación*, 57, 11-30. <https://doi.org/10.12795/Ambitos.2022.i57.01>

Lowe, R. K. y Shnotz, W. (2014). Animation principles in multimedia learning. En R. E. Mayer (Ed.), *The Cambridge Handbook of Multimedia Learning* (pp. 513-546). Cambridge University Press.

Montero-Viñuales, E. (2019). Los Sistemas Sanitarios Públicos y el empoderamiento en salud del ciudadano a través de medios digitales. En D. J. Catalán, C. Peñafiel y J. L. Terrón (Coord.), *¿Por qué la comunicación en salud es importante?: avances e investigación* (pp. 377-398). Aranzadi Thomson Reuters.

- Moreda-Sánchez, E.M. (2015). *Comunicación institucional intercultural para la salud: un análisis de la adaptación cultural de materiales en el periodo 2000-2010* [Tesis doctoral]. Universidad Rey Juan Carlos.
- Nguyen, A. y Catalán-Matamoros, D. (2020). Digital mis/disinformation and public engagement with health and science controversies: Fresh perspectives from COVID-19. *Media and Communication (Lisboa)*, 8(2), 323-328. <https://doi.org/10.17645/mac.v8i2.3352>
- Okan-Gil, Y., Galesic, M. y García Retamero, R. (2016). How people with low and high graph literacy process health graphs: Evidence from eye tracking. *Journal of Behavioral Decision Making*, 29(2-3), 271-294. <https://doi.org/10.1002/bdm.189>
- Okan, Y. (2014). *How to improve the comprehension and communication of information about medical and health risks* [Tesis Doctoral]. Universidad de Granada.
- OMS y UIT. (2012). *Conjunto de herramientas para una estrategia de eSalud nacional*. Organización Mundial de la Salud y Unión Internacional de Telecomunicaciones. <https://bit.ly/3wpGUZu>
- ONTSI y MIET. (2016). *Los ciudadanos ante la en Sanidad. Opiniones y expectativas de los ciudadanos sobre el uso y aplicación de las TIC en el ámbito sanitario*. Observatorio Nacional de las Telecomunicaciones y de la Sociedad de la Información (ONTSI) y Ministerio de Industria, Energía y Turismo (MIET). <https://bit.ly/3FICyR4>
- Paredes-Otero, G. (2019). Análisis de YouTube como herramienta informativa en el periodismo español especializado en videojuegos. En G. Paredes-Otero (Ed.), *Investigar las redes sociales. Un acercamiento interdisciplinar* (pp. 52-72). Egregius. <https://cutt.ly/le3x4TX>
- Petterson, A. N. y Zimmerman, M. A. (2004). Beyond the individual: toward a nomological network of organizational empowerment. *American Journal of Community Psychology*, 34(1-2), 129-145.
- Pick, S., Sirkin, J., Ortega, I., Osorio, P., Martínez, R., Xocolotzin, U. y Givaudan, M. (2007). Escala para medir Agencia Personal y Empoderamiento (ESAGE). *Revista interamericana de Psicología*, 41(3), 295-304. <https://bit.ly/3OLs2zt>
- Rappaport, J. (1981). In praise of paradox: a social policy of empowerment over prevention. *American Journal of Community Psychology*, 9(1), 1-25. <https://doi.org/10.1007/bf00896357>
- Ríos, I. (2009). *Influencias del lenguaje y origen de un lector en la comprensión de mensajes de comunicación en salud y en la formación de actitud e intención hacia la realización de una conducta preventiva* [Tesis Doctoral]. Universidad Pompeu-Fabra.
- Roam, D. (2010). *Tu mundo en una servilleta. Resolver problemas y vender ideas mediante dibujos*. Gestión 2000.
- Roam, D. (2012). *Bla, bla, bla: Qué hacer cuando las palabras no funcionan*. Gestión 2000.
- Rodríguez-Andrés, R. (2017). Cómo diseñar planes de comunicación para organizaciones sanitarias. En U. Cuesta, C. Peñafiel, J. L. Terrón, E. Bustamante y S. Gaspar (Coord.), *Comunicación y salud* (pp.367-378), Dextra.
- Romero-Zepeda, J. A. (2012). Promoción del empoderamiento de género en la población indígena en Querétaro, México, a través de la difusión de la salud reproductiva por parte de las parteras. *Estudios sociales (Hermosillo, Son.)*, 20(40), 293-312.

- Rubia-Vila, F. J. (Coord.). (2011). *El Libro Blanco sobre el Sistema Sanitario Español*. Academia Europea de Ciencias y Artes.
- Ruivo-Manzano, F. y Gomes-Franco-e-Silva, F. (2019). YouTube como herramienta de refuerzo de marca para la Agencia EFE. Pilares para el éxito en plataformas de vídeos digitales. *Hipertext.net*, 18, 35-46. <https://doi.org/10.31009/hipertext.net.2019.i18.04>
- Trujano-Ruíz, P. y Limón-Arce, G. (2010). De la patología a la normalidad: deco-construcción y empoderamiento. *Revista Electrónica de Psicología Iztacala*, 13(3). <https://bit.ly/3MAngSy>
- Speer, P. y Hughey, J. (1995). Community organizing: an ecological route to empowerment and power. *American Journal of Community Psychology*, 23, 729-748. <http://dx.doi.org/10.1007/BF02506989>
- Suriá-Martínez, R. (2017). Relación entre resiliencia y empoderamiento en adultos con movilidad reducida. *Quaderns de Psicologia*, 19(3), 113-140. <https://doi.org/10.5565/rev/qpsicologia.1396>
- Van Manen, M. J., Van't Spijker, A., Tak, N. C., Baars, C. T., Jongenotter, S. M., Van Roon, L. R., Kraan, J., Hoogsteden, H. C. y Wijsenbeek, M. S. (2017). Patient and partner empowerment programme for idiopathic pulmonary fibrosis. *European Respiratory Journal*, 49(4). <https://doi.org/10.1183/13993003.01596-2016>
- Vivas, R. (2021). *Visual thinking works. Cómo lograr lo que te propones con dibujos*. Lunwerg.
- Wells, P. (1998). *Understanding animation*. Routledge.
- Westcott, T. (2011). An overview of the global animation industry. *Creative Industries Journal*, 3(3), 253-259. [https://doi.org/10.1386/cij.3.3.253\\_1](https://doi.org/10.1386/cij.3.3.253_1)
- White, T. (2006). *Animation from pencils to pixels: Classical Techniques for the Digital Animator*. Routledge.
- Wiggins, N. (2011). Popular Education for Health Promotion and Community Empowerment: A Review of the Literature. *Health Promotion International*, 27(3), 356-371. <https://doi.org/10.1093/heapro/dar046>
- Williams, R. (2012). *The animator's survival kit. A manual of methods, principles and formulas for classical, computer, games, stop motion and internet animators*. Farrar, Straus and Giroux.
- Yoon, H. y Malecki, E. J. (2010). Cartoon planet: worlds of production and global production networks in the animation industry. *Industrial and Corporate Change*, 19(1), 239-271. <https://doi.org/10.1093/icc/dtp04>

## AUTHORS CONTRIBUTIONS, FUNDING, AND ACKNOWLEDGMENTS

### Authors contributions:

**Conceptualization:** Loiti Rodríguez, Sara, Genaut Arratibel, Aingeru, and Cantalapiedra González, María José. **Software:** Loiti Rodríguez, Sara. **Validation:** Loiti Rodríguez, Sara. **Formal Analysis:** Loiti Rodríguez, Sara and Genaut Arratibel, Aingeru. **Data Curation:** Loiti Rodríguez, Sara and Genaut Arratibel, Aingeru. **Original Draft Preparation:** Loiti Rodríguez, Sara. **Writing - Review and Editing:** Loiti Rodríguez, Sara, Genaut Arratibel, Aingeru, and Cantalapiedra González, María José. **Visualization:** Loiti Rodríguez, Sara. **Supervision:** Cantalapiedra González, María José. **Project Administration:** Loiti Rodríguez, Sara. **All authors have read and approved the**

**final published version of the manuscript:** Loiti Rodríguez, Sara, Genaut Arratibel, Aingeru, and Cantalapiedra González, María José.

**Funding:** This research is part of the Pre-doctoral Researcher Training Program, funded by the Department of Education of the Basque Government. Thesis project from 2019 to 2022.

## **AUTHORS:**

### **Sara Loiti-Rodríguez**

University of the Basque Country / Euskal Herriko Unibertsitatea. Spain.

Ph.D. in Social Communication (2023) from the Department of Journalism (UPV/EHU), funded by the Basque Government's Department of Education scholarship (2019-2022). She is a member of the Consolidated Research Group of the Basque University System "Bitartez." She graduated with honors and received the Extraordinary Prize in Audiovisual Communication (2017) and had the best academic record in the Master's in Social Communication (2018). Throughout her academic career, she has developed a strong interest in visual communication: she has taken courses in visual thinking (2016-2020) and Big Data for data visualization (2019-2020). Her main research focus is on improving institutional information to promote social empowerment using new forms of communication, such as animations.

[sara.loiti@ehu.eus](mailto:sara.loiti@ehu.eus)

**H-index:** 2

**Orcid ID:** <https://orcid.org/0000-0002-7283-8211>

**Scopus ID:** <https://www.scopus.com/results/authorNamesList.uri?orcidId=0000-0002-7283-8211>

**Google Scholar:** <http://scholar.google.com/citations?user=5ex2Ay8AAAAJ>

**ResearchGate:** <https://www.researchgate.net/profile/Sara-Loiti-Rodriguez>

**Academia.edu:** <https://independent.academia.edu/SaraLoiti>

### **Aingeru Genaut Arratibel**

University of the Basque Country / Euskal Herriko Unibertsitatea. Spain.

Aingeru Genaut is a member of the Consolidated Research Group of the Basque University System "Bitartez." He holds a degree in Journalism from the University of Navarra, obtained his Ph.D. in Information Sciences at UPV/EHU in 2012, and is part of the teaching staff in the Faculty of Journalism as an Associate Professor in the Department of Journalism. He teaches Infographics and Journalism Technology in the Journalism degree program, and Digital Editing and Graphic Design in the UPV/EITB Multimedia Master's program. He has published sixteen research articles in scientific journals and several book chapters. His main research focus is on new technologies and digital journalism, especially in data visualization, infographics, design, and the application of big data in communication.

[aingeru.genaut@ehu.eus](mailto:aingeru.genaut@ehu.eus)

**H-index:** 7-9

**Orcid ID:** <https://orcid.org/0000-0003-3762-3570>

**Scopus ID:** <https://www.scopus.com/authid/detail.uri?authorId=56003522400>

**Google Scholar:** <https://scholar.google.es/citations?user=RO60B1MAAAAJ&hl=es>

**ResearchGate:** <https://www.researchgate.net/profile/Aingeru-Genaut-2>

**Academia.edu:** <https://independent.academia.edu/GenautArratibel>



**María José Cantalapiedra-González**

University of the Basque Country / Euskal Herriko Unibertsitatea. Spain.

Aingeru Genaut is a member of the Consolidated Research Group of the Basque University System "Bitartez." He holds a degree in Journalism from the University of Navarra, obtained his Ph.D. in Information Sciences at UPV/EHU in 2012, and is part of the teaching staff in the Faculty of Journalism as an Associate Professor in the Department of Journalism. He teaches Infographics and Journalism Technology in the Journalism degree program, and Digital Editing and Graphic Design in the UPV/EITB Multimedia Master's program. He has published sixteen research articles in scientific journals and several book chapters. His main research focus is on new technologies and digital journalism, especially in data visualization, infographics, design, and the application of big data in communication.

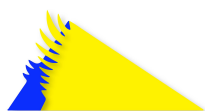
[mariajose.cantalapiedra@ehu.eus](mailto:mariajose.cantalapiedra@ehu.eus)

**H-index:** 12

**Orcid ID:** <https://orcid.org/0000-0003-4961-2326>

**Scopus:** <https://www.scopus.com/authid/detail.uri?authorId=55578553300>

**Google Scholar:** <https://scholar.google.es/citations?user=dz7p6CkAAAAJ&hl=es>



## RELATED ARTICLES

- Betancourt, A., Campillo, N. y Mieres, C. (2021). Información sobre la salud: una revisión de la literatura existente sobre YouTube como fuente de información sanitaria. *Revista de Comunicación y Salud*, 11, 1-18. <https://doi.org/10.35669/rcys.2021.11.e207>
- Cerdán Martínez, V., Giménez Sarmiento, A. y Padilla Castillo, G. (2022). El auge de Vox y el populismo en Youtube antes y durante la pandemia del COVID-19. *Revista de Comunicación de la SEECI*, 55, 17-35. <https://doi.org/10.15198/seeci.2022.55.e751>
- Del-Moral-Pérez, M. E., Bellver-Moreno, M. del C., Guzman-Duque, A. y López-Bouzas, N. (2021). Concienciación juvenil frente al COVID-19 en España y Latinoamérica: análisis de spots en YouTube. *Revista Latina de Comunicación Social*, 79, 23-49. <https://doi.org/10.4185/RLCS-2021-1510>
- Juárez Rodríguez, J. (2020). Los roles de género en la música infantil de la plataforma digital YouTube. *Revista de Ciencias de la Comunicación e Información*, 25(1), 19-37. [http://doi.org/10.35742/rcci.2020.25\(1\).19-37](http://doi.org/10.35742/rcci.2020.25(1).19-37)
- López Villafranca, P. y Smolak Lozano, E. (2020). El consumo cultural digital de los programas de radio a través de Youtube en España y Polonia. *Historia y Comunicación Social*, 25(1), 123-138. <https://doi.org/10.5209/hics.69231>